S. HRG. 106–381

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2000

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

ON

H.R. 2605/S. 1186

AN ACT MAKING APPROPRIATIONS FOR ENERGY AND WATER DEVELOPMENT FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 2000, AND FOR OTHER PURPOSES

Department of Defense
Department of Energy
Department of the Interior
Nondepartmental witnesses

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CONTENTS

TUESDAY, MARCH 9, 1999

	Page
Department of the Interior: Bureau of Reclamation	1
Department of Defense—Civil: Department of the Army: Corps of Engineers—Civil	63

THURSDAY, MARCH 11, 1999

Department of Energy: Atomic Energy Defense and Nonproliferation Programs	193

THURSDAY, MARCH 18, 1999

Department of Energy: Environmental Management and Civilian Waste Management Program	269

TUESDAY, APRIL 13, 1999

Department of Energy:	
Office of Science	383
Office of Nuclear Energy, Science and Technology	383
Office of Energy Efficiency and Renewable Energy	383

NONDEPARTMENTAL WITNESSES

California water resource development projects	525
Nationwide water resource organization	599
New York and New Jersey water resource projects	612
Southeastern U.S. water resource development projects	620
Ohio River Valley inland navigation projects	651
Mississippi and Louisiana water resource projects	656
Midwest U.S. water resource development projects	699
Upper Midwest water projects	729
Southwest U.S. water resource development projects	748
Pacific Northwest water resource projects	770
Department of Energy programs and activities	790
California navigation and related projects	850

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2000

TUESDAY, MARCH 9, 1999

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:10 a.m., in room SD–124, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Cochran, Gorton, Bennett, Burns, Craig, Stevens, Reid, Kohl, and Dorgan.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

STATEMENTS OF:

PATRICIA BENEKE, ASSISTANT SECRETARY OF THE INTERIOR, WATER AND SCIENCE

ELUID MARTINEZ, COMMISSIONER, BUREAU OF RECLAMATION

OPENING STATEMENT

Senator DOMENICI. The committee will please come to order.

Patty, it's good to see you again.

Today, we begin our hearings on the fiscal year 2000 budget for agencies and programs under the jurisdiction of the Energy and Water Development Subcommittee. This morning we have representatives from the Department of the Interior to review the funding requests of the Bureau of Reclamation. Following their testimony, we will hear from the Corps of Engineers. This continues our tradition of alternating the order of the Corps' and the Bureau's testimony each year in an effort to be fair to agencies and members who may be interested in one over the other.

First, it is a pleasure to welcome Patty Beneke, Assistant Secretary of the Interior for Water and Science; and Eluid Martinez, Commissioner of the Bureau of Reclamation and a resident of the State of New Mexico. Eluid, it is nice to have you here.

Mr. MARTINEZ. Thank you, Mr. Chairman.

Senator DOMENICI. Both of our witnesses appeared last year before the committee and are well known to both the staff and the committee members.

BUDGET REQUEST

The fiscal year 2000 budget request for the Bureau of Reclamation totals $856,600,000, compared to the appropriation of $780.5 million, an increase of $76 million over the current year. This includes an increase of $30 million over the 1999 water and related resources; a $20 million increase for the CALFED restoration program, which totals $95 million for the year 2000; and a $14 million increase in the Central Valley Project Restoration Fund in California, for a total of $47.3 million; and some smaller increases in other programs and activities.

Our initial review indicates that there are no major changes or proposals put forth in the budget request of the administration for the Bureau of Reclamation for the year 2000.

Now, having said that, since we have much to do this morning, I will say nothing further and yield to Senator Reid, our ranking member, for any comments that he may have.

So, again, I welcome both of you. I welcome those in the audience, and clearly the Corps of Engineers will follow these witnesses.

STATEMENT OF SENATOR HARRY REID

Senator REID. Mr. Chairman, I appreciate very much your involvement, of course, as chair. I will follow your example and ask unanimous consent that my full statement be made part of the record.

I would just comment that I am also a member of the authorizing committee, the Environment and Public Works Committee, and we are this morning having a hearing on something that we will have to fund at a later time. We are having the Corps of Engineers on the Water Resources Development Act. So, I am going to have to be excused at a later time to whip over there and make an appearance.

The Bureau of Reclamation has had a significant history in the State of Nevada. The first ever Bureau of Reclamation project in the country was in Nevada, the Newlands Project, which for 70 years was fairly noncontroversial, but the last 20 years has been very controversial. But the Bureau has always had a prominent place in that project.

Also, of course, with the construction of Boulder, later to become the Hoover Dam, the Bureau of Reclamation was and has been heavily involved in that little city in the southern part of the State.

Flood control projects which are becoming so important in the two metropolitan areas of Reno and Las Vegas, the Corps of Engineers is vitally involved. Hundreds of millions of dollars are being spent in those two areas to stop the loss of life and property.

PREPARED STATEMENT

So, I look forward to this hearing and to working with these two agencies during the coming year.

[The information follows:]

PREPARED STATEMENT OF SENATOR HARRY REID

Mr. Chairman, I appreciate this hearing on the U.S. Army Corps of Engineers and the Bureau of Reclamation. Both the Corps and Bureau have played a vital role in the development of American water management infrastructure that is all too often overlooked. And unfortunately, given the numbers that I see in the Budget Request, the future role of the Bureau and Corps are now minimized in the perception of some in the administration.

The need for water projects is not diminishing, indeed some may argue that the need is increasing, and yet some at Office of Management and Budget and elsewhere would like to dictate the course of the program by tightening the budget for surveys, studies and new construction. I think it is a perilous path to trod when we underestimate the economic, societal, and hydrological impacts of these water programs. This is why the communities at home so distinctly recognize these projects. And while it is derisively called a congressional pork program, we need not make any apologies for that because of the many benefits of these projects as water is managed throughout the nation.

The Army Corps of Engineers has a history that dates back to the origins of the nation and I appreciate the vast function that the Corps has in the management of the nation's navigational waters. For example, this last week, I learned that half of New Orleans lives under sea level and without the maintenance of its levees and canals that city, indeed, most of the state of Louisiana would be under water. Around the nation, there are communities that rely on these flood control projects, from Reno to Las Cruces, New Mexico.

There's no doubt that the work on the harbors and ports of the nation is essential to our trade and commerce. For instance, the ports of the nation move over 13.5 million tons of breakbulk cargo annually; which is an estimated $600 billion in international cargo generating over $150 billion in tax revenue. There are critical issues that we need to pursue further, and about which I will have specific questions, including the administration's continuing concern about the endless need of beach or shoreline erosion. Since Nevada is not on the shoreline, I do not have a parochial interest but a concern that commitment made to these states and communities cannot be washed away, pun intended.

Additionally, the cooperative agreements that are being negotiated with non-federal sponsors are creating a mechanism that could create a very precarious financial condition for the Corps. The Chairman and I are working through that issue. I have discussed that issue with both the Assistant Secretary and General Fuhrman and I appreciate your perspectives.

There are a number of projects that are now rectifying the mistakes of management of water resources and engineering approaches in such places as the Kissimmee River that feeds into the Florida Everglades and the Truckee River in Nevada. I think we need to assess the future commitment that rectifying these mistakes will require of us.

The Bureau of Reclamation has recently celebrated its 150th anniversary. I congratulate the Bureau on its many achievements and stellar record. Many of the communities throughout the western United States were developed as a consequence of the Bureau of Reclamation's water management.

As you are aware, there is some criticism that the bureau has been expanding its mission and activities. I am interested in your vision, Assistant Secretary and Commissioner, of the future of the Bureau and not just this fiscal year.

I note that the Budget Request has $95 million for California Bay Delta Restoration which is bringing that request into line with the appropriations level, generally. That still is a significant amount of money that could be funding many multiple projects. I hope you will discuss the progress and measurable benchmarks of CALFED effort.

Additionally, I would appreciate a discussion of the environmental restoration mission and its relationship to the reclamation management of water.

STATEMENT OF PATRICIA BENEKE

Senator DOMENICI. Senator Bennett, would you like to comment?

Senator BENNETT. No.

Senator DOMENICI. Thank you for coming to the hearing this morning.

Patty, you are first. Patty Beneke.

Ms. BENEKE. Thank you very much, Mr. Chairman, members of the subcommittee. I am pleased to discuss the President's fiscal

year 2000 budget request for the Bureau of Reclamation. Eluid Martinez, the Commissioner of the Bureau, is here today as well, and he will provide further detail with respect to the budget.

I am going to be very brief this morning and summarize my testimony.

As you stated, Mr. Chairman, the request for the Bureau of Reclamation totals $856.6 million. Of this amount, over $278 million is requested for facility operations, maintenance, and rehabilitation. This is an increase of over $15 million from last fiscal year and reflects the fact that the Commissioner and I place a high priority on these projects.

I also note that the budget request for the Department reflects the Administration's continued commitment to address natural resource issues by working in geographically based partnerships. These partnerships cross not only jurisdictional boundaries within the Federal Government, but also involve the States, tribes, local communities, and affected stakeholders. An example of one such partnership is the California Bay-Delta Program, and I would like to take just a few minutes to talk a little bit about that very important program.

CALIFORNIA BAY-DELTA PROGRAM

This is a tremendously important effort under which CALFED, comprised of 10 Federal agencies and 4 State agencies, is working with all interested stakeholders to develop a long-term solution to the many water resource issues presented in the San Francisco Bay-Delta region in California. This solution will address water supply reliability issues, levy stabilization which is key to flood protection, water quality, and restoring the health of the Bay-Delta region. The Bay-Delta itself provides drinking water to over two-thirds of the State of California and irrigation water to three-quarters of the Nation's fruit and vegetable crop. It is also a national resource in that it is the largest wetland estuary in the West.

From our perspective at Interior, a key goal of the program is to provide greater certainty and reliability of supply to our many Central Valley Project contractors, as well as to resolve issues relating to the ecological health of the Bay-Delta region.

The President's fiscal year 2000 budget for the Bureau of Reclamation requests $95 million for Federal cost sharing for the program. Of this amount, $75 million would be used pursuant to the California Bay-Delta Environmental Enhancement Act passed by Congress a couple of years ago. These funds would build upon the restoration begun in fiscal year 1998 and continued in 1999 by monitoring prior projects and initiating and implementing new projects approved by CALFED and the Secretary. The remaining $20 million is requested for non-ecosystem restoration activities, such as groundwater storage, water use efficiency, water quality, and watershed management.

This request signals that the Administration has a commitment to funding all elements of the California Bay-Delta Program. We believe it is important to get this work underway.

CENTRAL UTAH PROJECT

Finally, this morning I would like to note that responsibility for overseeing the implementation of the Central Utah Project Completion Act rests with my office, and I would be pleased to answer any questions you might have on this topic, as well as any others.

PREPARED STATEMENT

Again, thank you for the opportunity to testify. It is an honor and privilege to be here. With your permission, I would like to pass the baton on to Commissioner of Reclamation, Eluid Martinez, who will provide further details on the budget request.

[The statement follows:]

PREPARED STATEMENT OF PATRICIA J. BENEKE

I am pleased to appear before this Subcommittee again as Assistant Secretary for Water & Science to testify in support of the President's fiscal year 2000 budget for the Bureau of Reclamation and the Central Utah Project.

Eluid Martinez, the Commissioner of the Bureau of Reclamation is also appearing today. His testimony will address details of the fiscal year 2000 budget request for the Bureau of Reclamation. This morning I would like to highlight only one or two key elements in Reclamation's budget and also discuss the request for the Central Utah Project, for which my office is responsible. Ron Johnston, Program Director for the Central Utah Project (CUP) Completion Act Office is also with me today.

Reclamation's fiscal year 2000 request will allow the timely and effective delivery of project benefits; ensure the reliability and operational readiness of Reclamation's dams, reservoirs, power plants, and distribution systems; and identify, plan, and implement dam safety corrective actions and site security improvements. Providing adequate funding for the operation, maintenance and rehabilitation of its facilities continues to be one of Reclamation's highest priorities, and its staff works closely with water users and other stakeholders to ensure that available funds are used effectively.

The budget request for the Department of the Interior reflects the Department's and the Administration's continued commitment to address natural resource issues by working in geographically-based partnerships that cross not only the jurisdictional boundaries within the Federal government but also involve the States, Tribes, local communities and affected stakeholders. Solving natural resource problems is vital to the successful operation of Reclamation Projects.

This approach is reflected in several initiatives in the Department's fiscal year 2000 budget. In South Florida, several Federal agencies are working closely with the State, Tribes, local communities and affected stakeholders to restore the Everglades. Because funding for another such vital effort, the multi-agency Bay-Delta Restoration Program, is included in the Bureau of Reclamation's budget request, I will discuss it in more detail this morning.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

The fiscal year 2000 budget proposes funding of $75 million for ecosystem restoration efforts that will build on the fiscal year 1998 and fiscal year 1999 programs by monitoring prior projects and initiating and implementing new projects approved by CALFED and the Secretary. In addition, $20 million is requested for non-ecosystem restoration activities authorized under various current authorities, such as water use efficiency, water quality, groundwater storage, levees, conveyance, and watershed management that would be common to any version of the overall Bay-Delta Long-term Plan that is ultimately selected.

Ecosystem Restoration funds are requested in an account within the Bureau of Reclamation and provided to participating agencies based upon the program recommended by CALFED and approved by the Secretary of the Interior in consultation with participating agencies. Participating agencies will work directly with and administer contracts with non-Federal entities. Federal funds would be available in a manner consistent with the terms of the existing cost-sharing agreement and environmental review requirements. Also, CALFED is developing a comprehensive framework to provide a more reliable water supply for all uses, stabilize levees, and

improve water quality. Restoring the health of the Bay-Delta ecosystem is central to meeting these objectives.

Fiscal year 1998 was the first year that Federal agencies had funds for the Bay-Delta Program. During the year, Federal agencies made considerable progress in developing a project selection/approval process to assure that funds are being used for the highest priority ecosystem restoration projects and that all proposed and selected projects comply with Federal contract provisions. The process assures extensive public participation. By the end of the year, CALFED had recommended and the Secretary of the Interior had approved programs and projects to use all of the $85 million appropriated in fiscal year 1998. Reclamation had contracts or agreements with other agencies obligating $73 million.

CALFED is using the fiscal year 1999 funds expeditiously and on high priority activities. The Secretary has approved ecosystem restoration projects that would use $65 million of the $75 million appropriated in fiscal year 1999. CALFED currently has a request for proposals out to the public to solicit other ecosystem restoration projects that will be funded in fiscal year 1999 and fiscal year 2000.

The Administration is submitting authorization language that would extend current spending authorization through 2003 to enable the ecosystem restoration program to be fully funded at the $430 million authorized by the California Bay-Delta Environmental Enhancement Act.

BUREAU OF RECLAMATION

Aside from the request for the Bay-Delta Restoration initiative, the budget request for the Bureau of Reclamation totals $761.6 million, an increase of $30.2 million from the fiscal year 1999 level. The request includes adequate funding for operations, maintenance and rehabilitation, which continues to be a high priority for both the Commissioner and me. The request includes $71 million for the dam safety program, $27 million for the Central Arizona Project; $28.7 million for the Colorado River Basin Salinity Control Program; $27 million for the Garrison Diversion Unit; $31.5 million for Water Reclamation/Reuse projects; $125 million for the Central Valley Project; $47.3 million for the Central Valley Project Restoration Fund; $13 million for Columbia/Snake River Salmon Recovery and $15 million for Endangered Species Recovery in other river basins.

Reclamation's water management mission places a greater emphasis on water conservation, recycling and reuse; developing partnerships with its customers, States and Tribes; finding ways to bring various interests together to address their water needs; good stewardship of Reclamation's facilities; and transferring title and operation of some facilities to local beneficiaries. All these changes have one goal—to meet the increasing water demands of the West while protecting the environment and the public's investment.

The Reclamation budget request also includes the Annual Performance Plan required under the Government Performance and Results Act. This plan identifies the annual goals for fiscal year 2000 that support Reclamation's Strategic Plan.

CENTRAL UTAH PROJECT COMPLETION ACT

The Central Utah Project Completion Act provides for completion of the Central Utah Project (CUP) by the Central Utah Water Conservancy District. The Act also authorizes funding for fish, wildlife, and recreation mitigation and conservation; establishes the Utah Reclamation Mitigation and Conservation Commission to coordinate mitigation and conservation activities; and provides for the Ute Indian Rights Settlement.

The Secretary is prohibited from delegating his responsibilities under the Act to the Bureau of Reclamation. As a result, responsibility for overseeing implementation of the Act rests with the Assistant Secretary for Water and Science. The Department has established a program coordination office in Provo, Utah, with a Program Director to provide oversight, review, and liaison with the District, the Commission, and the Ute Indian Tribe, and to assist in administering the responsibilities of the Secretary under the Act.

The fiscal year 2000 request for the Central Utah Project Completion Account provides $39.4 million for use by the District, the Commission, and the Department to implement Titles II–IV of the Act, a decrease of $3.1 million from the fiscal year 1999 enacted level. The request includes $18.6 million for the District to initiate construction on the remaining segments of the Diamond Fork System; to complete construction of the Wasatch County Water Efficiency Project; to implement approved water conservation and water management improvement projects; to implement the groundwater recharge and conjunctive use program; to initiate construction of the Duchesne/Strawberry diversion structures; and to continue development

of planning and NEPA documents on facilities to deliver water in the Utah Lake drainage basin. No new funds are requested for the Uinta Basin facilities.

The request also provides $12.0 million for use by the Commission for mitigation and conservation projects authorized in Title III of the Act, including fish hatchery improvements, construction of the Daniels Creek Pipeline, and for acquisition of habitat, access, and water rights along the Provo River and other key watersheds; and for completing other mitigation measures identified in Reclamation planning documents under Title II of the Act.

Finally, the request includes funds for the Federal contribution to the principal of the Utah Reclamation Mitigation and Conservation Account ($5.0 million); for mitigation and conservation projects outside the State of Utah ($0.4 million); for modifications to Syar Tunnel that are necessary to meet the minimum instream flow requirements ($2.0 million); and for program administration ($1.3 million).

In addition to the request described above, the Bureau of Indian Affairs' budget includes $27.5 million for the Ute Indian Rights Settlement; and $5.0 million is included in the request for the Western Area Power Administration for its contribution to the Utah Reclamation Mitigation and Conservation Account.

This completes my statement today. Again, thank you for providing me the opportunity to discuss with this subcommittee our fiscal year 2000 requests. The Commissioner and I will be pleased to respond to your questions.

STATEMENT OF ELUID L. MARTINEZ

Senator DOMENICI. Commissioner, we are glad to have you.

Mr. MARTINEZ. Good morning, Mr. Chairman, members of the subcommittee. I appreciate this opportunity to discuss the President's fiscal year 2000 budget with the subcommittee.

I am sure all of you are aware of the history of the Bureau of Reclamation, and my written statement goes into that. I will summarize my statement and get to the issues as I view them.

Our budget request is for $856.6 million, of which approximately $762 million is for ongoing Reclamation programs. Also included is $95 million for the California Bay-Delta Restoration account: $75 million for ecosystem restoration, and $20 million for our other activities.

The $652.8 million requested in the Water and Related Resources account basically deals with our water resource and energy management programs, our wildlife and fish management programs, our land management programs, and our facility operation and maintenance. Also included in our request is $47.3 million for the Central Valley Project Restoration Fund, and $12.4 million for our loan program to continue five small loan projects, two of which will be completed this year. The balance is reflected in $49 million in our request for policy administration, which is a $2 million increase over the fiscal year enacted level.

SAFETY OF DAMS PROGRAM

Mr. Chairman, members of the subcommittee, our Safety of Dams program basically addresses the continuing safety and analysis of our structures. We place high priority on the safety of our dams. It funds adequately, I believe, the operation and maintenance of our facilities out West. It continues to move along some of our construction projects specifically dealing with waste water reuse and rural water distribution systems, probably not at the level that the project sponsors would wish, and includes some monies for some Indian water systems, including initiation of construction of the Gila portion of the Central Arizona Project.

PREPARED STATEMENT

Generally, Mr. Chairman, that concludes my summary remarks. I will be glad to answer any specific questions you might have.

Senator DOMENICI. Your statement will be made a part of the record, and yours, Ms. Beneke, will also be made a part of the record. I did not say that Senator Reid's was, but it will be.

[The statement follows:]

PREPARED STATEMENT OF HON. ELUID L. MARTINEZ

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to appear before the Subcommittee this morning to discuss the Bureau of Reclamation's fiscal year 2000 budget request.

The Bureau of Reclamation has been in existence for 97 years, developing and managing water and related resources in the Western United States. Having constructed more than 600 dams and reservoirs, including such significant structures as Hoover and Grand Coulee Dams, Reclamation today is the largest water wholesaler in the country, bringing water resources to more than 31 million people and irrigating approximately 10 million acres of land. Reclamation is also the second largest producer of hydroelectric power in the nation and the fifth largest electric utility in the West. Reclamation's 58 powerplants annually provide more than 40 billion kilowatt-hours, generate nearly a billion dollars in power revenues, and produce enough electricity to serve six million homes.

Today, the main focus of the Bureau of Reclamation is to provide improved water resources management. Reclamation programs include a broad range of water uses, such as domestic water supply, irrigation, Indian self-sufficiency, fish and wildlife protection, endangered species recovery, environmental restoration, and recreation. Since water is a scarce resource in the West, the budget proposes innovative strategies for addressing water resource issues, including water reclamation and reuse.

For fiscal year 2000, the Bureau of Reclamation is requesting $856.6 million in new budget authority. This request includes $761.6 million for Reclamation's traditional programs, an increase of $30.2 million from the fiscal year 1999 level; and $95.0 million for the California Bay-Delta Ecosystem Restoration account, which is administered by Reclamation but funds activities in several Federal agencies, an increase of $20.0 million.

Before moving into the more specific financial data, I'd like to discuss several programs and issues of interest.

ANNUAL PERFORMANCE PLAN

The Government Performance and Results Act (GPRA) of 1993 requires annual performance plans beginning with fiscal year 1999 and annual performance reports beginning in March of 2000. Reclamation has made significant progress in implementing GPRA. Reclamation has begun submitting quarterly reports to the Department showing progress made in accomplishing the goals and indicators in the fiscal year 1999 Performance Plan. Based on Reclamation's Strategic Plan, the fiscal year 2000 Annual Performance Plan has been developed to address the direction of key programmatic activities. This plan reflects the linkage between strategies and goals of the Strategic Plan, the annual performance goals and indicators, and the programmatic budget. Each performance goal is linked to program and financing activities and accounts as indicated in the tables provided with the Annual Performance Plan.

DAM SAFETY

Reclamation's Dam Safety Program is critical to the management of risks associated with events, such as earthquakes, floods, etc., that could threaten the safety of Reclamation dams, and the downstream public, property, and natural resources near those structures. Ensuring the safety and reliability of Reclamation dams continues to be one of Reclamation's highest priorities. Approximately 50 percent of Reclamation's dams were built between the years 1900 and 1950 and approximately 90 percent of the dams were built before current state-of-the-art design and construction practices. Aging dams, which lack state-of-the-art structural reliability features, place a greater reliance on ongoing risk management activities such as monitoring, examinations and, engineering analyses to assure safe performance of any dam. A strong Dam Safety Program must be maintained to identify quickly any ad-

verse performance within Reclamation's inventory of aging dams and to carry out necessary corrective actions when unreasonable public risks are identified.

Reclamation's fiscal year 2000 budget request includes $60.9 million for the Safety of Dams Evaluation and Modification Program that provides for a variety of risk management activities pertaining to Reclamation's 362 high and significant hazard dams. Included in that amount are preconstruction and construction activities on up to 26 dams which may require modifications for safety reasons. Most notable are the activities at Yakima Project, Washington, and Casitas Dam, Ventura River Project, California, which have critical Safety of Dams issues that require modifications of significant cost and scope.

In addition, $8.8 million is being requested to complete modifications on Bradbury Dam in California, Reservoir A Dam in Idaho, Pueblo Dam in Colorado, and for ongoing modifications at Horse Mesa Dam in Arizona. Modifications on Lost Creek Dam in Utah and Twin Buttes Dam in Texas are scheduled to be completed in fiscal year 1999 with no additional funding anticipated for fiscal year 2000. An additional $1.6 million is included in the request for the Department of the Interior Dam Safety Program.

It should be noted that Reclamation's fiscal year 1999 Dam Safety Program request was reduced by $8,787,000. As a result, Reclamation had to re-prioritize its Safety of Dams risk reduction activities in fiscal year 1999, and shift some activities and costs into fiscal year 2000. The reduction impaired Reclamation's ability to pursue more aggressively the necessary risk reduction actions at its dams. Current enacted funding and future requests will be managed to focus funding to the most critical Safety of Dams issues presently known to Reclamation. Funding the full fiscal year 2000 Dam Safety Program request is necessary to avoid any delays in eliminating risk reduction efforts needed for public safety.

Now, I would like to focus on Reclamation's fiscal year 2000 Budget request by appropriation.

WATER AND RELATED RESOURCES

The amount requested for the Water and Related Resources appropriation for fiscal year 2000, $652.8 million, is an increase of $10 million from the fiscal year 1999 enacted level of $642.8 million. This appropriation funds five program activities: Water and Energy Management and Development, Fish and Wildlife Management and Development, Land Management and Development, Facility Operations, and Facility Maintenance and Rehabilitation.

The fiscal year 2000 Budget proposes $278.6 million for Facility Operations and Facility Maintenance and Rehabilitation, an increase of $15.6 million from the fiscal year 1999 enacted level. Reclamation places high priority on these activities, which ensure delivery of project benefits and protect the Federal investment and the public through the dam safety program, discussed above, and other measures.

The request includes $27.3 million for the Central Arizona Project; $125.0 million for the Central Valley Project in California; $29.4 million for the Mni Wiconi Project and $5 million for the Mid-Dakota Project in South Dakota; $27 million for the Garrison Project in North Dakota; and $3 million for the Animas-La Plata Project in Colorado and New Mexico.

The fiscal year 2000 request of $31.5 million for water recycling includes funding for four projects that were authorized by the 104th Congress in 1996, plus continued funding for ongoing projects. The request includes $6.0 million for the four new starts: Calleguas Municipal Water District Recycling, Long Beach Area Water Reclamation and Reuse, North San Diego County Water Reclamation and Reuse, and Orange County Regional Water Reclamation Project. In addition, funds in the amount of $23.2 million will be used for ongoing California projects in Los Angeles, San Diego, San Gabriel and San Jose. The fiscal year 2000 request also includes $2.2 million for feasibility studies and research.

The request also includes $7.3 million for Reclamation's Science and Technology Program. This funding is requested for development of new information and technologies that respond to and anticipate mission-related needs, and that provide for innovative management, development, and protection of water and related resources and associated values through cost-shared research and technology transfer.

LOAN PROGRAM

Funding of $12.4 million is requested to complete work on 2 loan projects: Chino Basin Desalination and Temescal Valley. Work will continue on three loan projects: Castroville Irrigation, Salinas Valley Water Reclamation, and San Sevaine Creek, all of which are located in California. In addition, $425,000 is requested for program administration.

POLICY AND ADMINISTRATION

The $49 million requested supports Reclamation's centralized management functions. These functions include overall program and personnel policy management; equal employment opportunity management; safety and health management; budgetary policy formulation and execution; information resources management, property, and general services policy; public affairs activities; and organizational and management analysis.

CENTRAL VALLEY PROJECT RESTORATION FUND

The Restoration Fund request for fiscal year 2000 is $47.3 million. These funds are focused on four primary emphases: water acquisition for instream flows and refuges; refuge conveyance and refuge water wheeling; land retirement; and the Anadromous Fish Restoration Program. Efforts to provide for the doubling of the anadromous fish population are expected to be enhanced through increased emphasis on partnerships with local, state, and stakeholder involvement.

The budget request includes a provision for the conversion of the CVP Restoration Fund to a permanent appropriation. This action would ensure that collections from project beneficiaries are available for their intended purpose and would improve project planning by both beneficiaries and managers.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

The fiscal year 2000 budget includes a request for $95 million to continue Federal cost-sharing in ecosystem restoration efforts in California's Bay-Delta. Although requested in a single account under Reclamation, the funds will be distributed among participating Federal agencies based upon the program recommended by CALFED, a consortium of Federal and State agencies with management and regulatory responsibilities in the Bay-Delta, and approved by the Secretary of the Interior.

The fiscal year 2000 budget request provides details on how Reclamation intends to use the funds, including a summary of how the project selection process works. Participating agencies and the CALFED staff developed in fiscal year 1998 and fiscal year 1999 a program that covers habitat acquisition and restoration, improvements to fish screens and passage, and exotic species management. The fiscal year 2000 budget proposes $75 million to build upon the efforts begun in 1998 and continued in 1999 by monitoring prior projects, initiating, and implementing new projects approved by CALFED and the Secretary. In addition, $20 million is requested for non-ecosystem restoration activities that are in accord with the CALFED Bay-Delta Program, such as water use efficiency, water quality, groundwater storage, and watershed management.

The Administration will submit authorization language that would extend current spending authorization through 2003 to enable the ecosystem restoration program to be fully funded at the $430 million authorized by the California Bay-Delta Environmental Enhancement Act.

Mr. Chairman and Members of the Subcommittee, this concludes my prepared remarks. I would be happy to respond to any questions Members may have concerning the Reclamation program and our fiscal year 2000 Budget request.

TRUCKEE RIVER OPERATING AGREEMENT

Senator DOMENICI. I am going to let you go first, Senator Reid, and then you, Senator Bennett.

Senator REID. I appreciate that very much, Mr. Chairman.

Ms. Beneke, as you know the Truckee River Operating Agreement still has a few things that need to be done, and one item is the final environmental impact statement. I have worked with Bill Bettenberg for a number of years, who has been tremendously helpful in his work on this project.

Because the environmental impact statement will be funded through the Bureau of Reclamation, I am wondering if you can assure this subcommittee that it will be given priority in regards to staff and funding so that we can get this done.

Ms. BENEKE. Senator, you certainly do have my assurances in this regard. We consider this to be a very important undertaking. We very much appreciate your leadership in helping us wend our

way through the difficult issues and the important issues presented in that River basin.

Senator REID. I would hope also that rather than—I will not say waste, but rather than utilize the time and money for reeducating staff at your regional office in Denver, I would encourage you to use as much of the local resources as you can. I think it would add some continuity and I think in the long run save money. If you would take a look at that, that would be good.

Ms. BENEKE. I would be happy to, Senator.

DESALINIZATION

Senator REID. In regards to desalinization, the Bureau of Reclamation has had some responsibility for desalinization in the past. As you know, Senator Simon has even written a book on the problems of water in the world. It is called "Tapping Out", a very fine book that Senator Simon has recently published.

While the Desalinization Act of 1996 has authorized up to $5 million a year for research and studies, or $20 million, the Bureau of Reclamation has requested less than $4 million since 1997. Why is this?

Mr. MARTINEZ. Mr. Chairman, Senator, basically it is an economic issue. Given the priorities and the limited resources that we have in our budget, we have come up with a request for these amounts of money. I fully realize that Congress has added funding which has increased those amounts over the last 2 years, but we continue to try to put as much money as we possibly can into that project.

Senator REID. As indicated in Secretary Beneke's statement, the direction of the Bureau of Reclamation has changed over the years. There was a time when there was a construction of, I think, some 600 dams that the Bureau of Reclamation has been involved in, and now the concern is more with water resource management.

That being the case, I believe the Bureau should look very strongly at the Desalinization Act because it seems to me that that is the wave of the future. We have to look at new places for water, and I think one of the places that has some promise is brackish and salty water that we have around the country. Would you agree with that?

Mr. MARTINEZ. I would agree with that. I think the Bureau has a long history of working in this area. We have a desalting plant down in Yuma.

Senator REID. I understand that, Mr. Martinez. The problem with that is we are doing nothing new. The technology there is technology that was available 40 years ago.

RECLAMATION ROLE IN DESALINIZATION

What I would like you to do—and I will not take any more time of the subcommittee—I would like you to present to me and to the subcommittee your view as to what the future of the Bureau should be if you had the money that you needed in regard to desalinization.

Mr. MARTINEZ. I will be glad to do that.

Senator REID. Keep in mind the words that I used.

Mr. MARTINEZ. Correct.

Senator REID. I have a number of other questions, Mr. Chairman. I will submit those in writing.

Senator DOMENICI. Thank you, Senator.

[The information follows:]

DESALINATION—RECLAMATION'S FUTURE FOCUS

INTRODUCTION

Reclamation has a long tradition of commitment to desalination, and particularly a tradition of being a leader in its development and application. Reclamation recognized early in the 1960's and 1970's the potential value of desalination to play a significant role in developing and managing the water resources in the western United States. Reclamation played a key role in testing the new desalination technologies as they were developed in the 1960's by the DOI Office of Saline Water, followed by the very early application on a large scale of membrane desalination at the Yuma Desalting Plant. These early commitments to the development and application of the desalination technologies has continued through our support of reimbursed involvement in desalination R&D in the Middle East, and more recently, our commitment through Title XVI legislation to demonstration of new membrane technologies in water recycling applications.

It is clear that future water resource management in the western United States will be more heavily dependent on innovative sources of water. Although the population continues to grow, fresh water sources remain constant. Therefore, to continue to meet the future water demands, Reclamation must be pro-active. Water conservation, water recycling, and desalination should all play roles in meeting future water demands, in addition to our existing conventional water resource capabilities.

In consideration of meeting these future water demands, in 1989 Reclamation began investigating the desalination research needs to reduce the costs of the technologies.[1] This effort was accomplished through sponsorship of various workshops, seminars, and studies.[2][3][4][5][6][7][8] In 1992, Reclamation initiated a small desalination R&D program, using cost- sharing and human resources from the private sector to leverage the program. Reclamation also constructed a high-tech desalination laboratory, entitled the Water Quality Improvement Laboratory, on the grounds of the Yuma Desalting Plant. The purpose of this facility is to provide a testing ground for new desalination improvements as they develop.

When the Water Desalination and Research Act of 1996 (Act) was enacted, Reclamation developed an overall plan to meet the requisites of the Act based upon input from the desalination community. This plan is presently being implemented, albeit on a reduced scale as a result of existing budgetary demands within the agency and our need to stay within our budget allocations.

Initially, the most significant role for desalination will be providing water resources along coastal areas, where populations are growing most rapidly and disposal of concentrate is most environmentally-friendly. Costs for desalinating water are continuing to drop significantly—the most recent contract for delivery of desalinated seawater to the City of Tampa, Florida, is $1.71/1000 gallons ($557/acre ft)—which is within the abilities for many large communities to afford. For example,

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[1] *Emerging Desalting and Water Treatment Technologies for Water Resources Management,* Bureau of Reclamation Summary Report, October 17–19, Arizona, 1989.

[2] *Research Needs for Upgrading Sub-Standard Water Supplies,* Bureau of Reclamation Seminar Summary Report with National Water Supply Improvement Association, International Desalination Association Conference, Washington, D.C., 1991.

[3] *Issues Associated with Large Scale Desalination Plants,* Bureau of Reclamation Seminar Summary Report, National Water Supply Improvement Association Biennial Conference, Newport Beach, California, 1992.

[4] Bessler, M.B., *National Desalting and Water Treatment Needs Survey, Bureau of Reclamation,* Desalination Research and Development Program Report #2, 1993.

[5] Buros, O.K., *Desalting as an Environmentally Friendly Water Treatment Process,* Bureau of Reclamation and American Desalting Association Workshop, Desalination Research and Development Program Report #13, 1994.

[6] Herbranson, L., S.H. Suemoto, *Desalination Research—Current Needs and Approaches—A U.S. Perspective,* Desalination, vol. 96, no. 1–3, p 239–248, 1996.

[7] Martella, S., *Water Reuse Research Needs Assessment Workshop,* Desalination Research and Development Program Report #19, 1996.

[8] Buros, O.K., *Research Opportunities at the Yuma Water Quality Improvement Center,* sponsored with the American Desalting Association, Desalination Research and Development Program Report #25, 1997.

development of new water resources in the San Diego area from conventional means is estimated to cost $600–$700/acre ft. Using more desalinated resources along coastal areas will also provide less pressure on existing inland water resources.

As outlined in the 1996 Act, R&D will play a significant role in continuing to lower the cost and acceptance of desalinated water in many communities. Our future efforts, if funding were available, would be largely based on the Research Program Plan developed for purposes of meeting the requisites of the Act. The following narrative outlines the specifics of our future direction and focus.

OVERALL PROGRAM GOALS

—develop more cost-effective, technologically efficient, and implementable means to desalinate water,
—increase supplies of water for environmental restoration, and other competing needs for the limited and often overextended supplies,
—provide additional cost effective alternatives for water managers, regulators, and decision makers,
—increase the ability of Native American, rural communities, and others to economically treat their only source of water to potable standards,
—increase the ability of the United States desalting industry to compete throughout the world, by fostering partnerships with them to develop new and innovative technologies (patent rights belong to the non-Federal partners for all non-Federal applications),
—develop methods to make desalting more efficient through promotion of dual-use facilities, in which waste energy could be applied to desalting water,
—develop methods to ensure desalting technologies are environmentally-friendly and when possible sustainable,
—ensure regulations are appropriate for the application by working with regulators to fully evaluate effects of concentrate streams, capitalizing on the recovery of by-product streams, and
—maximize technology transfer to ensure full transfer of knowledge and commercialization of technology.

To meet these goals, Reclamation has outlined 10 technical/emphasis areas which comprehensively should be addressed, in order to make desalination a more affordable tool for water resource development and management in the future.

TECHNICAL/EMPHASIS AREAS

The areas to be explored are listed and described below.

A. Membrane Process Research and Development Studies

Research focuses on development of improvements in membrane processes for brackish and seawater desalting, and/or removal of specific contaminants. The research topics include: development of membranes with improved properties, development of membranes with increased resistance to chlorine, studies on adhesion of foulant materials to membrane surfaces, studies on membrane cleaning, including frequency and effectiveness, increase of rates of mass transfer at membrane surfaces, studies on pretreatment, and development of improved membrane-containing elements or stacks.

B. Thermal Process Research and Development Studies

Research focuses on development of improvements in thermally driven desalting processes. Thermal processes are generally applied to seawater desalting due to the high energy investment. The research topics include: improvements and/or cost reductions in multi-stage flash distillation, multiple effect distillation, and vapor compression distillation; evaluation and development of methods to improve the heat economy of thermally driven desalting processes; investigation of methods to resolve pre- or post-treatment issues; and investigation of methods to reduce the formation of scale and corrosion.

C. Non-Traditional, and Alternative Desalination Process Research and Studies

Research focuses on investigation of innovative, non-traditional, or alternative desalination techniques, including the evaluation of the economics and thermodynamic efficiency of these processes. The ultimate goal being the development of technologies that are much more cost effective than conventional desalination processes. For specific remote sites, research of alternative technologies will be considered that significantly reduce the capital costs, and operations and maintenance of conventional technologies. The research topics include investigation of unique solar energy methods and applications, and development of new, innovative alternative desalination processes.

D. Water Recycling and Reuse

Research and development studies support activities directed at innovative methods to treat municipal, industrial, or agricultural wastewaters. Projects also include solving specific problems related to specific reuse facilities, in order to improve the economics of overall operation and maintenance of existing or future facilities. Reclamation is presently co-funding the evaluation and construction of a number of water recycling projects through authorization under Public Law 102–575, Title XVI. Research efforts in support of these projects will be of particular interest. The research topics include: investigate innovative methods to recycle and reuse municipal, agricultural, or industrial process water or waste waters; research studies to remove toxic substances from waste water streams, i.e., pesticides, heavy metals, radioactive elements, etc.; enhanced membrane characteristics for waste water treatment applications; development of low-cost treatment methods for high nitrate well waters from farm fertilization or livestock operations; development of tools to reduce the public's psychological stigmas associated with the reuse of water; developing on-line methods for detecting leakage of viruses in reuse facilities; and developing "leak-proof" recycling treatment technologies.

E. Ancillary and Economic Improvements (Dual-Use Facilities, By-Products Recovery, Cost Evaluations)

This research task area is three-fold in its direction. First, the evaluation of opportunities to promote desalination development in combination with new or existing power facilities, in order to create a dual-purpose facility. Second, the evaluation of the economic and environmental benefits of recovering the byproducts of desalting processes. Third, the evaluation of cost to determine which desalting process is the most economically feasible for communities under different restrictions and localities, as well as economic sensitivity analyses of thermal and membrane systems. The research topics include: development of more efficient pumps, and energy recovery systems; studies on instrumentation and control of desalination systems; development of a method to recover commercially marketable minerals from a desalination process concentrate stream; and evaluation of the effect of feedwater quality and volume on a desalting plant design and concentrate disposal cost.

F. Concentrate Issues

Research focuses on the various problems related to concentrate disposal, and develops innovative techniques to reduce concentrate disposal costs and impacts on the environment. The research topics include: concentrate disposal systems development; methods to recover by-products; salinity modeling and toxicity analysis of concentrate discharges to the environment; and wetlands and other non-conventional disposal methods. Additional efforts are also directed towards the collection of concentrate disposal information that may assist in the future development of regulations.

G. Testing of Laboratory Scale and Pilot Systems

The work involves the design, construction, and testing of pilot-scale systems. Testing of laboratory and pilot systems is generally done as a result of previous successful research studies conducted in Areas A through F, above.

H. Partnerships

This work involves collaborative research efforts between Reclamation's program and that of other water research organizations outside the government. This provides access to new funding partners, to organized groups that need desalination technologies, to highly qualified research advisory boards, to the most recent research findings, and to new networks of highly qualified researchers. Past work has included partnerships with the American Water Works Research Foundation, the National Water Research Institute, and two of the National Science Foundation Engineering Research Centers.

I. Technology Transfer

Technology transfer is key to making the program a success. Reclamation has a very ambitious technology transfer effort which exploits electronic access of information, as well as more traditional means of providing access to all information gained in the research program. The Program continues to seek new innovative opportunities to provide technology transfer to assist other researchers, private industry, academia, municipalities, and small and Native American communities. The technology transfer effort includes: an Internet website, electronic access to Requests for Proposals, newsletters, informational brochures and leaflets, free hard-copy publications of all final research reports, videos, technical manuals, presentations at technical conferences, yearly workshops, peer reviews, and electronic databases.

J. Design, Construction, and Testing of Plants and Modules (Demonstration and Development Projects)

This technical area has not been funded in the past. The Act envisioned funding for demonstration and development to begin the third year following the first appropriations for research and studies. The Authorization Act requires a report to Congress in fiscal year 1999, with recommendations on which projects to further evaluate and implement based upon the most successful research findings from the Program's research and studies, successful pilot plant research carried out by others, and significant input from users and purveyors of desalination technology. The type of work involved could include: preliminary design studies, detailed design, construction and testing, demonstration of by-products recovery, and economic surveys. For future years, this area will require significant resources in order to meet the intent of the Act.

STATEMENT OF SENATOR ROBERT F. BENNETT

Senator DOMENICI. Senator Bennett.

Senator BENNETT. Thank you, Mr. Chairman.

I want to take a minute to thank both the Assistant Secretary and the Commissioner for their assistance to our State in the last year. Water is the most precious commodity in the West. We used to have a saying, "It's better to be head of the ditch than head of the Church." [Laughter.]

Given the reputation we have for the power of the Church in Utah, that is a pretty strong statement.

We have had a lot of cooperation from the Bureau of Reclamation, and we recognize this and we want to thank you for it. We have good people in Utah from the Bureau. My only message to you is leave them there. Do not keep transferring them in and out. We have had a good experience.

RED BUTTE DAM

We have had to call on the Bureau for some input and assistance, and you have always been very helpful. Most specifically, we had to have an appraisal of the old Army dam above Fort Douglas called Red Butte Dam. The Army insisted it was not worth very much, and they were a little surprised when they found out how much you thought it was worth, or more importantly, how much you thought it would take to bring it up to the level whereby the Army could have safely disposed of it. We are having that fight with the Army in another subcommittee as to where we get that money. But these are over and above your normal activities and we are very grateful to you for your assistance.

I am glad we were able to help OMB find religion on the issue of Dutch John and work that out.

CENTRAL UTAH PROJECT

Now, I want to quickly reinforce—this will come as no surprise to anyone—what some of my priorities are. I was glad to hear you, Ms. Beneke, talk about the Central Utah Project. The legislative effort for that began some 40 plus years ago with my father. I hope the project will be completed before one of my grandchildren is elected to the Senate. [Laughter.]

SALINITY CONTROL PROGRAM

If we can get that one moving along.

I want to put the Bureau on notice that I recognize that we will eventually have to raise the funding level on the salinity control program. When that time comes, I will introduce legislation to do so, and I hope that the chairman and other members of this committee will join me.

TITLE XVI WATER REUSE PROGRAM

I remain committed to the title 16 water reuse program. I will work with the committee to ensure that it is properly and adequately funded this year. I know we had a little disagreement last year over the interpretations of the formula with respect to the Tooele Project. I am glad we were able to work that out.

Now, I also look forward to providing some additional funding to a very interesting project that is ongoing near St. George where the Bureau, the USGS, and the Water Conservancy District are conducting a study on water recharge in the Navajo sandstone.

So, those are all of my parochial items, and I have to get them on the record.

LAKE POWELL DRAINING

Now, I do want to make one other comment which affects not only my State but those from neighboring States. I am sure Senator Reid of Nevada has a number of constituents who are involved with Lake Powell. Senator Craig has indicated that he has vacationed at Lake Powell.

And I hope the administration will hold firm in its position that the Sierra Club's idea of draining Lake Powell is absurd. I almost hesitated to raise it today lest I give the proposal validity. But I understand that the Sierra Club and others in the environmental community have now pegged this as their number one fund raising activity. They have raised millions of dollars trying to tell us how to handle Utah wilderness, and now they want to raise millions more telling us to get rid of the dam at Lake Powell.

I will just share with you this experience that I had over the weekend. I found myself in an airport, not an unusual situation for Senators, and my flight was delayed, which is also not an unusual situation for Senators. I picked up one of the free newspapers that was sitting there called the Earth Times in order to have something to read while I waited for the equipment to show up.

There was a lead editorial that caught my eye, and it was attacking the Green Party in Germany. I thought this is a little unusual for the Earth Times to be attacking the Green Party. The burden of the editorial was that the Green Party was, in fact, going to add to pollution and to upset the Kyoto Accords because they were demanding the dismantling of all of the nuclear plants in Europe. And the editorial said that may be well and good because we all hate nuclear plants, but if you dismantle all the nuclear plants, you are going to have to replace the power somewhere and it will be coal-fired plants that will upset the Kyoto Accords. Therefore, we ought to swallow hard and leave the available source of power in place.

You know, that applies to Glen Canyon Dam and Lake Powell, because it currently supplies recreation to 3 million visitors and power to half a million homes. I remember during the debate when

the dam was being built, the Sierra Club came in and opposed it. Ultimately they made a deal to accept it, which they now say is one of their biggest mistakes. But their argument was that that power was not needed. They said, we have got plenty of energy in this country. The time will never, ever come when we have an energy shortage, and to build a dam to provide excess energy at a time when we have too much is really foolish. But if the time should ever come, if in fact we should ever need that energy, clearly we do not need to build the dam because there at Kaparowitz there is plenty of coal and we could burn all the coal in Kaparowitz to provide the power and not have to worry about the dam. Now, everybody who knows anything about environmental issues in Utah knows how enthusiastic the Sierra Club now is about burning coal at Kaparowitz.

So, taking a cue from the lead editorial in the Earth Times, I tell you leave the dam in place, provide the power, and let the 3 million visitors continue to enjoy their experience in southern Utah.

I have nothing further, Mr. Chairman.

Senator DOMENICI. Thank you very much, Senator Bennett.

Senator Craig?

Senator CRAIG. Thank you very much, Mr. Chairman.

I had the privilege of visiting with these folks last week before the Energy and Natural Resources Committee, and it was at that time, Mr. Chairman, that we discussed issues pertinent to their budget and to my State of Idaho. So, with that, what I had said last week I will just simply underline this week as being important to our State, especially the Fremont-Madison Irrigation District exchange that is coming on board now as an opportunity, certainly along with what we are doing and what the Bureau of Reclamation is doing in cooperation with all the other agencies in the Snake-Columbia system to find additional waters for the purposes of fish mitigation in the Snake and Columbia system.

All I can say is proceed with caution. Do not dewater the State of Idaho. We spent the last 100 years cooperating with the Bureau of Reclamation and others to build water facilities in our State to make it bloom. We are not about to start dewatering the State and return it to a desert environment.

And, yes, I enjoy Lake Powell. [Laughter.]

Thank you very much, Senator.

Senator DOMENICI. Are you finished?

Senator CRAIG. I am.

Senator DOMENICI. Senator Dorgan.

Senator DORGAN. Mr. Chairman, thank you.

I also had an opportunity last week to visit briefly with the Commissioner and the Secretary on a number of issues.

Let me just ask a couple of brief questions, if I might.

I regret I was delayed. I had a group in my office that I could not escape from. I have read your testimony and appreciate all that you do.

DAKOTA RESOURCES ACT

As you know, one of the issues that we will deal with this year is the change in the authorization of Dakota Water Resources Act. You have included an amount of money in this year's budget, I be-

lieve $27 million for the Garrison project, under the Dakota Water Resources Act. We face the problem that many States out in our region face, of water development needs that are quite critical.

Let me just show you a couple of samples of water that I thought you would find interesting. This is from Keith and Ann Anderson's house in Scranton, North Dakota. This looks like the coffee that Senator Domenici drinks in the morning. Maybe yours is stronger than this.

Senator DOMENICI. Yes.

Senator DORGAN. And this is Leonard Jacobs' farm water. This is from Reeder, North Dakota, just south of where I grew up.

Senator REID. A lot of iron in that water.

Senator DORGAN. Well, there is a lot of something in that water.

Senator DOMENICI. That is potable water?

Senator DORGAN. That is the water they used to have on their farm.

Now, that has changed, and here is what Leonard Jacobs has now, and it comes, as the Secretary and Commissioner know, because the Southwest Pipeline, which came through the appropriation of these water projects, has transferred this kind of water to these farmsteads in southwestern North Dakota.

Senator REID. You could not drink that, could you?

Senator DORGAN. Well, I could not.

Senator BENNETT. Maybe with a blindfold.

Senator DORGAN. But the fact is we have a lot of communities with very unhealthy water, and that is one of the advantages of being able to move water from the Missouri River behind the dam through the State into areas that have terrible water quality, refreshing that opportunity with good quality water.

I just wanted to show you the results of what we are doing together and to ask you your assessment of our ability to work together on this reauthorization this year because that is the key to future funding. Can you just give me a comment on that?

Ms. BENEKE. Well, Senator, as we have discussed in the past, we are committed to working with you on this important project. I have a real appreciation for what it means to your home State. I actually hail from the central part of the country myself and am familiar with rural communities. I also got to drink my share of well water when growing up. So, I do have an appreciation for what it means. And we very much want to work with you this year.

MR&I NEEDS OF INDIAN TRIBES

Senator DORGAN. One of the other issues that is a problem for us is the funding priorities that were outlined in the 1986 Reformulation Act was meeting the MR&I needs of the Indian tribes. The tribes have reached their funding ceilings which has been a problem, and we are trying to identify additional resources for them. I mentioned some of these farmsteads and the critical water needs, but you are well aware, I know, of the needs on the Indian reservations. And I hope that we could work with you, Madam Secretary, and also the Commissioner on those issues.

RED RIVER VALLY WATER NEEDS STUDIES

One final question. The Bureau of Reclamation has been studying the water development and management needs of the Red River Valley now for the past year. Can you give us the status of those studies, tell us where you are, and what we might expect?

Mr. MARTINEZ. I do not have that information in front of me, but I understand two of the studies are complete. The third study is ongoing. One was a needs assessment study, and the other one is on the particular projects that might deliver the water that is needed. I will get that answer for the record.

Senator DORGAN. I appreciate that, and I hope you can continue to make that a top priority, because the results of those studies will help us on this reformulation prospect and the timing is very important.

Mr. MARTINEZ. Yes, Mr. Dorgan.

Senator DORGAN. Let me again, Mr. Chairman, thank the Secretary and the Commissioner. You work in a tough area with unlimited wants and limited resources, and I appreciate the work you do. Mr. Chairman, thank you.

Senator DOMENICI. Thank you very much.

[The information follows:]

RED RIVER VALLEY WATER NEED STUDIES

The Phase IA Needs Assessment has been completed and the Phase IB Instream Flow report will be finalized by the end of March 1999. Reclamation has been working closely with State and local interests to obtain their views and recommendations.

Reclamation's work is coordinated with a steering committee, which is comprised of representatives of the North Dakota State Water Commission, North Dakota State Health Department, the Garrison Diversion Conservancy District, Fargo, Grand Forks, Moorehead, rural water systems, and the environmental community.

Initial alternatives to meet the municipal, rural, and industrial water needs of the Red River Valley have been formulated. A working draft of the Phase 2 (Alternatives Analysis) report was forwarded to the Steering Committee prior to our March 30 meeting. It is expected that more meetings may be needed to assure that the views and interests of the State and local interests are fully considered prior to distribution of the public review draft.

SAFETY OF DAMS

Senator DOMENICI. Let me ask a couple general questions first. Commissioner, you indicated that one of your big responsibilities is to see to it that the structures that you manage and supervise are safe.

Mr. MARTINEZ. That is correct.

Senator DOMENICI. Now, if I were to say to you, give us proof that they are safe, what would you give us?

Mr. MARTINEZ. When I became Commissioner of Reclamation, I was concerned about our Dam Safety Program and the safety of our structures, and I empaneled five experts from outside the Bureau of Reclamation to review our program and our facilities. The report was quite favorable. I have implemented quite a few of their recommendations.

Senator DOMENICI. So, since we would like very much never to be shocked by having a dam failure—and we have you up here every year to talk with us—what could you give us for the record indicating that? Could you put some things in the record here with-

in the next couple of weeks indicating why the Department of the Interior, Bureau of Reclamation says it has safe structures and is doing what they ought to do?

Mr. MARTINEZ. Well, yes, I can, but I will not sit up here and say that I do not guarantee that——

Senator DOMENICI. Oh, no, no.

Mr. MARTINEZ [continuing]. We might not lose a structure some day because of an earthquake and so forth. But I think that we have a very effective program and will continue to put our resources in that program with your assistance. And I will provide that information to you.

Senator DOMENICI. Would you, please? I just mean that I think we have a responsibility as an oversight entity to get this information in the record so that we are going along with you in that regard.

[The information follows:]

DAM SAFETY PROGRAM

Reclamation cannot guarantee that there will be no dam failures. However, Reclamation diligently strives to have a strong Dam Safety Program to manage the risks associated with dams in order to keep that chance of dam failure as low as reasonably possible.

In 1997, the Commissioner tasked an independent team of dam safety professionals to review Reclamation's dam safety practices to identify best practices already in place and to make recommendations for improvements. The peer review concluded that Reclamation has a strong dam safety program and made recommendations for further improvements. Thirty-three peer review findings have already been addressed. The twelve remaining findings are under review and scheduled to be addressed during 1999.

Program improvements that have been implemented as a result of the peer review findings and Reclamation's own internal initiatives that received peer review endorsement include:

1. The appointment of a Dam Safety Officer to provide independent advisory and guidance for achieving program vigilance.
2. The procurement of a standing review board of independent dam safety consultants to review program practices that have occurred on individual dams.
3. Annual dam safety meetings to review dam safety issues and actions on each dam with Reclamation management.
4. The updating of Emergency Action Plans for each dam and exercising the plans with downstream communities.
5. Enhancements to the facility review, performance monitoring, and engineering analysis activities in order to more reliably identify and manage dam safety issues.

The fiscal year 2000 budget request includes these program improvements intended to continue a strong Dam Safety Program. The fiscal year 2000 budget request also includes funding for modifications to reduce the risk of dam failure on dams having identified critical dam safety issues; such as Keechelus Dam, Yakima Project, Washington; and Casitas Dam, Ventura River Project, California which require modifications of significant cost and scope.

In order to continue to fund Safety of Dams modifications in the future, additional legislation will be needed to increase the authorization ceiling provided under the 1984 Safety of Dams Act Amendment. Current estimates indicate that sufficient ceiling remains to fund necessary modifications and associated ongoing commitments represented by the fiscal year 2000 request. However, projections indicate that the total cost for new modifications identified for fiscal year 2001 could begin to exhaust the remaining ceiling.

DROUGHT ASSISTANCE

Senator DOMENICI. Now, let me change to a situation that is evolving in the Southwest, but is almost upon us in New Mexico. The dread word of "drought" is just—all you have to do is fly into New Mexico and you think you are approaching the desert, al-

though we are not a desert State. Drought is the kind of disaster that is very difficult for the people, because it does not occur overnight. It sort of creeps upon you, and it is creeping upon our State. I do not know if it is on others too.

What are you doing with reference to the drought, for drought for a State like ours which has very little water?

Mr. MARTINEZ. Mr. Chairman, if you recall in 1996, through your assistance, we had some funding to work under our drought assistance program. Since then we have been working with the southwestern States to help in their water planning process. As a matter of fact, we have given the State of New Mexico two grants. They have put in place a planning process on how to respond to drought. So, we have been working in that area.

You are correct that we expect droughts in the American Southwest this summer. Our budget will reflect a request for drought money. This budget was put together before conditions that came up this year. We have, I believe, about $100,000 left in our budget from prior appropriations. I understand I have some reprogramming authority, but the requests that are being made today are probably going to exceed our ability to respond if we do have a drought situation in the American Southwest this year.

Senator DOMENICI. Before we mark up our bill, I wonder if it would be possible for you to gather up the resources through your information and some statements to us with reference to what kind of authority you might need and what kind of changes that might occur. Could you do that for us?

Mr. MARTINEZ. Yes, Mr. Chairman. I think the authority is in place. What we would need would be the financial resources.

Senator DOMENICI. All right, and can you give us some idea later what that might be?

Mr. MARTINEZ. I will provide that for the record.

Senator DOMENICI. I appreciate it.

[The information follows:]

DROUGHT FUNDING

Reclamation is currently experiencing drought conditions in several of its Southwestern states mostly due to below normal rainfall. While some areas are less severe than others, there is a real need to provide emergency assistance and relief. In the past, up to $30 million has been appropriated to the Bureau for drought emergency assistance. In fiscal year 1999 carryover funds of $673,754 will be insufficient to provide the necessary drought relief to the Southwest. The fiscal year 2000 President's budget includes $500,000 for the Drought Emergency Assistance program. However, we would like to work with the Committees to discuss funding levels that would be needed to address the drought emergency situations that now exist and those that are developing.

DESALINIZATION

Senator DOMENICI. With reference to desalinization, I am fully aware that Senator Simon got an authorization bill through and a little bit of money, but I think what has happened to desalinization is that it is spread all over, even though it is a very small program. I am just wondering if it is not exclusively the Department of the Interior's mission. Is there some way to focus the money, and if the Bureau of Reclamation is the right place to do that. Would you have any thoughts on that, Patty?

Ms. BENEKE. Senator, I think that we should take a look at the program. We, of course, want to make sure that we are getting the maximum benefit for every research dollar we put into it. Reclamation does have a lot of expertise in this area, and I guess my off-the-cuff reaction would be that it is an appropriate place for the program to be lodged. But we would be happy to work with the subcommittee and incorporate any ideas you might have regarding how we can——

Senator REID. Would the chairman yield? Also, I have asked Commissioner Martinez to submit to us his view as to what should happen to the program. Also, if you would, give us an idea of what is happening with desalinization any place else in Government. I think it is something we need to take a look at. On a mini-level, it is kind of like global warming. We have a lot of people doing a little bit of nothing, and we need to gather them all together, and maybe one organization can do more than spread out the way it has been.

Mr. MARTINEZ. Mr. Chairman, if I may respond to that. I think the research in this particular area is very crucial, especially in New Mexico. We have large groundwater aquifers that have impaired water quality. The issue is the economic cost of treating that water, and I think that in the future that has great promise.

I would agree that there are probably programs across the Federal Government that could be consolidated and made more efficient.

Senator REID. You will let us know.

Mr. MARTINEZ. Yes, sir.

Senator DOMENICI. So, now we understand, based on Senator Reid's inquiry, Madam Secretary, you are going to go through the Government and break out for us where any desalinization research money is. Is that correct?

Ms. BENEKE. Yes. We will do our best to make a review of that.

Senator DOMENICI. And if you need our help, we would be glad to ask the Director of OMB to do that with you if you want. You can do it on your own. If you need our help, we will ask him.

Ms. BENEKE. Thank you very much.

Senator DOMENICI. I concur that with water shortages in the Southwest, it is rather dismal that the research has still not made a major breakthrough for our country. We have not funded it well enough, and if we put some our talented people on it, we are going to find some way to fix this, I am sure.

[The information follows:]

DESALINATION FUNDING IN THE FEDERAL GOVERNMENT

INTRODUCTION

The Bureau of Reclamation has a major role among the federal agencies in desalination research, development, and demonstration. Other agencies use and adapt the technologies to meet their missions. Many years ago it was recognized that a potential existed within the federal government for duplication of this effort. As a result, the Bureau of Reclamation and the U.S. Army Tank-Automotive Research, Development, and Engineering Center created the Interagency Consortium for Desalination and Membrane Separation Research in 1992.[1] Since that time, the Consortium has

[1] Bagwell, T.H., M.K. Price, *The Interagency Consortium for Desalination and Membrane Separation Research,* Desalination, vol.99, no.2–3, p 195–199, 1994.

met yearly to discuss individual projects being carried out by the agencies and the future directions of their programs.

The Consortium members work together to establish a communications network that has the following benefits:

—Prevent federal duplication of efforts,

—Pool limited federal research funding and other resources to obtain common goals,

—Identify future research needs, and

—Allow for discussion of new technologies with other experts in the field.

Within the past year, the Army has worked with Reclamation and the Navy in its' procurement of new technologies. Reclamation has assisted National Institute of Standards and Technology (NIST) in the selection of proposals for their Advanced Technology Program. NIST also designed their membrane research program not to overlap with Reclamation and specifically excluded water treatment applications. The other agencies have provided advice and information to Reclamation to assist in the formulation and management of the Desalination Research and Development Program.

DESALINATION FUNDING IN FEDERAL GOVERNMENT AGENCIES

The table below indicates the level of funding for desalination technologies within the federal government. The information in the table is based on a recent telephone survey of agency program offices. Several themes became evident as this information was collected. First, the military is spending the most money. Second, the work being done in the other agencies is very mission specific. For instance, the Army's mission is to provide safe drinking water for troops in the field. This is done by using commercial desalting technologies and making them deployable, light weight, mobile, self-powered, rugged, and able to treat all waters. The Navy is responsible for providing shipboard water and wastewater treatment starting with commercially available technologies. The EPA develops regulations and they generally test and demonstrate technologies related to the enforcement of the regulations. This also involves testing commercial products. Currently, they are doing no desalination work. The Department of Energy's laboratories are looking at environmental remediation and waste management technologies. Their work is related but not directly supportive of desalination technologies. The one agency that could have a large impact on the sustainability of advanced water treatment, National Renewable Energy Laboratory, has no funding to combine desalination with renewable energy at this time. A third theme came from several of the agencies. They look to Reclamation's program for development of desalination innovations, since the other agencies' work consists of engineering modifications to commercially available desalination products. Fourth, the cost of developing new desalination technologies does not come cheaply. For instance, the Defense Advanced Research Projects Agency is funding three projects to develop a handheld desalination device. Each of these contracts cost $500,000.

SUMMARY

While many federal agencies outside the Defense Department apply desalting technologies in carrying out their missions, they are dependent upon what is available commercially. Reclamation's desalination research and development program is the only federal program devoted to reducing the costs of desalination through research, studies, development, and demonstration. Reclamation's program benefits not only the federal agencies in carrying out their mission, but also the public who need additional supplies of clean water.

Price, M.K., *The Various Programs in Membrane Water Treatment Research Provide and Insight to Areas Where Further Innovation is Needed,* The 1996 Fourteenth Annual Membrane Technology/Separations Planning Conference, Business Communications Co., Inc., Newton, MA, 1996.

DESALINATION FUNDING BY FEDERAL AGENCY IN FISCAL YEAR 1999

Agency	Fiscal year 1999 desal funding	Example projects
Defense:		
Army [2]	$370,000	SIBR contract for handheld desal device.
	1,100,000	Lightweight tactical water purification system development 125 gallon per hour.
	120,000	Parts/support for older desal systems.
	1,800,000	Complete development of 1,200 gallon per hour tactical water purification system.
	900,000	Cost reduction studies of existing desal systems.
	1,500,000	Work with Navy on new desal and wastewater treatment and reuse systems.
Corps of Engineers [3]	.....	
Defense Advanced Research Projects Agency [2].	1,500,000	Three contracts for handheld desal devices under mesoscopic equipment.
Navy—Marine Corps [4]	.....	Do support work for Army.
Navy—ships [5]	[6] 1,000,000	Application of current technologies to shipboard use.
Commerce:		
Advanced Technology Program [7]	.....	Specifically excludes water research.
U.S./Israel Science and Technology Commission [8].	([6])	Past work has included $3,000,000 for Enhanced Seawater Desal, project complete.
EPA [9]	.....	
Energy:		
Argonne [10]	.....	
Livermore [11]	.....	Past work has included capacitive deionization desal research.
Nat Renewable Energy Lab [12]	.....	
Interior:		
USGS [13]	.....	Use commercially available products.
National Park Service [14]	.....	Use commercially available products.
BOR	2,360,000	
CDC and NIH [15]	.....	Use commercially available products.
NASA [16]	.....	
TOTAL	10,650,000	

[2] Personal communication with Jay Dusenbury, TARDEC, Army, Michigan.
[3] Personal communication with Steve Maloney, Corps of Engineers, Illinois.
[4] Personal communication with Mark Silbernagel, Naval Facilities Engineering Service Center, California.
[5] Personal communication with Ivan Caplan, Naval Surface Warfare Center.
[6] Estimate.
[7] Personal communication with John Pellegrino, NIST, Colorado.
[8] Personal communication with Duane Lee, Parsons Engineering, working under contract to Commerce.
[9] Personal communication with Steve Clark, EPA Washington; Jeff Adams EPA Drinking Water Research, Ohio; Tom Sorg, Marc Parrotta, and Bob Bartian.
[10] Personal communication with James Frank, Argonne National Laboratory.
[11] Personal communication with Jeff Richardson, Livermore National Laboratory.
[12] Personal communication with John Anderson, National Renewable Energy Laboratory.
[13] Personal communication with Yousif Kharaka, USGS, California.
[14] Personal communication with Craig Patterson, NPS, Colorado.
[15] Personal communication with Anita Highsmith, consultant, previously with NIH, Georgia.
[16] Waiting for response from NASA.

SAN JUAN RIVER PROJECT

Senator DOMENICI. I'm going to go through five or six New Mexico projects quickly. The San Juan River-Gallup, Mount Taylor pipelines which are trying to bring water to Navajo country and to the City of Gallup. We have been funding the proposed San Juan River project for quite some time, Commissioner.

Mr. MARTINEZ. That is correct.

Senator DOMENICI. They are back before us—the Navajo Nation is and the City of Gallup—asking for some additional funding. I guess they have a new idea. The new approach is different than the one we funded 10 years ago and we did not get anywhere. I am very concerned. I am wondering what your thoughts would be about us having the Navajo Nation and the City of Gallup and the

Bureau of Reclamation enter into an agreement that would say what we are doing and what the parties will do in the event it becomes feasible. I am kind of concerned that people change this plan so much. It seems like all we are doing is funding planning, and now we have yet another plan. So, could you comment on that?

Mr. MARTINEZ. Yes, Mr. Chairman. My briefing also indicates that this has been being planned since the 1970's.

Senator DOMENICI. You got it.

Mr. MARTINEZ. I commit to you to personally get involved in this issue and put together a proposal for you that will make some sense as to where we head in the future.

Senator DOMENICI. Well, I want you to know that I intend to write a letter—and I will send a copy of it to you—to both the entities in New Mexico suggesting that I do not think we ought to fund it anymore, unless we have an agreement up front as to what we are trying to do.

Mr. MARTINEZ. That is correct.

Senator DOMENICI. And they would then agree to be bound by it. I just cannot see some more money unless that is going to happen.

INDIAN WATER SETTLEMENTS

Let me talk a minute generally about Indian water settlements. This is one of the potential jobs you have in the future that could get very big to be an integral part of the Indian water settlements, if they occur. Is that correct?

Mr. MARTINEZ. Yes. We are engaged in providing technical support to the Federal negotiating committees, as well as building some projects as a result of water rights settlement acts enacted by Congress. And I see a role for the Bureau of Reclamation in this area.

Senator DOMENICI. We have a Taos Indian settlement brewing. Could you just give us a brief update on that?

Mr. MARTINEZ. Yes. We are involved. We had a $2 million appropriation in this year's budget under the Upper Rio Grande project for the Bureau of Reclamation that will be used for drilling some wells. I am advised that the project sponsors might be looking for some additional resources to do some modeling studies that result from the information gained from drilling these wells.

BAY-DELTA ECOSYSTEM FUNDING

Senator DOMENICI. It has been hinted that the role of the Bureau of Reclamation is changing rather dramatically. I think that is the understatement of the world. If the Bureau of Reclamation was doing what it has always done, its budget would be a much smaller this year. But you have been assigned some new responsibilities. As a consequence, I believe we have some pretty serious oversight responsibilities with reference to that new role. You are now doing very large environmental projects and wetlands projects, which I have no objection to at all, but I want to go through a few of these very quickly, if I could.

What is the total level of funding being requested by the Bureau for the ecosystem related activities in the Bay-Delta region? How much is being requested for other agencies within the Department of the Interior and Government-wide for these type of activities?

And could you provide us with a crosswalk for the record which shows the 2000 funding requests for ecosystem related work in the Bay-Delta by agency?

Ms. BENEKE. We can certainly provide the crosswalk for you, Mr. Chairman. The total request for the ecosystem restoration program in the Bay-Delta is $75 million, which is the same amount as was actually appropriated for fiscal year 1999.

Senator DOMENICI. And you will tell us how much is elsewhere in Government, if you can.

Ms. BENEKE. Yes. I can do that. The California Bay-Delta Environmental Enhancement Act that was passed by Congress—I think it was late 1996—authorized the Secretary of the Interior to select projects for this purpose. So, the program is lodged within the Interior Department at this time and the Bureau of Reclamation.

[The information follows:]

BAY-DELTA FUNDING BY AGENCY

Fiscal year 2000 funding for ecosystem related work in the Bay-Delta by agency has not been determined by CALFED at this time. Funding provided to the Bureau of Reclamation for activities in support of the CALFED/Bay-Delta program include three accounts as follows:

U.S. Bureau of Reclamation	$117,192,000
California Bay-Delta Ecosystem	75,000,000
Water and Related Resources	16,317,000
CVP Restoration Fund	32,246,000

The CALFED Bay-Delta programs builds on numerous Federal and State programs addressing water management, conservation and water quality, as well as aquatic species and habitat conservation. Other Department of the Interior agencies supporting the CALFED effort are the U.S. Fish and Wildlife Service and the U.S. Geological Survey. In addition to their routine operation of refuges and habitat management, the U.S. Fish and Wildlife Service requested $2.1 million in fiscal year 2000 to provide technical assistance for activities supporting the conservation and recovery of migratory birds, sensitive, threatened and endangered species, and other trust species in the Bay-Delta watershed. They also participate in the CALFED program for habitat restoration in areas such as planning, assistance, review, and permitting and implementation. The U.S. Geological Survey request includes an estimated $3.5 million for a variety of studies covering water resources, wetlands, contaminants and salinity, and biological research that will contribute to solutions to the problems in the Bay-Delta.

Agencies outside of the Department of the Interior provide CALFED/Bay-Delta support as follows: The Environmental Protection Agency anticipates that significant funding in Clean Water Act and Safe Drinking Water Act program grants provided to California could be used for the water quality portion of this program. They are currently involved in the development of wetlands and drainage management projects throughout the Delta and its tributaries. The Natural Resources Conservation Service plans to provide funds to Resource Conservation Districts for riparian, watershed, agriculture water run-off, and other ecosystem restoration activities in the Delta. The National Marine Fisheries Service requested $1.4 million in their appropriation to support a number of relatively small ecosystem related studies in the Delta. And the U.S. Army Corps of Engineers anticipates funding approximately $12.4 million in fiscal year 2000 for ecosystem restoration projects along the Sacramento River that include levee rehabilitation, flood control projects, and restoration of seasonal and permanent wetlands.

CALFED APPROPRIATIONS AND EXPENDITURES

Senator DOMENICI. Now, let us move on to CALFED for a moment. Now, of the $160 million appropriated to date for CALFED, how much has been obligated and expended?

Ms. BENEKE. Well, in fiscal year 1998, there was $85 million appropriated. Of the $85 million, all of it has been allocated to either programs or projects. $73 million has been obligated.

Senator DOMENICI. How much?

Ms. BENEKE. $73 million.

Senator DOMENICI. Thank you.

Ms. BENEKE. By that I mean that it is either under contract with a third party or under an agreement with another agency to implement a program or projects.

For fiscal year 1999, $75 million was appropriated. $64 million of this has been allocated to projects or programs. We go through a fairly extensive project selection process, a public process. There is stakeholder participation. There is an integration panel that reviews these projects to make certain that they are consistent and coordinated with our other authorities and spending. There are technical screens that are undertaken, and then the Secretary approves the projects.

At any rate, $75 million was appropriated, and $64 million has been allocated to projects or programs. None of this has yet been obligated, but we are working on our interagency agreements and on our contracts as we speak, and we feel fully confident that it will be obligated by the end of the fiscal year.

The expenditure rate is much lower, but I would encourage the subcommittee to focus on our obligation rate.

There are some reasons that our expenditures are lower, Mr. Chairman. For one thing, most of these projects are done on a 3- to 5-year contract basis and we do not prepay the contracts. So, we do not expend the money as quickly as we otherwise might.

In addition, CALFED typically has the funding for the entire project in place before the project starts. We have all the money up front before we engage in our 3- to 5-year time horizon for these projects.

At any rate, the current amount that has actually been expended to date is $6.4 million of our 1998 appropriations. But again, I would hope that the subcommittee would be looking more closely at our obligation rate.

Senator REID. Mr. Chairman, if I could just interrupt, and I apologize. I would like to apologize to Dr. Westphal and Lieutenant General Ballard for not being able to be present during their testimony. I indicated to you earlier that I would like to submit my questions in writing on the Corps of Engineers, and with your permission, I will do that.

Senator DOMENICI. It will be done.

CALFED EXPENDITURES

I am sorry to keep going, but some of these have to be asked.

Would you state the amount of expenditures out of this $160 million appropriated again please?

Ms. BENEKE. To date it is $6.4 million, sir.

Senator DOMENICI. $6.4 million.

And you suggest that we should not be concerned about that low level of expenditure?

Ms. BENEKE. Well, I am suggesting that there are some good reasons for it. The first fiscal year that we received appropriated funds

for this project was 1998, and there was some start-up time associated with getting our project selection process in place. As a manager I think that taking some time to get this process in place and do it right was the prudent thing to do. We are talking about large sums of money. We want to be very responsible about how we administer them.

So, again, we do not prepay our contracts. There was start-up time associated with getting this program underway. We have it up and running now. We think it is running smoothly. Again, I would encourage the subcommittee to focus more on our rate of obligation rather than the actual dollars that have gone out the door.

Senator DOMENICI. Well, I just want to give you my version. Frankly, we have a very tight budget in every area. The chairman of the Appropriations Committee has been greatly concerned—he is sitting here—whether we have enough money to allocate among the subcommittees to get our job done this year.

When you have $160 million obligated to a program that was declared to be somewhat of an emergency, a very high priority and you have spent $6.4 million, it seems to me we have picked out a program in government to advance fund in a very different way than we do many other things: just put $160 million out there and say whenever you get ready to use it, you use it. I would almost think that sooner or later we are going to ask you to give us a schedule of what is it you are going to use this for. If we are just out there fishing around for projects, then we have just opened a door to projects that nobody else gets in this country. Other projects do not get that opportunity.

Ms. BENEKE. Well, I appreciate the concern that you are raising, sir, but I do want to assure you that the projects have been selected. We have 171 projects that have been funded either through these funds or in cooperation with the State or other non-Federal partners. There are specific projects selected, specific projects that are underway, specific projects that have been contracted for, and we think that they are very important to the overall progress that we can make in this program.

Senator DOMENICI. Does the new Governor of California support the ecosystem restoration activities as currently structured and the non-ecosystem components proposed for the 2000 budget, including water supply, storage, and conveyance?

Ms. BENEKE. We have been working very closely with Governor Gray Davis and his new team. Last year, Secretary Babbitt made a personal commitment to making progress on this program. We had partnered very closely with Governor Wilson. We feel fully confident that Gray Davis and his team are supportive of this request, and we will continue our good partnership with the State of California.

Senator DOMENICI. The answer, however, is they do not yet do that. They are not yet supporting it.

Ms. BENEKE. Oh, no. I am confident that they do support it, sir.

BUREAUWIDE OPERATION AND MAINTENANCE COSTS

Senator DOMENICI. I just have three more. The conference report on the 1998 energy and water appropriations bill asked the Bureau to prepare a report on the operation and maintenance costs of its

projects. The committee requested the report because of expressed concerns related to how the O&M costs were being allocated by these projects, the declining level of operation and maintenance funding for traditional water supply and distribution related work, concerns that Reclamation's overhead expenses may be excessive, and the lack of opportunity of stakeholders to have input into the formulation of the budget recommendations. The report was completed and provided to the Committee last September, for which we are grateful.

STAKEHOLDERS' INPUT INTO BUDGET PRIORITIES

What has the Bureau done to afford the stakeholders an opportunity to have input into the budget needs and priorities since you gave us that report? Can the Bureau benefit from this increased openness? Do you expect to learn new ways and approaches that could improve efficiency and thereby reduce O&M costs?

Mr. MARTINEZ. Mr. Chairman, I have put out a memorandum, a letter, a directive to our regional directors and area managers to engage our customers in the budget formulation process and how we do our O&M. We have been doing some of that across the West, but not in all places. I would expect that we would improve both in how we do our work and how much it takes to do our work.

STAFFING LEVELS FOR O&M ACTIVITIES

Senator DOMENICI. Well, let me just have one last word in that regard and give you an example. The O&M cost report indicates that the Bureau of Reclamation is continuing efforts to control costs by reducing staffing. However, the Family Farm Alliance has provided information indicating that the San Luis and Delta-Mendoto Water Authority was able to accomplish operation and maintenance work with 85 regular full-time employees compared to 120 Reclamation employees.

Does Reclamation have procedures to periodically review and assess manpower being used to accomplish O&M activities, and have you reviewed situations like this one that I have just talked about?

Mr. MARTINEZ. I have not personally reviewed any of those, but given the constraints on our budget, we review our needs and our resources. There are some places we could probably improve. In particular, I draw to your attention the concerns raised by the irrigation district where we met with them on a one-to-one basis and reduced costs.

I think there is room for improvement. We operate, I believe, 89 major projects across the West. Some of them are probably doing a good job. Some places, I think, we could stand some improvement, and we are moving in that direction.

Senator DOMENICI. That is all the questions I had.

The two Senators who arrived, do you want to question the Bureau or were you here for the Corps? Go ahead, Senator Burns.

STATEMENT OF SENATOR BURNS

Senator BURNS. Thank you very much.

How are the kids? Are the kids all right?

Ms. BENEKE. Fine, thank you, sir.

Senator BURNS. I have to ask her that every time I see her.

I thank you for coming today and thank you, Mr. Chairman. I just have a couple of questions and I have a statement, if I may be allowed to put it in the record.

Senator DOMENICI. The questions will be made part of the record.

Senator BURNS. I am concerned about the $161 million and you have only allocated about $6.4 million. Yet, I understand we are experiencing some cost overruns in some of my State. You have shifted those costs to the water users, the farmers and ranchers in those areas, and I am concerned about that.

YELLOWSTONE RIVER FLOODING CONDITIONS

This past weekend I was up in Yellowstone Park, and we were up in the mountains. We have got a lot of snow this year. Now, that only means one thing: It has all got to come down and it is very fluid. Of course, the lower Yellowstone River is my concern again. We went through this process before at Yellowtail Dam, and I would just like to hear your comments on steps that should be taken now on the inventory. I know it could all come at once or it could come all summer. We cannot control the weather end of this thing, but I am just wondering, are there any plans being made right now to deal with the snowpack?

It is a wonderful problem. New Mexico is in a drought. I wish I could ship some water to Senator Domenici.

Mr. MARTINEZ. Mr. Chairman, Senator, we have starkly varied conditions across the West. On the Pecos River in New Mexico, we have 18 percent of normal water flow projected for this year, while in the Pacific Northwest and other places we have over 250 percent.

However, our flood operations are in full gear in those areas where we expect a runoff to make sure that we do everything to minimize a flooding potential. So, we have learned from past experiences and hopefully we will do a better job as we move along.

Senator BURNS. I am really concerned about this, because I will tell you we went through that flood a few years ago, and it was just the result of water management out of Yellowtail Dam. At the high time when it was coming down to Yellowstone, you made a big release out of Yellowtail on the Big Horn River. That flows into the Yellowstone River. I will tell you right now if it looks like that we have not really managed that water and we have similar flooding this year, there is going to be a bounty on you because it will be a sorry situation.

RECLAMATION GRAZING PERMITS

Now, another question. I am getting a little confused about the Bureau's main purpose here. I see you are dealing with grazing permits now?

Mr. MARTINEZ. Well, we have lands that were withdrawn from Bureau of Reclamation projects across the West. On some of those lands, we do have grazing leases and manage our lands.

Senator BURNS. Does that not traditionally fall into BLM? I do not think you folks are range managers.

Mr. MARTINEZ. And I would agree with you.

Senator BURNS. Well, then do something about it. Give it back to the BLM or something.

Mr. MARTINEZ. I will look into that.

Senator BURNS. Yes, just do that.

GLENDIVE, MONTANA

Mr. Commissioner, we have some projects in Montana that are paid off and they have requested transfer. One of them in particular is the Intake Division Dam near Glendive, Montana. What is the problem there? How come we are not making that transfer?

Mr. MARTINEZ. Well, I am not aware of that particular request. Basically, what we do is when a project sponsor requests transfer, we engage and hopefully move toward completion. But let me tell you, in the last 3 years we have not had too much success, and hopefully we will have some success with some of these issues.

Senator BURNS. What is the main problem?

Mr. MARTINEZ. Well, among the problems is occasional opposition from even the local folks as to whether or not a project should be transferred valuation, and NEPA studies that have to be completed. It is just not as easy as saying we can transfer overnight. Then, of course, we have to bring each transfer before Congress because ultimately you have to make that decision. Those are Federal properties and Congress has to act on them, but we will move forward, engage the project sponsors, and see if we can bring that proposal before Congress.

Senator BURNS. You do not own the land. You just own the water. Now they want to take control of their own project. It is already paid out, so why are we not making the transfer?

Mr. MARTINEZ. Because by Federal law, the Federal Government owns those facilities even though they have paid out their percentage of the costs. So, in order for those transfers to occur, it has to be through an act of Congress.

Senator BURNS. Well, Congress will act.

Do you have to do a NEPA before you make that transfer?

Mr. MARTINEZ. Yes.

Senator BURNS. Well, that is all I have. Thank you very much.

But now, on the CALFED expenditures, I am clearly concerned about the obligation of $161 million and expenditure of just $6 million.

Senator DOMENICI. $6 million.

Senator BURNS. Expended $6 million. Then we go around and we look for little projects to do, and run into cost over-runs and won't transfer ownership of these projects when they should be transferred. You can understand my concern.

I would like to remind you, now is the time to start planning for that lower yellowstone, though, because we got a lot of water.

Thank you, Mr. Chairman.

Senator DOMENICI. Thank you very much.

Did you have any further comments, either of you? Yes, Madam Secretary.

STATUS OF SPENDING ON CALFED PROGRAM

Ms. BENEKE. I am hoping that the record is clear on the exact status of the spending on the Bay-Delta ecosystem program. We

have $149 million of the $160 million allocated to specific projects or programs. We have $73 million obligated of the $85 million fiscal year 1998 funds. I would also like to note that we are a year and a half into this program. We have the mechanism in place to go ahead and expend these funds, and I am anticipating that our obligation rate and expenditure rate will pick up considerably for the next several months.

Senator BURNS. Would you supply the committee with a list of those projects?

Ms. BENEKE. Yes. I would be glad to do that.

Senator DOMENICI. I think we have them, but let us check and see. I think we do.

[The information follows:]

BAY-DELTA ECOSYSTEM RESTORATION APPROPRIATION

Funding Category/Projects	Agency	Funding Allocated in fiscal year 1998	Funding Allocated in fiscal year 1999
Woodbridge Fish Screen	USBR	1,575	
Richter Brothers Screen	USBR	49	
Boeger Brothers Screen	USBR	15	
Small Diversion Fish Screens Program [1]	NRCS	900	
Fish Screen Improvements		$2,539	
Anderson-Cottonwood Irrigation District (ACID) Screen	USBR	325	
Fish Passage Program	USBR	8,000	
ACID Fish Passage & Fish Screen Improvement Project, Phase II		860	
Anadromous Fish Passage at Clough Dam on Mill Creek		1,280	
Fish Passage Improvement Project at the Red Bluff Diversion Dam		341	
Steelhead & Chinook Salmon Fish Passage Barrier Remediation at Guadalupe River		178	
Cosumnes River Salmonid Barrier Program		188	
Boeger Family Farms Fish Screen, Phase III (Construction)		140	
Hastings Tract Fish Screen, Phase II (Construction)		271	
City of Sacramento Fish Screen Replacement Project, Phase II		655	
American Basin Fish Screen & Habitat Improvement Project		200	
Stanislaus River Channel Restoration		1,038	
Tuolumne River Setback Levees		655	
Battle Creek		395	
Fish Passage Program Remaining Balance [1]		1,799	
ACID Fish Passage Improvement Project, Phase III	USBR		5,253
Battle Creek Salmon and Steelhead Restoration Project	USBR		28,000
Lower Butte Creek Project, Phase II	USBR		775
Fish Passage Improvements		8,325	34,028
San Joaquin Floodplain Acquisition and Riparian Restoration	USFWS	10,647	
Bear Creek Floodplain Restoration Demonstration Project	USFWS	334	
Napa River Wetlands Acquisition	USBR	1,000	
Cache Slough Habitat Enhancement	USBR	85	
Regional Wetlands Goals Project	USEPA	76	
Cosumnes River Floodplain Acquisition	USBR	3,500	
Prospect Island	USCOE	2,000	
McCormack-Williamson Tract Acquisition	USFWS		5,250
McCormack-Williamson Tract's Wildlife-friendly Levee Management Project	USFWS		860
Habitat Restoration/Flood Control Bypasses Program [1]	USCOE	1,200	
Floodplain Restoration/Habitat Restoration on Existing Conservation Lands Program	USFWS	14,000	2,700
Butte Creek Acquisition		125	
Lower Mill Creek Riparian Restoration		30	
Grayson River Ranch Perpetual Easement and Restoration		732	
Hill Slough West Habitat Demonstration Project		200	
Rhode Island Floodplain Management and Habitat Restoration		25	
Nelson Slough Wildlife Area Restoration Demonstration Project		256	
Merced River Salmon Habitat Enhancement, Phase III		2,433	

BAY-DELTA ECOSYSTEM RESTORATION APPROPRIATION—Continued

Funding Category/Projects	Agency	Funding Allocated in fiscal year 1998	Funding Allocated in fiscal year 1999
Stone Lakes National Wildlife Refuge Land Acquisitions		1,900	
Petaluma Marsh Expansion Project—Marin County		352	
South Napa River Wetlands Acquisition and Restoration		431	
Lower Clear Creek Floodway Restoration		3,560	
Fern-Headreach Tidal Perennial Aquatic and Shaded River Aquatic Conservation		425	
Benicia Waterfront Marsh Restoration		59	
Floodplain Acquisition, Management, and Monitoring on the Sacramento River		1,000	
Cosumnes River Acquisition Restoration, Planning and Demonstration		750	
Deer and Mill Creeks Acquisition and Enhancement		1,000	
Lower San Joaquin River Floodplain Protection and Restoration Project		722	396
Biological Restoration and Monitoring in the Suisun Marsh/North San Francisco Bay Ecological Zone			773
South Napa River Tidal Slough and Floodplain Restoration Project			1,455
Butte Creek Riparian Restoration Demonstration			76
Habitat Restoration In Floodplains and Marshes		32,842	8,810
Liberty Island Acquisition	USFWS	8,577	
Sedimentation Movement, and Availability and Monitoring in the Delta	USGS	1,047	
Tuolumne River Mining Reach Restoration Project No. 2—MJ Ruddy Segment	USFWS		3,332
Merced River Salmon Habitat Enhancement, Phase I: Robinson/Gallo Project, Ratzlaff Reach Site	USBR		1,633
Tuolumne River Special Run Pool (SRP) 10 Restoration	USBR		165
Preliminary Design and Engineering—Lower Western Stone Restoration Site, Merced River	USBR		130
River Channel Changes		9,624	5,260
Environmental Water Acquisition Program [2]	USBR	14,500	
Improved Instream Flows		14,500	
Assessment of Organic Matter in the Habitat and Its Relationship to the Food Chain	USGS	1,400	
Evaluation of Selenium Sources, Levels, and Consequences in the Delta	USGS	1,589	
Bacterial Treatment of Selenium in the Panoche Drainage	USBR	1,149	
Sand and Salt Creek Watershed Project	USBR	599	
Integrated Pest Management in Suisun Bay Program	USBR	266	
Assessment of Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed	USBR		3,800
Water Quality and Temperature Improvement		5,003	3,800
Exotic Species Control Program	USFWS	1,250	
Introduced and Undesirable Species Control		1,250	
Evaluation of Tagging Data	USBR	625	
Improved Fish Management and Hatchery Operations		625	
Watershed Improvement/Sediment Stabilization on Deer, Mill and Antelope Creeks	USFS	371	
Watershed Restoration Planning Program	USEPA	1,550	1,310
Petaluma River Watershed Restoration		220	
Cottonwood Creek Watershed Group Formation		161	
Battle Creek Watershed Stewardship		145	
Local Watershed Stewardship Steelhead Trout Plan		48	
Cold Water Fisheries and Water Quality Element		200	
Merced River Corridor Restoration Plan		300	
South Yuba River Coordinated Watershed Management Plan		264	
Watershed Restoration Strategy for the Yolo Bypass		212	32
Proposal to Develop Local Watershed Stewardship Plan for the Lower Mokelumne River			159
Union School Slough Watershed Improvement			636
American River Integrated Watershed Stewardship Strategy			221
Sulphur Creek Coordinated Resource Management Planning Group			24

BAY-DELTA ECOSYSTEM RESTORATION APPROPRIATION—Continued

Funding Category/Projects	Agency	Funding Allocated in fiscal year 1998	Funding Allocated in fiscal year 1999
Lower Putah Creek Watershed Stewardship			100
Alhambra Creek Watershed CRMP			138
Butte Creek Watershed Road Survey	USFWS	294	
Inventory of Forest Road Systems—Cat Creek Watershed	USFS	38	
Floodplain Easement—Lower Tuolumne and San Joaquin Rivers	NRCS		1,545
Watershed Management		2,253	2,855
EPA Contribution			910
Bay-Delta Account		2,253	1,945
Integrated Phasing Strategy (CALFED Program Staff)	USBR	1,647	3,200
Coordinated Permitting (CALFED Program Staff)	USBR	282	
Development of a Watershed Management Program (CALFED Program Staff)	USBR	184	
Comprehensive and Coordinated Monitoring Assessment and Research Program (CCMARP)	USBR	1,157	
Bay-Delta Education Program	USBR	300	120
San Joaquin Valley's "Salmonids in the Classroom" Program Enhancement		3	
Traveling Film Festival/Heron Booth/Video Archive		54	
Environmental Agriculture Conferences and Field Tours		28	
Sacramento River Headwaters to the Ocean, Public Information and Education		50	
Discover the Flyway		49	
The Butte Creek Watershed Educational Workshops and Field Tours Series		33	
Bay-Delta Environmental Restoration Education Program		40	
The Virtual Science Center and Hands-on Learning Programs		42	
Water Hyacinth Education Program		1	10
Water Challenge 2010			65
Tuolumne River Natural Resources Program			45
Special Support Programs (CALFED Program Staff)	USBR		1,751
Prospect Island Monitoring Project	USCOE		915
Monitoring, Permit Coordination, and Other Special Support		3,570	5,986
Restoration Reserve	USBR	3,319	3,750
Technical Review and Quality Control Program	USBR	850	750
Administrative Support Program	USBR	850	750
Miscellaneous Expenses/Administration		4,469	5,000
Pending April 16, 1999 due date of the Public Solicitation Process			10,171
Less EPA Contribution (Watershed Management Category)			−910
GRAND TOTAL ALLOCATED (Bay-Delta Account)		85,000	75,000

[1] Program is included in the Public Solicitation Process issued on February 16, 1999 with a project submittal due date of April 16, 1999. Project selection is expected to be complete by June 30, 1999.
[2] CALFED is currently working the Stakeholder community to develop this program.

Ms. BENEKE. It is a very important program in California.

Senator DOMENICI. When I raised the issue, I just wonder if we started too fast. That is all I am wondering about.

Ms. BENEKE. Sir, I would also say that Congress authorized $143.3 million in annual appropriations for this program. We have come in with a request this year of $75 million, which we think is well tailored to what we can expend and what the need is. We are going to be sending up a request to extend the authorization for this program, and we will be working with the authorizing committees on that as well.

NEW MEXICO DROUGHT CONDITIONS

Senator DOMENICI. I would like to make one last observation directed to the Department and, in particular, the Commissioner. I am pleased that I have six Senators here.

My State is on the verge of a drought. The Commissioner has just expressed a concern about one river in our State. It is not as drastic, but every river is having enormous problems in terms of the source of water that normally flows down the rivers.

We have a budding problem with reference to the endangered species law that is very, very serious. It has to do with a minnow on our biggest river system. It has been declared an endangered species, and it is entirely possible that we cannot maintain the flow in the river for the minnow, which is a latecomer to the water needs of that river basin, having just been adjudicated, whereas we have had all kinds of other users lined up who are entitled to water, including large cities like Albuquerque who bought much of the water that is coming down the river.

We may very well be asked here in Congress to do something to alleviate this situation unless the managers of the river system can accommodate the traditional users who already have claims, the cities who own the water, and a minnow that has just recently, as I indicated, made claim to our waters.

We have a similar one in the second largest water system, another minnow, the same claim, in a drought era in a desert State. I just leave that with you.

Senator BURNS. Do you want some grizzly bears?

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. Well, what we need is we need some common sense, but that is the problem.

Thank you both very, very much.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR DOMENICI

SAN JUAN RIVER-GALLUP, MOUNT TAYLOR PIPELINE

The Committee has been funding the San Juan-Gallup, Mount Taylor Pipeline study effort for the past two years. Last year, the Bureau of Reclamation entered into a Memorandum of Agreement to undertake a feasibility study of a water supply pipeline from Mount Taylor mine for additional water supplies in the area. The Committee understood that the Bureau had sufficient funding available in fiscal year 1999 to complete the study, but provided additional funding to insure there were no delays or funding constraints.

Question. What is the status of this study which will confirm the quantity and quality of water that might be available from the Mount Taylor mine?

Answer. We have completed an appraisal study of the requirements for treatment and delivery of water through a pipeline from Mt. Taylor to Gallup, Acoma Pueblo, and Laguna Pueblo. A separate preliminary study has been done by John Shomaker & Associates for the City of Gallup on the quantity of water available. Shomaker's preliminary estimate is that 4,000 acre feet of water could be produced from the Mt. Taylor Mine for about 40 years. We estimate the pipeline and treatment plant would cost $35–$40 million to build and a preliminary estimate of $2–$2.5 million annually for operation and maintenance. No special environmental or cultural resource issues have been identified. However, disposal of selenium at the water treatment plant is a concern and a high cost for documentation and mitigation of archaeological sites should be anticipated due to high density of known sites in the area.

Question. Will the study be completed in fiscal year 1999 as planned? If not, why? Has the Bureau established a firm schedule to complete the determination of quantity and quality?

Answer. No, at this point Reclamation has not initiated feasibility studies. None of the local sponsors are able to provide cost-sharing contributions to take the studies to the feasibility stage. Reclamation has proposed entering into a Memorandum

of Agreement with the city of Gallup, and the Acoma and Laguna Pueblos, under which Reclamation would contract with the Pueblos under the authority of the Indian Self-Determination Act of Public Law 93–638 to accomplish some of the needed studies. These contracts would not require cost sharing. We have proposed two major studies to be completed under these contracts. The first are detailed hydrologic studies including groundwater modeling to provide a firmer estimate of the quantity of water available and to identify and quantify potential impacts on other parts of the hydrologic system such as springs, streams, and other aquifers. The second is the development of a legal framework for cooperation of the sponsors to plan, implement, and operate the project. Substantial questions related to water rights and allocation of project water need to be addressed before the project could be built. To date, the proposed agreement has not been accepted and signed by all the sponsors.

SAN JUAN GALLUP-NAVAJO WATER SUPPLY STUDY

The San Juan Gallup-Navajo Water Supply feasibility study has been on-going for several years. The Committee provided $150,000 for the current year for the Bureau of Reclamation to complete the feasibility study and initiate NEPA compliance activities.

Question. What is the status of this study?

Answer. Reclamation and the study partners will complete a planning status report and environmental analysis during fiscal year 1999. The report will present the preferred plan and alternatives considered by the study partners and identify significant environmental issues that would be addressed during the National Environmental Policy Act process. Consultation under Section 7 of the Endangered Species Act will be initiated with respect to the endangered fish in the San Juan River by the Bureau of Indian Affairs during fiscal year 1999.

Question. How much funding is included in the fiscal year 2000 budget request to continue the study effort?

Answer. No funding has been requested for fiscal year 2000.

Question. Is this level of funding sufficient to keep the study on schedule?

Answer. No. Additional funding of $300,000 would be needed in fiscal year 2000 to keep this project moving forward. These funds would allow the NEPA process to move forward and allow data to be collected to refine the project plan. The additional capability shown was not included in the President's budget. The Department does not support the addition of funds for any project that would result in the reduction of funding for programs or projects included in the budget request.

Question. Has the Bureau established a firm schedule to complete the San Juan Gallup-Navajo Water Supply study effort?

Answer. No. Due to the uncertainty of funding a firm schedule has not been completed. The planning status report and environmental assessment will be completed during fiscal year 1999. If funding is available, necessary data could be collected and a Feasibility Report/Environmental Statement could be completed by the end of 2001. In order for the project to move to implementation, additional construction authorization and funding would also be required.

TAOS INDIAN WATER RIGHTS SETTLEMENT

The Committee provided $2 million in the current fiscal year for the Bureau of Reclamation to initiate and complete a confirmatory well drilling program of the deep aquifer which was a critical element of the Taos Indian Water Rights Settlement Agreement.

Question. What is the current status of your efforts to undertake this important work?

Answer. An environmental assessment, which typically takes 3–5 months, is in progress and is scheduled to be completed late in April of this year. Depending upon the results of the assessment, drilling could commence after the environmental assessment is done.

Question. Will the proposed work be completed in fiscal year 1999 as directed, if not, why? Is additional funding needed in fiscal year 2000? If so, what is the Bureau's funding capability?

Answer. No, the work cannot be completed in fiscal year 1999 because of the size and depth of the seven wells. It will take about two months to complete each well even with some 24-hour per day drilling. Completion of the drilling is anticipated in late spring or summer of 2000.

The current funding capability estimate for fiscal year 2000 is $700,000. This includes all required NEPA activities, contact administration, modeling reports, and

consultant fees. This estimate is based on the assumption that the drilling has been completed, and a recommendation to proceed has been made.

UTE RESERVOIR PIPELINE PROJECT, CURRY AND ROOSEVELT COUNTIES, NM

The Conference Agreement for fiscal year 1999 included $200,000 for the Bureau of Reclamation to begin feasibility studies of the Curry and Roosevelt counties portion of the Ute Reservoir Pipeline project.

Question. How does the Bureau of Reclamation plan to proceed with this work in fiscal year 1999?

Answer. The Ute Water Commission is working on a plan of study for this work which will include feasibility planning and environmental compliance for the Curry and Roosevelt Counties phased portions of the Ute Pipeline project. Reclamation plans on modifying the existing Cooperative Agreement to include this work once we receive and agree on the scope of work.

Question. How much funding is requested in your fiscal year 2000 budget to continue this work?

Answer. No funding was requested for this work in fiscal year 2000.

Question. Now, $300,000 was provided in fiscal year 1998 for the Quay County portion of the project. What is the status of the Quay County studies?

Answer. On June 24, 1998, Reclamation entered into a Cooperative Agreement with the Eastern Plains Council of Governments (COG). This obligated funds in the amount of $285,000 to the COG, which includes $15,000 to administer the contract. The additional $15,000 was set aside to pay Reclamation administrative costs.

In September of 1998, a contract was entered into between the COG and Smith Engineering to prepare a Special Report (to be completed in June 1999) which would provide enough information for the local sponsors to solicit financing for final design and construction either from private or public entities. This effort differs from past efforts as it provided for project phasing, which allows the Quay County portion to be built first, and subsequent phasing would provide for final project completion.

UPPER RIO GRANDE BASIN WATER MANAGEMENT

The Upper Rio Grande Basin water operation model has been under development for several years with funding that has been appropriated by this Committee.

Question. Am I correct that the development of the model is about to be completed? Is there any additional model development which will not be completed in fiscal year 1999 for which funding will be required in fiscal year 2000? If so, does the Bureau have sufficient funding requested in fiscal year 2000 to carry out any additional development work that may be needed? How much funding over and above the budget request is needed to complete the development work?

Answer. The first fully linked upper-basin model, operating from Colorado to Fort Quitman, Texas is scheduled to be completed in fiscal year 2000. However, this "backbone water operations model" will lack necessary refinements required to satisfy planning and NEPA applications in some reaches of the river. These necessary refinements are expected to continue into fiscal year 2004 as various water management and operational issues surface in the basin requiring the detail of a planning model. Several water issues in the basin are currently showing a need for accelerated application of the planning model. Acceleration of the model refinement would require enhanced funding from various partnership sources. Currently, the model is being developed using funding from several sources and partners. Reclamation has requested $345,000 for model development in fiscal year 2000 but could apply an additional $250,000 toward accelerated model refinement. The additional capability shown was not included in the President's budget. The Department does not support the addition of funds for any project that would result in the reduction of funding for programs or projects included in the budget request.

Question. How do you envision using this operational model as a management tool?

Answer. The model can be thought of in terms of three modular components: First, a real-time hydrologic daily decision support system linked to a real time monitoring network. Second, a water accounting and water operations model used for analysis and documentation of daily flood control and project water delivery operations; and, third, a basin-wide hydrological planning model used for evaluating impacts of long range water management and water development scenarios. There is already a well defined need for all three model components.

Question. Now, funding is included in the budget to begin work with the Regional Water Planning Assembly to undertake "grass-roots water planning efforts for the Middle Rio Grande Valley". Can you explain what the Bureau has in mind, what

the total cost of the effort is expected to be, and how long you expect to fund this effort? What is the make-up to the Regional Water Planning Assembly?

Answer. In fiscal year 2000, $50,000 is requested for coordination with the Regional Water Planning Assembly and minor technical support. An additional $78,000 is estimated to be needed for work through fiscal year 2002. The Regional Planning Assembly is a grass roots organization which came into existence at the request of the New Mexico Governor and State Engineer to address basin-wide water resource issues. The mission of this group is to formulate a regional water plan funded by the New Mexico Interstate Stream Commission. The group includes representatives from every water interest sector in the Middle Rio Grande Valley. This includes farming, municipal, environmental, rural organizations as well as water management agencies at the local, state, and federal level.

RECLAMATION RECREATION MANAGEMENT PROGRAM—TITLE XXVIII

Congress provided $2 million for the current fiscal year for the Bureau of Reclamation to more fully participate in a cost-shared program with the State of New Mexico for recreation facility improvements under Title XXVIII of the Reclamation Projects Authorization and Adjustments Act. The funding was provided because the Committee understood that the State of New Mexico had been financing recreation improvements unilaterally and that an imbalance existed in the allocation of funding through this program.

Question. Do you expect any problems in carrying out this program as authorized and intended by the Committee? Specifically, how is the Bureau using the $2 million provided for improvements at recreation facilities in New Mexico?

Answer. We will have no problem in carrying out this program. Most of the funding will be used to rehabilitate recreation facilities at Elephant Butte and Navajo State Parks. Funds will also be used for facilities at Caballo, Heron, El Vado, Sumner, Percha and Leasburg State Parks.

ANIMAS-LA PLATA

Congress has appropriated $3 million or more annually for the past several years for the Bureau of Reclamation to continue data collection, analysis and other activities related to the Animas-La Plata project. The fiscal year 2000 budget again includes $3 million for similar activities.

Question. What has been the total level of funding appropriated for this project over the past 5 years, and how much has actually been spent on the project?

Answer. The total amount appropriated for Animas-La Plata for the period fiscal year 1995 through fiscal year 1999 was $34.8 million. Reclamation applied a total of $4.8 million of underfinancing to this project during the period. Therefore, the net allotments for the past 5 years totaled $30 million. The total amount spent on the Project from fiscal year 1995 through February 1999 was about $20.2 million.

Question. How much funding is available for expenditure in fiscal year 1999 from prior year balances? How much of the total funding available does the Bureau expect to spend in fiscal year 1999?

Answer. At the beginning of fiscal year 1999, $9.5 million was available to expend from prior year balances. If the fiscal year 1999 allotment of $0.5 million is added, then $10.0 million is available to expend in fiscal year 1999. The initial fiscal year 1999 estimate for expenditures was approximately $3.0 million. With the anticipated new environmental evaluations discussed below, additional expenditures are expected. The magnitude of those expenditures is currently being evaluated.

Question. Now the budget justification seems to indicate that the Department has selected a Proposal for Animas-La Plata. The justification uses terms such as "the Department of the Interior's Proposal", the "Administration Proposal", and "refining the Proposal". Please explain what is meant by "Proposal". Has the Department of the Interior selected a "project" alternative as directed by Congress? Specifically, how will the funding requested for fiscal year 2000 be used?

Answer. On August 11, 1998, the Secretary of the Interior presented an Administration Proposal to build a down-sized version of Animas-La Plata to implement the Colorado Ute water rights settlement, which would also include a nonstructural element as part of the settlement implementation. Then on January 4, 1999, a Notice of Intent (NOI) was published in the Federal Register announcing the intent to prepare a Draft Supplemental Environmental Impact Statement for the Animas-La Plata Project pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended. The Draft Statement would evaluate the environmental impacts of the Administration Proposal and several other alternatives. Pending public input, Reclamation intends that the Administration Proposal and each of the alternatives described in the NOI undergo an environmental impact analysis beginning with a

threshold assessment of the alternative's capability to accomplish the project's purpose fiscal year 2000 funding would be used to conduct a major portion of the NEPA process identified in the NOI. Current plans are to use contracts under the Indian Self-Determination Act authority of Public Law 93–638 with both Colorado Ute Indian Tribes to conduct this work.

Question. Last year, you testified that the analysis of alternatives would be completed in 3–6 months. Has the analysis of alternatives been completed as you testified? If not, why?

Answer. Reclamation conducted an appraisal-level analysis on the two alternatives resulting from the Romer/Schoettler Process. Prior to its finalization, the Secretary of the Interior announced an Administration Proposal incorporating portions of those two alternatives. All information and data developed as part of the Romer/Schoettler Process, as well as previously completed environmental studies, are being utilized and incorporated into the present Draft Supplemental EIS effort.

Question. Why should the Congress appropriate any further funding for this project for fiscal year 2000?

Answer. The Administration is committed to implementing a water rights settlement for the Colorado Ute Tribes. We anticipate increased costs to accelerate NEPA compliance work and will seek authority to immediately initiate activities to implement the selected alternatives.

SALTON SEA, CALIFORNIA RESEARCH PROJECT

For the past several years, funding has been provided for the Salton Sea research project in California to investigate increasing salinity, other water quality issues, and rising surface levels which are flooding developed areas and wildlife habitat. The Bureau of Reclamation, and other Federal and State agencies are engaged in an effort to identify and evaluate possibilities for improving the conditions of the sea, a program of additional planning, research, and environmental impact analysis.

Question. First, tell the Committee why the Bureau of Reclamation is involved in this effort?

Answer. The Salton Sea as we know it today was created in 1905–07, when the flooding Colorado River broke through a temporary diversion works and flowed into the Salton Sink for nearly 15 months before it was diverted back to the river channel. Soon after, the Sea began to decrease as the flow of new water was discontinued prior to the creation of irrigated agriculture. In 1942, the All-American Canal began carrying Colorado River water to the Imperial and Coachella Valleys which flank the Salton Sea and thus the Sea began to receive an annual inflow of water created from the agricultural drainage. Reclamation was the Federal partner in the development of this diversion system.

The Bureau of Reclamation studies directed towards managing the salinity of the Salton Sea date back to the 1960's, when Reclamation and the California Department of Water Resources performed a joint appraisal evaluation of possible alternatives. Title XI of Public Law 102–575, the Salton Sea Research Project Act, directed the Secretary of the Interior, acting through Reclamation, to conduct a research project. Most recently, Congress in 1998 passed the Salton Sea Reclamation Project Act, Public Law 105–372, which directed the Secretary of the Interior, acting through Reclamation, to conduct an Environmental Impact Statement/California Environmental Impact Report feasibility study to reclaim the Sea, and specifically named the Bureau of Reclamation as lead agency on these efforts.

Question. Setting aside the action of the Secretary of the Interior designating the Bureau of Reclamation as the lead agency in the Department, is there a direct connection to your traditional missions and responsibilities?

Answer. There is a direct connection to Reclamation's traditional mission and responsibilities in this project. The two irrigation districts that contribute agricultural drainage to the Salton Sea are both Reclamation projects built through a partnership with the Federal government. As with most of our projects, if the operation of the project adversely affects the local environment then Reclamation can be involved in developing solutions to the problems.

Question. How much funding has been provided for this effort across all Federal government agencies in fiscal year 1998 and fiscal year 1999, and how much is requested for fiscal year 2000? How much funding are State and other non-Federal agencies providing for fiscal year 1999 and 2000?

Answer. The following table presents the Federal funding being used to perform the various activities associated with the Salton Sea.

Bureau of Reclamation

Fiscal year 1998—$2,000,000 (Includes $400,000 enacted and $1,600,000 fund transfer and reprogramming).

Fiscal year 1999—$400,000 (Enacted).
Fiscal year 2000—$1,000,000 (Requested).

U.S. Environmental Protection Agency

Fiscal year 1998—$5,875,000 (Enacted).
Fiscal year 1999—$13,400,000 (Enacted).
Fiscal year 2000—(None Requested).

U.S. Fish and Wildlife Service

Fiscal year 1998—$1,000,000 (Enacted).
Fiscal year 1999—$1,000,000 (Enacted).
Fiscal year 2000—$1,000,000 (Requested).

U.S. Geological Survey

Provides limited scientific expertise and personnel support.

The State and other local non-Federal agencies have made or will make available a total of $3,784,100 for work in fiscal year 1999 and fiscal year 2000.

Question. What is the total estimated cost of the effort to complete the feasibility design, and the technical and biological impact analysis work necessary for the preparation of feasibility report and environmental compliance documents?

Answer. The current estimated cost of the feasibility study is $4.85 million. Reclamation is providing 50 percent of the total costs of the study which is being matched by a non-Federal cost sharing partner. The non-Federal cost sharing partner is the Salton Sea Authority, a Joint Power Authority established under the laws of the State of California.

Question. Has a firm schedule, which establishes critical milestones, been established for this work? If so, could you provide it for the record?

Answer. The Department of the Interior and Reclamation understand that January 1, 2000, is a firm date for a report to Congress. The following schedule is being followed to prepare the report and documents for this project.

November 12, 1998—Salton Sea Alternatives Final Pre-appraisal Report—Engineering information on Salinity and Water Surface Elevation.

February 15, 1999—Scoping Report on Public Meetings Held in July and October 1998.

March 15, 1999—Draft Report, Screening Analysis of Initial Restoration Alternatives.

April 30, 1999—Draft Appraisal Report on Proposed Alternatives.

May-June 1999—Initial Reports from Baseline Science work being performed with submittal to the Science Subcommittee, Salton Sea Authority, and Reclamation.

September 1, 1999—Draft Environmental Impact Statement/Planning Report, California Environmental Impact Report.

January 1, 2000—Final Environmental Impact Statement/Planning Report, California Environmental Impact Report to Congress.

Question. Is it realistic to believe that the Bureau of Reclamation can complete the feasibility report and associated National Environmental Protection Act documentation by January 1, 2000 when this work is only 9 percent complete?

Answer. A report will be made available with proposed action alternatives for consideration by Congress by January 1, 2000. Reclamation will be able to provide an analysis of the alternatives for feasibility economics and costs on phase one, but not a complete feasibility-level engineering design for all phases. It is envisioned that the preferred project may be proposed using a phased approach to addressing the ecological issues of the Sea. The final Environmental Impact Statement/Planning Report will then include at least feasibility-level designs and cost estimates of phase one and appraisal-level designs and cost estimates for the other features.

Question. The fiscal year 2000 justification material indicates that a portion of the $2 million budget request is to "initiate specific design work on the preferred alternative course of action coming out of the feasibility report and supporting environmental compliance documents". How much of the budget request is for specific design work on the preferred alternative, and why is this work being proposed prior to completion of the feasibility report and project authorization?

Answer. Of the $2,000,000 total program in fiscal year 2000, $1,000,000 is non-Federal cost-sharing. When the fiscal year 2000 Budget Justification was prepared, the funding proposed was based on an aggressive schedule that assumed that authorization by Congress would occur quickly and initiation of designs could occur shortly after Congressional decision within the same fiscal year. However, since then it is envisioned that the preferred project may be proposed using a phased approach to addressing the ecological issues of the Sea. The final Environmental Impact Statement/Planning Report will then include at least feasibility-level designs and cost estimates of phase one and appraisal-level designs and cost estimates for

the other features. The funds originally identified in fiscal year 2000 to collect initial design data are now expected to be needed to complete feasibility designs for other phases of the preferred plan.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION (CALFED)

The budget request for fiscal year 2000 is $95 million, the last year appropriations are authorized. However, the Administration has proposed legislative language to extend the current spending authorization through 2003 in order that the full $430 million authorized currently will be funded. In addition to the funding provided under the CALFED program, funding is provided for similar restoration work in the Bay-Delta area through the Bureau of Reclamation's Central Valley Project Restoration Fund, the Bureau's Water and Related Resources funding account; and other Federal agencies.

The programmatic environmental impact statement and a report describing the preferred alternative to address the issues related to the restoration program, including the possibility of new water supply options, is long overdue. Yet, the budget for fiscal year 2000 proposes expanding current activities by beginning the planning and implementation additional activities without reaching agreement on critical issues such as additional water supply, storage and conveyance, which are important to other water users principally those in the agricultural and development communities.

Question. When Secretary Babbitt released the revised CALFED Phase II Report he indicated that additional issues remained to be worked out. What are these additional issues that need to be resolved? When will a final revised Phase II Report be issued, and a preferred alternative selected?

Answer. The major issue referred to by the Secretary involved the water supply reliability element of the CALFED program, more specifically, the treatment of new storage facilities. CALFED agencies are continuing to refine the CALFED program, including the water management strategy and how to finance the program. CALFED has received the largest number of public comments on the use of water conservation as a tool to reduce demand versus the support for construction of new facilities, particularly surface storage. The schedule calls for CALFED to issue a supplemental draft environmental impact statement containing a preferred alternative and a Phase II Report in June 1999, and the final EIS/EIR in the spring of 2000.

Question. Some have suggested that reoperation of existing non-Federal power facilities could provide significant additional water supplies needed to solve environmental and other water supply issues. What can you tell us about this idea? Is it a creditable suggestion, and would the Department of the Interior support such an approach?

Answer. The reoperation of existing non-Federal power facilities could provide additional water for water users and the environment at high priority times and places. CALFED has proposed taking a comprehensive analysis of existing non-Federal hydropower projects in California as part of the proposed Integrated Storage Investigation. Interior, other Federal agencies, and the State generally support undertaking the Integrated Storage Investigation analysis and are currently refining the scope of work.

Question. Under the CALFED agreement, the State of California is to share the costs of activities undertaken. Describe the cost-sharing arrangement with the State of California. If you consider Reclamation's appropriation of $160 million, what is the corresponding required level of State and non-Federal cost-sharing, and how much has actually been provided?

Answer. The cost-share agreement between the Federal and State governments calls for equal sharing of ecosystem restoration costs over the period of ecosystem restoration activities. With the passage of Proposition 204, California voters provided $60 million in 1997 and another $390 million will become available when the State certifies the Final Programmatic Environmental Statement/EIS/EIR (similar to the Federal Record of Decision). Based on Proposition 204 and the $430 million authorized by the Bay-Delta Environmental and Water Security Act, the Federal and State governments have made approximately equal commitments to Bay-Delta ecosystem restoration. As of September 30, 1998 CALFED reports that the State had provided $55 million in Proposition 204 and other funds for approved Bay-Delta ecosystem restoration projects. Funding the $75 million ecosystem restoration request and extending the Bay-Delta Act is important to maintaining the Federal commitment.

Question. Now the budget request for fiscal year 2000 proposed $20 million to begin work on Phase II, non-ecosystem components. Is Phase II work specifically au-

thorized? What is the justification for undertaking Phase II work in the absence of a final Programmatic Environmental Impact Statement and Preferred Alternative? Is there wide spread agreement and support for proceeding with this work? Is the State ready to cost-share in this work? What is the position of the new governor on proceeding with this work?

Answer. The non-ecosystem work under Phase II that is contemplated for the $20 million is authorized by a wide range of existing authorities applicable to the Federal CALFED agencies. For example, those authorities include the Flood Control Act of 1950, Section 205; Reclamation Reform Act, Sections 210(1) and (c); Clean Water Act of 1948, and additional authorities contained in Public Law 102–575, Central Valley Project Improvement Act (CVPIA).

Undertaking work on non-ecosystem Phase II projects prior to completion of the programmatic environmental statement is appropriate because these are certain actions that will be needed for any alternative selected, and those actions can be taken consistent with the restrictions in the proposed fiscal year 2000 Bay-Delta appropriations language. CALFED anticipates completing its EIS/EIR during fiscal year 2000. We are requesting fiscal year 2000 funds to be ready to start these projects in a timely manner. Significant support exists for resolution of issues in the Bay-Delta. State agencies and California stakeholders endorse the activities that will be undertaken. Governor Gray Davis indicated strong support for the CALFED/Bay-Delta Program in his inaugural address. The draft EIS/EIR will describe the cost-share obligations of Federal and State government, as well as others, to finance implementation of the CALFED Bay-Delta Program.

MANAGING COMPETING WATER DEMANDS

Because of concerns of the Senate authorizing committee, language was included in last years report directing the Bureau of Reclamation not to use funds to complete evaluations of current practices in each of the Area Offices to find ways to more effectively manage competing demands for water.

Question. Have you complied with this directive? If not, explain why?

Answer. Yes. Reclamation has complied with this directive. Reclamation also removed two performance goals referring to this activity from the fiscal year 1999 Annual Performance Plan.

OPERATION AND MAINTENANCE COSTS

The Conference Report on the fiscal year 1998 Energy and Water Appropriations Bill asked the Bureau of Reclamation to prepare a report on the operation and maintenance costs of it's projects. The Committees requested the report because of expressed concerns related to how O&M costs were being allocated by project purpose, the declining level of operation and maintenance funding for traditional water supply and distribution related work, concerns that Reclamation's overhead expenses may be excessive, and the lack of opportunity of stakeholders to have input into the formulation of the Bureau's budget recommendations. The report was completed and provided to the Committee last September.

Question. What has the Bureau done to afford stakeholders an opportunity to have input into the budget needs and priorities?

Answer. Reclamation has been working for several years with many of our water and power customers in the formulation of the operation and maintenance (O&M) program, for our multipurpose projects. As an expansion of current efforts, and in response to language contained in the statement of the Managers accompanying the Conference Report for the fiscal year 1998 Energy and Water Appropriations Bill, the Commissioner issued a memorandum in September 1998 which directed the Regional Directors and Area Mangers to redouble their efforts to insure customers who are interested are given the opportunity to provide input into the formulation of project O&M programs. For Reclamation, this will continue to be an ongoing activity.

Question. Can the Bureau benefit from this increased openness?

Answer. Reclamation, our customers, and the general public have benefited and learned from the increased openness. We encourage customer feedback and believe the increased openness gives the customers the opportunity to realize how serious and committed Reclamation is to Project O&M.

Question. Do you expect to learn new ways and approaches that could improve efficiencies and, thereby reduce O&M costs?

Answer. Our efforts to benchmark the power program has been a worthwhile activity in that it has already identified areas where we compared very favorably with the hydroelectric industry. Reclamation will use benchmarking in the future to identify new ways and approaches to improve efficiency and ultimately reduce costs.

Question. Now there is continuing concern that the Bureau of Reclamation is placing increasing emphasis and funding on non-traditional activities such as wetland creation and wildlife habitat enhancement, to name a few, at the expense of traditional operation and maintenance activities necessary to meet contractual water supply obligations. If you look just at the traditional O&M activities related to contractual water supply and distribution requirements, how does the fiscal year 2000 budget request of the Bureau compare to the fiscal year 1999 budget request?

Answer. Reclamation undertakes environmental mitigation and enhancement activities only to the extent, and in the manner, authorized by Congress. These efforts are done in cooperation with the Fish and Wildlife Service, state game and fish agencies our water users and the public. Furthermore, nearly all of the environmental work which we undertake is necessitated by the regulatory requirements of such laws as the Endangered Species Act and the Clean Water Act, which requirements must be met if we are to continue to deliver the water and power benefits for which Reclamation projects have been authorized. We do not fund environmental work at the expense of project operation and maintenance. To the contrary, we fund such work so that we can continue to meet our contractual obligations to deliver water and power to our customers.

Our environmental activities, including compliance with regulatory laws, are generally funded under different fund activities than are traditional project operation and maintenance activities. Reclamation's fiscal year 1999 and fiscal year 2000 budgets in the Facility Operation and Facility Maintenance and Rehabilitation, show increases in funding for both activities of $8.0 million and $7.5 million respectively. We believe that the increase reflects Reclamation's commitment to continue to meet its traditional contractual obligations for water and power supply in an effective and efficient manner.

Question. The O&M Cost Report indicates that the Bureau of Reclamation is continuing efforts to control costs by reducing staffing. However, the Family Farm Alliance has provided information indicating that the San Luis and Delta-Mendota Water Authority was able to accomplish certain operation and maintenance work with 85 regular full time employees compared to 120 Reclamation employees.

Answer. The Family Farm Alliance number of 120 is incorrect. According to Reclamation records, 72 federal employees performed subject operation and maintenance work.

Question. Does Reclamation have procedures in place to periodically review and assess the manpower being used to accomplish O&M activities?

Answer. Reclamation reviews and assesses staffing needs for O&M activities on a regular basis and we consider this activity an important one.

Question. Have you reviewed situations like this with the objective of applying new approaches and methods instituted by non-Federal entities at other Reclamation projects?

Answer. Reclamation always seeks ways to learn new approaches at one project and apply it to other projects Reclamation-wide as appropriate. We would also welcome the opportunity to benchmark our water program with others having similar facilities as we have in our power program.

Question. Turning to indirect costs related to O&M projects, your Report indicates that 62 of 89 projects experienced overhead costs in excess of 20 percent in 1–2 years over 5 fiscal years of the analysis. How does this 20 percent level compare to other Federal agencies and non-Federal entities operation and maintenance overhead costs?

Answer. As noted in the report at page 31, three of Reclamation's 89 projects had overhead rates in excess of 20 percent in one or more of the five fiscal years in question based upon the definition of "overhead costs" used in the report. As was further noted on page 32, if Project General Expense costs were added to overhead costs, the total of which is referred to in the report as "indirect costs," then 62 projects would have had "indirect cost rates" in excess of 20 percent in at least one of the five years in question.

In our opinion, it is not possible to compare the overhead rates shown in our report to the "overhead rates" of other Federal agencies or non-Federal entities. This is due to the fact, as the report notes at page 5, that: (1) the term "overhead" is not used in budget documents submitted to Congress nor is it defined in the official Statement of Federal Financial Accounting Standards, and (2) the private sector does not use a uniform, commonly accepted approach as to what is included in overhead. As a result, practices vary widely across federal agencies as well as the private sector as to what costs are accounted for and labeled as overhead costs and as to how overhead rates are computed. Furthermore, what some federal agencies call "overhead rates" are actually just estimated service charges that may bear little direct relationship to actual costs incurred. Consequently, one cannot compare stat-

ed overhead rates between federal agencies, or between federal agencies and private firms, without first ensuring that each entity involved has classified exactly the same types of costs as overhead costs.

Question. In your judgement, what is an acceptable level of indirect costs for a project?

Answer. The level of administrative services and support functions, the costs of which are "indirect costs," required to support the operation and maintenance of a project will vary from project to project because each project is authorized in a different manner. Depending on contractual arrangements we have with the individual authorized projects, these costs may vary, and do. Thus, what is acceptable for one project may not be acceptable at another. Reclamation does its best to be equitable in assessing indirect costs in a cost conscious, business-like manner.

Question. What is Reclamation doing to identify those programs and activities that have indirect costs in excess of what would be expected?

Answer. As addressed in the O&M Cost Report (see Chapter 6), Reclamation has taken a number of steps over the past few years to reduce the costs of its centralized administrative services and of its regional administrative services. For example, in the Management Services Office (MSO) in Denver, which provides the majority of Reclamation's centralized administrative services, the administrative staff has been reduced from 434 to 286 from fiscal year 1994 to 1997, a reduction of approximately 35 percent. This was also accompanied by a reduction in office space, telephones, and utilities. As a result, the MSO has reduced its own internal indirect costs by 35 percent.

Under the Chief Financial Officer, a council of Reclamation managers reviews all indirect budgets for both consistency and reductions. Programs are discussed and line managers make decisions on those indirect costs needed for effective operations.

Reclamation has also instituted standard processes for reviewing Reclamation-wide business processes and systems. This process has resulted in cost savings through common business practices, careful scrutiny of what administrative computer systems are essential for efficient operations, and bulk buying of software. For example, Reclamation was able to save $5.3 million over three years by purchasing one bureau-wide Oracle license instead of site licenses.

In another case, we were able to replace multiple timekeeping systems with one. The report recites other cost reduction measures in the regional offices which have been taken.

Reclamation also continues to review overhead costs charged to a project on a project-by-project basis to ensure that these costs are properly accounted and charged, and make corrections, as necessary. We are also taking a look at reimbursable O&M costs and assessments that impact the project.

Question. I believe that in the past, the Bureau of Reclamation has indicated that there was around $75 million of deferred maintenance work. What is your current estimate of deferred maintenance work?

Answer. In our Financial Statement for fiscal year 1998 we reported about $12 million in deferred maintenance on our "reserved works" in accordance with the requirements of the Statement of Federal Financial Accounting Standards No. 6. The reported number reflects the redefinition of deferred maintenance under the new standard and is consistent with the reporting for reserved works, which is O&M'd by Reclamation. "Reserved works" are project facilities which Reclamation operates and maintains with its own personnel, as opposed to "transferred works" which are project facilities operated and maintained by Reclamation's water and power customers at their own expense pursuant to contracts with Reclamation.

Question. How much of the work is important to efficient and effective operation of essential operational facilities and structures?

Answer. Reclamation does not defer any "critical" maintenance which is needed to protect public safety and to ensure the delivery of water and power to its contractors. Furthermore, none of this deferred maintenance will have adverse impacts to the efficient and effective operation of our facilities and structures at this time. However, if these maintenance items are not eventually funded, this could result in less than optimally efficient operations over time.

Question. How does the Bureau of Reclamation plan to address the backlog of deferred maintenance in future years?

Answer. Reclamation continues to prioritize its maintenance activities to ensure that the highest priority work is completed in a timely manner. Should any deferred maintenance item become, for some reason, critical maintenance, it will be given priority and accomplished immediately. We also continue to look for direct funding arrangements with our contractors so that there will be sufficient funding, when coupled with appropriated dollars, to ensure that Reclamation does not accumulate a "backlog" of ever growing deferred maintenance.

Question. Do future budget planning targets accommodate increased funding for reducing the backlog?

Answer. Reclamation believes it has adequate funding to prevent deferred maintenance from significantly increasing in the future.

DAM SAFETY PROGRAM

INITIATE SAFETY OF DAMS CORRECTIVE ACTIONS

The fiscal year 1999 Energy and Water Appropriations Bill, while reducing Reclamation's budget request for the Dam Safety Program, provided a sizable increase over the 1998 appropriation. The funding request for fiscal year 2000 again reflects a significant increase over the previous year appropriation.

Question. Have you experienced or do you anticipate any major problems in carrying out the program with the funding provided for the current fiscal year, particularly in Initiate Safety of Dams Corrective Actions activities?

Answer. Congress reduced the fiscal year 1999 Dam Safety Program request by $8,787,000. As a result, Reclamation rescheduled Safety of Dams activities and costs into fiscal year 2000. At this time, we anticipate being able to carry out the restructured fiscal year 1999 program with the funding provided.

However, shifting activities from fiscal year 1999 into fiscal year 2000 impacts the flexibility to aggressively pursue risk reduction actions at Reclamation dams in fiscal year 2000. Keechelus Dam, Yakima Project, Washington, and Casitas Dam, Ventura River Project, California have critical Safety of Dams issues that require modifications of significant cost and scope. Current enacted funding and requests will be managed to focus funding to these dams and critical Safety of Dams issues at other dams. Funding at the President's Request level for the fiscal year 2000 Dam Safety Program is needed to avoid delaying critical public risk reduction efforts.

SAFETY EVALUATION OF EXISTING DAMS

Question. What accounts for the increase from $14.2 million in fiscal year 1999 to $17 million requested in fiscal year 2000 for the Safety Evaluation of Existing Dams activities?

Answer. Ensuring the safety and reliability of Reclamation dams is one of the agency's highest priorities. In 1997, the Commissioner tasked an independent team of dam safety professionals to review Reclamation's dam safety practices to identify best practices already in place and make recommendations for improvements. As a result of recommendations from the peer review team and Reclamation's own internal initiatives endorsed by the peer review team, more focus and vigilance has been directed at key activities such as examinations of dams, dam performance monitoring, and engineering analyses of dams to reliably define and manage risks across Reclamation's inventory of 362 dams. These activities are conducted under the Safety Evaluation of Existing Dams and are primarily responsible for the requested increase from $14.2 million in fiscal year 1999 to $17 million in fiscal year 2000.

INITIATE SAFETY OF DAMS

Question. Now the funding request for fiscal year 2000 for the Initiate Safety of Dams Corrective Actions program is $42.7 million, an increase of $10.4 million over the amount provided for the current fiscal year. What accounts for this large increase?

Answer. The fiscal year 2000 request of $42.7 million does not represent a large increase when compared to the original fiscal year 1999 request. Reclamation's request for fiscal year 1999 was $41.25 million, which Congress reduced by $8,787,000. One of the reasons for a comparable request in fiscal year 2000, is that modifications of significant cost and scope are required at Keechelus Dam, Yakima Project, Washington, and Casitas Dam, Ventura River Project, California, which have critical Safety of Dams issues. In addition, modifications activities are planned to reduce risks for identified safety issues at six other dams.

Initiate Safety of Dams Corrective Actions is a portfolio request for the planned Safety of Dams modifications not currently underway. After these Safety of Dams projects are formulated and submitted to Congress through the modification report process required by the Safety of Dams Act, funds and future requests are transferred from ISCA to a specific project line item. As these transfers occur, ISCA is lowered a corresponding amount which often creates the appearance that prior year ISCA funding is lower than current requests.

As a result, a true comparison of Safety of Dams funding levels between fiscal years is only achieved by combining the funding for ISCA with the funding for Safety of Dams modifications currently underway. Modifications are currently underway

at Bradbury, Horse Mesa, Lost Creek, Twin Buttes, Pueblo, and Reservoir A Dams which total $10 million enacted in fiscal year 1999 and $8.8 million requested in fiscal year 2000. When these ongoing projects are combined with ISCA, enacted fiscal year 1999 Reclamation Safety of Dams funding totals $42.46 million. Prior to the Congressional reduction the fiscal year 1999 total was $51.25 million. The total Safety of Dams request for fiscal year 2000 is $51.56 million which consist of the $42.7 million in ISCA and the $8.8 million for the ongoing modifications.

The level of funding necessary to carry out an effective dam safety program to reduce risk to the public varies from year to year, and depends on the specific dams for which deficiencies have been identified as needing modification. The fiscal year 2000 request is substantially below the $87.8 million funding level provided in fiscal year 1996. Large scale modifications were ongoing at Theodore Roosevelt Dam and Bartlett Dam in Arizona and the initiation of the modification work at Twin Buttes Dam in Texas began that year. While most projects are not of this magnitude, this represents the wide variation in funding that may be needed from year to year.

PUEBLO DAM

Question. The Committee has received information from the Family Farm Alliance which indicates that the Bureau of Reclamation's administration and non-construction costs for the Pueblo Dam, Safety of Dams repair project (design, engineering, oversight, construction management, etc.) adds around 50 percent to the cost of this construction project. By comparison, the private sector standards use 15–20 percent as a reasonable factor to administer a construction project of this type. Does a 50 percent factor to administer a Bureau construction project seem reasonable to you?

Answer. We believe that a 50 percent non-contract costs for a dam safety project may be reasonable. We do not believe that it is appropriate for Reclamation's performance on critical public safety issues to be measured on the basis of non-contract to contract costs. Reclamation's primary responsibility is to ensure the safety of the public downstream of the dam, and we believe that the public and the water users are best served by obtaining the lowest total project cost which also provides the necessary public risk reduction and the assurance of continued long term, verifiable performance of the structure.

Reclamation's experience has shown that total project costs can generally be reduced through rigorous project investigations, planning, and design, or "non-contract" costs. The Pueblo Dam Safety of Dams modification project provides an excellent example of this effort. Through extensive design effort, Reclamation reduced the cost of the proposed repairs by $8 million or 36 percent. Since the cost of the contract for construction was appreciably reduced, the ratio of administration and non-construction costs to construction contractor costs has correspondingly increased. During project formulation and design, Reclamation consulted extensively with an Independent Consulting Panel of dam design experts. The Panel originally recommended a totally "active resistance" solution which had an estimated construction cost of $22 million. Through significant study and design efforts, Reclamation formulated a more cost-effective alternative at $14 million that both met design requirements and was acceptable to the Panel. Also, during final design, a hydraulic model study was completed on the design of the modified spillway. This study resulted in changes to the design of the spillway energy dissipation structure and resulted in contract savings estimated at $2 million. The cost of the model study was less than $100,000.

These are two examples of reasonable non-contract expenditures resulting in significant cost savings. Although both efforts resulted in increased non-contract costs and increased the calculated percentage of non-contract costs to contract costs, they also resulted in far greater reductions in the total project costs. Public trust, safety issues, and Federal Guidelines for Dam Safety require significant quality control and designer oversight throughout the duration of the project, which cannot be compromised.

Question. Is it unreasonable to think that the Bureau of Reclamation should be able to conform to the same 15–20 percent standard of the private sector?

Answer. Reclamation is not aware of any study or private sector standard that establishes a 15 to 20 percent range for activities similar to the administration and non-construction activities for the modification work at Pueblo Dam. Neither is Reclamation aware of any private sector entity that performs all of the functions included in the calculated 50 percent factor. Reclamation's 50 percent non-contract figure cited in the Family Farm Alliance information includes all project costs from early investigations through the completion of construction and refilling the modified facility, not simply the construction administration costs. The non-contract costs—which are costs not directly paid to the construction contractor—for Safety

of Dams modifications include all costs for project activities related to Reclamation's roles as owner, operator, and regulatory agency for Pueblo Dam. These activities include planning and project formulation, field investigations and data collection, environmental compliance, securing Executive Branch and Congressional approval and funding for the project, extensive coordination of project activities with the water users associated with the facility, including an independent review of specifications by the water user's consultant, negotiation of appropriate repayment contracts, final design, development of drawings and specifications, procurement, construction management, quality control, construction contract administration, design and construction documentation, and monitoring of the modified facility during first filling as well as independent consultant review of all project activities. We believe that Reclamation's activities and associated costs are appropriate in addressing the critical public safety issues at Pueblo Dam.

Reclamation believes that the average private sector project management fee percentage cited in the Family Farm Alliance information does not include costs for project management activities such as field investigations, planning level studies; securing approval and funding for the project, the development of repayment studies for project repayment, which are required by the Reclamation Safety of Dams Act; quality control during construction; dam safety regulatory agency costs and fees; dam owner contract administration, oversight and review activities; verification of adequate performance during first filling of the modified dam; and the independent consultant panel's review of project activities.

Question. What factors would cause the Bureau's construction management costs to be so much above the private sector?

Answer. Reclamation believes that a comprehensive cost comparison that includes costs for all activities on a similar project would indicate that private sector costs would be comparable to Reclamation's for similar activities. Reclamation attempts to construct the most cost effective and reliable modification considering total project costs. One factor that could make it "appear" that Reclamation's construction management costs are high, based on percentages, compared to the private sector, is our decision to construct the least cost technically acceptable alternative to modify a dam. The decision at Pueblo Dam was to use a "state of the art" construction material referred to as Roller Compacted Concrete in a technically challenging manner. This decision resulted in the lowest "total" project costs. The use of RCC resulted in extremely low construction costs. However, it required extraordinary construction management activities to ensure flaws were not introduced during construction of the modifications. Failure of Pueblo Dam would endanger more than 14,000 lives. Reclamation views it as critical that we ensure the design intent is met by the modifications that are constructed.

Question. Is this common in other Safety of Dams work or other construction projects Reclamation wide?

Answer. Reclamation has estimated the total non-contract costs for the activities outlined above to be approximately $8.8 million or about 34 percent of the total project cost and 52 percent of the contract cost. This is in line with the range of non-contract costs for other Reclamation dam safety modifications as identified through a 1995 audit by the Office of the Inspector General. The audit found that Reclamation's non-contract costs ranged from 41 percent to 60 percent of contract costs for five projects of similar size to Pueblo Dam under construction at the time of the audit.

Question. Does the Bureau of Reclamation have procedures in place to ensure these types of indirect costs are held to a minimum, and that activities which exceed a set standard are highlighted for management attention at the Area, Regional or Headquarters level?

Answer. Reclamation utilizes a Project Management Team to administer and oversee all activities related to the planning, design, and construction of dam safety modifications. This includes development and monitoring of project schedules and costs. All significant issues related to the project are communicated to the Area Manager, Regional Director and the Chief of the Dam Safety Office for decision and appropriate action. Reclamation believes that the Project Management Team provides a cost-effective means of ensuring an appropriate level of project oversight and organizational review when addressing critical public safety issues under the Safety of Dams program.

YEAR 2000 COMPLIANCE

In testimony last year and in the budget justification for fiscal year 2000, you indicate an on-going effort to address the issue of embedded microchips in equipment throughout the Bureau of Reclamation.

Question. What was the outcome of the inventory of embedded microchips, which I believe was to be completed last summer? What types of equipment were found deficient and were any of those mission sensitive? What is your schedule to have all mission critical systems and devices with embedded microchips compliant?

Answer. We have conducted and essentially completed an inventory of all embedded microchip, or EMC, systems and devices, about half of which are considered mission critical. Our most important systems are Supervisory Control and Data Acquisition, or SCADA, controls which control automatic operations of power generation and water delivery. SCADA systems include software, EMC devices, and telecommunications equipment.

Reclamation is confirming completion and accuracy of the inventory of telecommunication components, EMC devices, computer applications, computer hardware and peripherals, commercial off-the-shelf software, and other types of computer applications. This inventory is estimated to be 98 percent complete. Mission critical equipment and systems are being tested according to a standard checklist that involves removing equipment from service, ensuring backup systems are in place, setting dates, observing the equipment as the date rolls over, restoring the present date and time, ensuring proper operation, and returning the equipment to service. Testing has shown that most equipment and systems are Y2K compliant. Over 80 percent of mission critical EMC's are compliant. Non-compliant mission critical equipment is being remediated. Most tests have been performed by Reclamation personnel and a few contractors. Independent verification has been performed by Reclamation personnel who were not involved in original testing, often from other facilities. Contractors have been used in the Pacific Northwest and Great Plains Regions. No Y2K problems were experienced during the changeover from 1998 to 1999, and no problems are expected on other dates. However, Y2K testing and planning efforts will address the following critical dates: April 9, 1999 (99th day of 99); September 9, 1999 (9/9/99); December 31, 1999 to January 1, 2000; and February 28 to February 29, 2000 (Leap Year). Although, we may find additional EMC devices that require testing, our plan is to have all currently identified EMC devices tested and remediated where necessary by June 30, 1999.

Question. Does the Bureau of Reclamation have a plan in place to correct the problem? What is the estimated cost to correct the problem? Is sufficient funding being requested in fiscal year 2000 to take care of the important work?

Answer. Beginning in March 1997, Reclamation undertook an aggressive effort to identify and correct potential Y2K related system deficiencies. Many of these systems directly support Reclamation's ability to generate power and regulate water.

Electrical Power Systems.—Reclamation is working closely with the Power Marketing Administrations (PMA's) and the North American Electric Reliability Council (NERC) to assure that potential failure of certain computer systems on January 1, 2000, does not result in the collapse of the electric grid. Reclamation is currently verifying its inventory of embedded microchips in its power control and operating systems and is taking steps to renovate any noncompliant devices, conduct independent validation and verification testing, certify all embedded chips as Y2K compliant, and prepare contingency plans to counter any unforseen circumstances. In addition, Reclamation is working with the PMA's, NERC, and the regional Western Systems Coordinating Council (WSCC) in the Y2K system-wide exercises scheduled for April and September. These exercises are to verify the integrity and the operational preparedness of the interconnected power system.

Utilities.—Letters have been sent and meetings held with partners, utilities, and electric reliability councils, such as the Western Area Power Administration, the Bonneville Power Administration, and the Western Systems Coordinating Council to address Y2K power system vulnerability.

Coordination with External Partners and Clients.—Reclamation has contacted its water and power partners and customers, i.e., water companies, irrigation districts, water districts, and Native American tribes. Several entities have stated that they have been aggressively working to ensure their equipment and systems function properly for the upcoming critical dates. In many cases, we have received inventory information and in others we were requested to assist in assessing and completing Y2K readiness activities.

Contingency Planning.—Reclamation contingency planning includes equipment-specific plans; facility-level plans; and power operation, water, and dam safety contingency plans. The plans reference continuity of operations, emergency action plans, standing operation procedures, and use of additional staff. The plans also address critical disruption periods, and we are continuing to prepare for logistical support.

Estimated Cost Summary.—The total estimated cost (not including labor) for Y2K related activities for fiscal year 1997 through completion is $10.4 million. We believe that all major work will be completed with fiscal year 1999 funding.

Question. Now the Bureau of Reclamation had identified 63 computer systems which were not Year 2000 compliant. How many of those systems are mission critical and what is the status of bringing them into compliance?

Answer. Reclamation identified 16 mission-critical applications from the original 63 applications inventoried. All 16 are complete and implemented. All but three of the remaining 47 non-mission critical systems are complete, and they are scheduled for completion by March 31, 1999. This includes testing and implementation. Newly acquired/developed systems/applications are being tested prior to implementation.

Question. Are you on schedule to have all computers identified as non-Y2K compliant corrected prior to the year 2000?

Answer. Yes, Reclamation's computer system infrastructure will be Y2K ready. It consists of the following:

Mainframe Systems.—The only BOR mainframe is at the Denver Administrative Service Center (DASC). The mainframe and its associated applications/systems are specific to the administration (payroll, personnel, and financial areas of business) of DOI's bureaus and other DASC clients, and have no impact on power and energy production. The systems have been tested and are Y2K compliant. (It should be noted that the DASC will be transferred to the Department of the Interior's National Business Center in April 1999).

Office Systems.—Normal replacement procedures will ensure that all essential personal computers will be upgraded or replaced. All local area networks have been tested; required upgrades to software and hardware will be completed by March 31, 1999. Reclamation's Hewlett-Packard minicomputers have been successfully tested and certified compliant. The wide area network has been tested and is Y2K compliant.

CVP, AMERICAN RIVER DIVISION

NIMBUS FISH HATCHERY INTERPRETIVE FACILITY

Question. The budget request for Facility Operations includes funds to begin efforts in support of the Nimbus Fish Hatchery Interpretative Facility. Why does the Bureau consider this to be priority work which must be undertaken in fiscal year 2000?

Answer. The Bureau of Reclamation is responsible for salmon and steelhead mitigation on the American River. The fish hatchery is located on the American River directly downstream from Lake Natoma and Nimbus Dam, approximately 15 miles from Sacramento. As part of the mitigation at the fish hatchery, which is operated by the California Department of Fish and Game, Reclamation is supporting a visitor facility to educate the public on the life cycle of the fish and the uses and benefits of the Central Valley Project. It is important for the public to understand the link between CVP project operations and measures to improve the anadromous fish health. Currently the facility is being staffed with volunteers, however, the public is coming to the hatchery in greater numbers every year and the workload has become too great to be adequately handled by volunteers.

Question. How much of the $10.1 million requested for Facility Operations is for this work, and how, specifically, will the funds be used?

Answer. Approximately $65,000 of the $10.1 million requested is for this work. The funds will be used by the California Department of Fish and Game to hire dedicated staff for the visitor facility. This project will consist of displays and interpretative specialists telling the story of the fish and the Central Valley Project. Information given out will consist of educational material on the salmon and steelhead, exhibits of their life cycle, enhanced viewing facilities, and guided tours of the hatchery.

CENTRAL ARIZONA PROJECT

Question. The budget request includes $2.8 million to construct remaining recreational enhancement activities at Lake Pleasant Regional Park in Arizona. Have the Bureau of Reclamation and all interested parties agreed to the scope of the recreational development to be undertaken and to a cost sharing agreement as appropriate?

Answer. The Bureau of Reclamation and Maricopa County agreed to the scope of recreational development under the Lake Pleasant Regional Park Master Plan, approved by Reclamation on March 10, 1995. Cost sharing with Maricopa County was committed to under the Recreational Management Agreement dated June 29, 1990.

The Recreational Management Agreement delineates replacement and enhancement obligations of Reclamation, as well as long-term management roles for Reclamation and Maricopa County. The major replacement items will be completed in fiscal year 1999. The agreement contains an $8 million Federal enhancement ceiling which is subject to indexing, of which $2.8 million remains. The enhancement obligation includes a 50 percent cost share obligation with Maricopa County. The remaining recreational development as identified in the Lake Pleasant Regional Park Master Plan includes group and family campground areas, picnic sites, boat launching facilities, improved public access, environmental education support, and public safety.

YUMA DESALTING PLANT

Question. The budget request includes $3 million to begin a long-term program to replace deteriorated membrane elements or look at a water banking program with the Basin states to offset the need to recover drainage water. Why is the Bureau exploring such options? Was a detailed analysis of a broad range of options undertaken? Why were these two approaches selected for possible funding in fiscal year 2000? What is the total estimated cost of the two budgeted options and over what period of time?

Answer. Under Title I of the 1974 Colorado River Basin Salinity Control Act, during what is called the "interim period," which is defined as that period of time when all of California's water contracts for Colorado River water can be met, savings from lining of the Coachella Canal of 132,000 acre-feet per year are used to offset pumped drainage return flows from Wellton-Mohawk that are diverted around Morelos Dam via the Bypass Drain and thus are not delivered to Mexico as part of their annual Colorado River water entitlement. Also, any time flood control releases are made from Hoover Dam, any accrued obligation to replace drainage water from Wellton-Mohawk that has been bypassed around Morelos Dam is automatically terminated.

Once the interim period ends, which will occur when sufficient Colorado River system water is not available to meet all of California's needs for Colorado River water, California begins to get credit for the savings that resulted from lining the Coachella Canal and the United States must provide an alternative source for replacing the drainage return flows from Wellton-Mohawk. The United States has two ways in which it could meet this obligation: one is to operate the Yuma Desalting Plant to improve the quality of drainage water from Wellton-Mohawk so it can be delivered to Mexico as part of its annual Colorado River water entitlement; and another is to find a replacement source to offset the drainage water being bypassed around Morelos Dam.

Reclamation has been actively looking at alternatives to operating the Yuma Desalting Plant for a number of years. We have considered a range of alternatives and after considering such factors as costs, ease of implementation and institutional constraints, we have concluded that water banking is an approach warranting serious consideration at this time. Under this approach, we would divert surplus Colorado River water, since reservoirs are completely full and likely to spill, store the water in underground aquifers in Arizona or California, and recover the water in future years when it is needed to meet our obligation under the Salinity Control Act. This would be done in close consultation with the Colorado River Basin States and Tribes.

As a minimum, Reclamation would like to bank enough water to offset drainage return flows from Wellton-Mohawk for a period of at least 2 years, or to offset the reject stream from the Yuma Desalting Plant for several years should the plant be operated.

We are reasonably certain that a water banking program can be implemented and are planning to utilize all of the $3 million requested in fiscal year 2000 for this program. However, if surplus water is not available, or we cannot successfully negotiate a banking agreement, we could alternatively use this funding for membrane replacement.

We currently have enough membranes to operate the Yuma Desalting Plant at full capacity for 1 year. After each year of operation we would have to replace approximately 20 percent of the membranes to maintain full plant capacity. As long as we have at least 2 years advance notice that the Yuma Desalting Plant will have to be operated, we can award a contract to allow manufacture for replacement of 20 percent of the membranes each year to maintain the plant's ability to operate at full capacity.

The total cost of replacement membranes for the entire plant is estimated to be $15 million, which if spread out over a 5-year period, because 20 percent of the membranes need replacement each year, the annual cost of membrane replacement would amount to $3 million per year to keep the plant operating at full capacity.

Question. What does it cost annually to keep the Yuma Desalting Plant in a standby status?

Answer. The total Title 1 budget submitted for fiscal year 2000 is $13,092,000. Within this budget, the annual cost to keep the Yuma Desalting Plant in ready-reserve standby status (meaning the plant could be put into full operation with 1 year's notice) is estimated to be approximately $1.5 million. The additional Title 1 funding is required for other activities such as operation and maintenance of the 242 wellfield; operation and maintenance of the Bypass Drain; water banking; research; and other Title 1 activities.

Question. Is shut down of the facility an option? If not, why?

Answer. Reclamation does not believe that shut down of the facility is a currently viable option. First, a long-term replacement source for the Wellton-Mohawk drainage water has not been found to date, so the facility may have to be operated to meet our obligation to replace Wellton-Mohawk drainage water. The facility may also be needed for salinity control for water delivered to Mexico at the Northerly International Boundary at some time in the future. The facility is being considered as part of several options for a long-term solution to reducing the salinity of flows delivered to Mexico at the Southerly International Boundary with Mexico. Studies to improve the salinity of flows at the southern boundary are ongoing in response to a complaint from the Mexican government about the quality of water being delivered. Also, Reclamation is actively searching for potential non-Federal paying customers interested in product water from the facility.

LONG BEACH WATER RECLAMATION AND REUSE

Question. The Long Beach Area Water Reclamation Project is a proposed Title XVI new start for fiscal year 2000. It consists of two elements: the Alamitos Barrier Reclaimed Water project and the City of Long Beach Recycled Water System Expansion project. The first element is a tertiary treatment and reinjection system, and the second is expansion of an existing distribution system. Are these two projects separable?

Answer. The expansion of the City of Long Beach Water Department Recycled Water Program will increase the use of reclaimed water for greenbelt irrigation and industrial purposes from the current 5,200 acre-feet per year to 12,000 acre-feet per year. The Alamitos Barrier Project will further increase the use of reclaimed water to 22,000 acre-feet per year.

As we understand it, these project components are closely related and probably cannot be separated. In order for reclaimed water to be used for the sea water intrusion barrier, the City of Long Beach must first complete the expansion of the distribution system. These new pipelines must be sized to meet the needs of both the City's irrigation system and the sea water intrusion barrier injection system. This will require close and continuous cooperation of both operating entities. In addition, since both components are treated as a single project, the Federal share of total funding cannot exceed $20.0 million.

Question. What is the importance in the Federal government participating in construction of a local distribution system?

Answer. The Long Beach area is heavily dependent on imported water, either from the Colorado River or the San Francisco Bay/Delta in northern California. Both water sources have significant Federal and Reclamation investment in numerous water supply facilities. For every acre-foot of water reclaimed by the Long Beach project, a like amount will not have to be imported, thus helping California live within its 4.4 million acre-foot allocation of Colorado River water and also reducing the water demand on the environmentally sensitive San Francisco-Sacramento-San Joaquin Bay/Delta.

Congress recognized the importance in the Federal government participation in the construction of a local distribution system in Long Beach when it passed the Reclamation Recycling and Water Conservation Act of 1996 (Public Law 104–266), which amended Title XVI of Public Law 102–575, the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992. This legislation authorized the Secretary of the Interior to provide up to 25 percent of the total cost of the Long Beach Area Water Reclamation and Reuse Project. This project has numerous environmental enhancement, water supply, and economic benefits that are of National importance. In providing the authority to make financial assistance available to the local project sponsors, Congress recognized that, without such Federal participation, this Title XVI project would likely not be implemented due to its relatively high cost and the current availability of cheaper imported water supplies.

Each project component will be reclaiming and reusing wastewater that is currently being discharged to the San Gabriel River just a few miles inland from the

Pacific Ocean. Reductions in wastewater discharges to the ocean have a positive impact on the environment. In addition, in keeping with the intent of Title XVI as amended, these project components will:

(1)reduce, postpone, or eliminate development of new or expanded water supplies,

(2) reduce or eliminate the use of existing diversions from natural watercourses or withdrawals from aquifers, and

(3) reduce the demand on existing Federal water supply facilities.

Because of the dependence on imported water, the project area is subject to water shortages due to the occurrence of drought, both locally and in far distant river basins. In addition, water shortages could occur following a major earthquake which could severely damage the two main aqueducts that convey water to the project area. These project components will help to assure a local water supply that will be reliable during droughts and earthquakes, thus helping to sustain a growing economic base that is of local, regional and National importance.

YUMA AREA PROJECTS

Question. The budget justification indicated that $22.1 million, an increase of $4.2 million over the amount appropriated for the current fiscal year will be allocated for work. What has necessitated the allocation of these additional funds, and where will this funding come from?

Answer. As a result of the 1993 Gila River flood, 10,000,000 cubic yards of sediment was deposited in a 15-mile reach of the lower Colorado River, near Yuma, Arizona. The sediment created both domestic and international problems; the domestic problem being the high probability of flooding in and around the city of Yuma, and the international problem being extreme sediment transportation into Mexico's canal system. The $22.1 million in the fiscal year 1999 Yuma Area Projects, Facility Maintenance activity includes $4.2 million in carryover funding that was for sediment removal work originally scheduled in the fiscal year 1998 Yuma Area Projects Facility Maintenance activity, but was delayed because sites to deposit the dredged sediment could not be found.

Question. What accounts for the sizable reduction in program level from $26.9 million in fiscal year 1999 to a level of $15.6 million for fiscal year 2000?

Answer. The $26.9 million total fiscal year 1999 Yuma Area Projects program includes $4.6 million in fiscal year 1998 carryover funds, and an additional $7.1 million in the Facility Maintenance activity to finish the sediment removal in the riverbed. The $15.6 million total fiscal year 2000 request reflects the return to a normal ongoing Yuma Area Projects program, resulting in the sizable reduction in program level.

Question. What is the backlog of essential maintenance and rehabilitation for the Yuma Area Projects?

Answer. None of the Yuma Area Projects list of maintenance and rehabilitation work items is so essential that adverse effects to the efficient and effective operation of critical facilities and structures would occur in fiscal year 2000. The Yuma Area Projects list is prioritized so that under normal river conditions, adverse effects will not occur over the short term. The Yuma Area Projects list includes the replacement of heavy equipment, and repair of the Main Outlet Drain and the Main Outlet Drain Extension channels that are connected to, and convey Wellton-Mohawk drainage system return flows to the Gulf of California. Both the Main Outlet Drain and Main Outlet Drain Extension channels were damaged as a result of the 1993 Gila River flood.

EMERGENCY PLANNING AND DISASTER RESPONSE PROGRAM

Question. The budget for fiscal year 2000 proposed a new item called the Emergency Planning and Disaster Response program and includes a funding request of $360,000. Why has a separate program been created for these activities?

Answer. While it is a new budget line item, it is not a new program. The title "Emergency Planning and Disaster Response Program" covers three distinct ongoing program activities for Disaster Response and for Continuity of Operations. These ongoing activities were previously funded under the Dam Safety Program. Because of increased emphasis on emergency preparedness, a separate Facilities Operation line item has been identified in the request for fiscal year 2000.

Question. How have these activities been funded in the past?

Answer. To date, all three of these activities have been funded through the Dam Safety Program.

Question. What does the Bureau expect the average annual funding requirement to be in future years?

Answer. Since the funds requested for all three of these activities are for program management, the expectation is that the funding level should remain about the same.

Question. Please provide for the record the legislative language which authorized appropriations for this program.

Answer. Public Law 93–288, "Robert T. Stafford Disaster Relief and Emergency Assistance Act", as amended, Section 101.(b) states that:

> "It is the intent of Congress, by this Act, to provide an orderly and continuing means of assistance by the Federal government to State and local governments in carrying out their responsibilities to alleviate the suffering and damage which result from such [see Section 101.(a)] disasters by—(1) revising and broadening the scope of existing disaster relief programs; (3) achieving greater coordination and responsiveness of disaster preparedness and relief programs; (6) providing Federal assistance programs for both public and private losses sustained in disasters."

Section 201.(a) states that:

> "The President is authorized to establish a program of disaster preparedness that utilizes services of all appropriate agencies and includes—(1) preparation of disaster preparedness plans for mitigation, warning, emergency operations, rehabilitation, and recovery;"

Section 303 states that:

> "The President shall form emergency support teams of Federal personnel to be deployed in an area affected by a major disaster or emergency. Such emergency support teams shall assist the Federal coordinating officer in carrying out his responsibilities pursuant to this Act. Upon request of the President, the head of any Federal agency is directed to detail to temporary duty with the emergency support teams on either a reimbursable or nonreimbursable basis, as is determined necessary by the President, such personnel within the administrative jurisdiction of the head of the Federal agency as the President may need or believe to be useful for carrying out the functions of the emergency support teams, each such detail to be without loss of seniority, pay, or other employee status".

See also Section 402, Public Law 84–99, Flood Control and Coastal Emergencies, which directs the Army Corps of Engineers in how it will conduct its response to flood emergencies.

For Continuity of Operations, the authorization is found in the National Security Act of 1947, Public Law 93–288, "Robert T. Stafford Disaster Relief and Emergency Assistance Act", as amended. Title VI of the Law is titled "Emergency Preparedness" and its purpose is,

> "to provide a system of emergency preparedness for the protection of life and property in the United States from hazards and to vest responsibility for emergency preparedness jointly in the Federal government and the States and their political subdivisions. The Federal government shall provide necessary direction, coordination, and guidance, and shall provide necessary assistance, as authorized in this title so that a comprehensive emergency preparedness system exists for all hazards."

In October of last year President Clinton signed a major policy directive (PDD 67) requiring all Federal departments and agencies to have "viable continuity of operations capability" by October 21, 1999. Presidential Decision Directive 67 states that:

> "in the face of current and future dangers, it remains the policy of the United States to have in place a comprehensive and effective program to ensure survival of our constitutional form of government and continuity of essential Federal functions under all circumstances."

It also states that,

> "As a baseline of preparedness and a foundation for the Continuity of Government, all Federal departments and agencies, including the Executive Office of the President, shall have in place viable Continuity of Operations capability."

Question. What is the rationale for including the request under Bureauwide programs and not under Policy and Administration?

Answer. All three activities that make up the Emergency Planning and Disaster Response Program are Bureau- wide in scope and impact. They are not particularly policy-oriented or administrative in nature. They are directly associated with continued operation of our facilities. The activities are critical for Reclamation operations during emergencies and incidents. As a result, the most appropriate request is considered to be a separate line item identified to the Congress under the Facilities Operation program activities.

TITLE XVI WATER RECLAMATION AND REUSE PROGRAM

Question. The budget justification for the $2.2 million requested for the Title XVI Water Reclamation and Reuse Program includes language which indicates that the requested funds "may also fund initiation of construction for specific water reclamation and reuse projects that have been determined to be both feasible and of high priority of Federal investment." Is the intent of this language to allow the Bureau to begin construction of a project when specific funding for initiation has not been approved by the Congress?

Answer. The statement "* * * may also fund initiation of construction for specific water reclamation and reuse projects that have been determined to be both feasible and of high priority of (for) Federal investment" is a general statement about the overall program that would only apply if funds were specifically requested for construction and included in the section of the budget justification for the Title XVI Water Reclamation and Reuse Program entitled "Work Proposed for fiscal year 2000". No funds under this line item will be used for construction activities in fiscal year 2000. Funding requests for construction of water recycling projects in fiscal year 2000 are described on a project-by-project basis elsewhere in the budget justification document.

Question. What is the rationale and authorization for such a provision?

Answer. There is no intent to expend funds for construction activities on projects for which Congress has not provided funding. The President's request for $2.214 million is intended to be used to conduct feasibility studies on authorized projects and research on treatment technologies applicable to municipal, industrial and domestic wastewater and impaired ground and surface water as specified in the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992.

QUESTIONS SUBMITTED BY SENATOR BURNS

MONTANA SAFETY OF DAMS PROJECTS

Question. Based upon your testimony to the Senate Committee on Energy and Natural Resources on March 3, you stated that ensuring dam safety and reliability of Reclamation dams continues to be a top priority. In your testimony you further explain that half of Reclamation dams were built during the first half of this century with outdated practices. I am concerned about this situation given the number of Reclamation dams in Montana and their deteriorating conditions. What are your plans to address this growing problem in Montana?

Answer. The age of a dam does not necessarily mean the dam is unsafe or deteriorating. Continued safe performance is and remains a priority of the agency regardless of the age of the dam. Reclamation relies on a strong dam safety program to provide ongoing monitoring, inspections, and evaluations to readily identify issues and risks. Inspections range from at-least-monthly examinations by operating personnel, annual inspections performed by Area Office personnel, and periodic inspections performed by Regional Office engineering staff; to comprehensive examinations of all features of the dam and engineering evaluation of the design and performance of the dam in comparison to state-of-the-art criteria at least once every six years. When issues or conditions are identified that represent unreasonable public safety risks, the Safety of Dams program strives to implement cost-effective corrective actions in an expeditious manner.

Question. How much funding is needed in fiscal year 2000 to restore the deteriorating dams in Montana?

Answer. Reclamation's inspection program provides for timely maintenance and repair of dams to ensure that they are safe. The fiscal year 2000 Dam Safety Program request includes funding for ongoing activities for 15 Reclamation facilities in the State of Montana. However, there is only dam in Montana proposed for repair in fiscal year 2000. That is under the Initiate Safety of Dams Corrective Actions Program, where $1,500,000 is requested to start planned modifications to Willow Creek Dam, Sun River Project. A modification report will be transmitted to Con-

gress for this project this year. Modifications will address issues related to internal erosion due to seepage and structural stability during earthquakes.

In addition to the work being conducted in fiscal year 2000, let me note that modifications have been completed on the following dams in Montana: Como Dam, Bitterroot Project; Pishkun Dikes, Sun River Project; Clark Canyon Dam, East Bench Unit, Pick-Sloan Missouri Basin Program; Lake Sherburne Dam, Milk River Project; Gibson Dam, Sun River Project; Tiber Dam, Lower Marias Unit, Pick-Sloan Missouri Basin Program; Helena Valley Dam, Helena Valley Unit, Pick-Sloan Missouri Basin Program; and Phase I modifications to Willow Creek Dam to repair a large void discovered in the dam in 1996. Additional issues are currently being evaluated at Gibson Dam and Como Dam.

LOWER YELLOWSTONE TITLE TRANSFER—INTAKE DIVERSIONARY DAM

Question. As I mentioned in this hearing, I have some concerns about the Bureau's progress to transfer completed water projects to local water districts, specifically the transfer of the Intake Diversionary Dam. I understand this transfer is not complete even though it has been completed for a number of years. Why is it taking so long to accomplish this transfer?

Answer. On February 2, 1999, Commissioner Eluid Martinez of the Bureau of Reclamation testified to the House of Representatives Committee on Resources, Subcommittee on Water and Power. He stated it is important to understand the legal requirements involved with title transfer. Title does not automatically transfer when the district repays its construction obligation. Operation and maintenance responsibilities can be transferred to water users of Reclamation projects under Reclamation law, but this does not give them title to the facilities. Section 6 of the Reclamation Act 1902 provides that title to the facilities "shall remain in the Government until otherwise provided by Congress," under 32 Stat. 389; 43 U.S.C. section 491. Also, Commissioner Martinez testified that the process needs to be open and inclusive of all stakeholders. There must also be compliance with the National Environmental Policy Act. The processes that are required under this Act ensure that the public has ample opportunity to participate in the process and have their concerns identified and addressed. Reclamation has been working with the Lower Yellowstone Board of Control to address specific items in accordance with Reclamation's Title Transfer Framework. Work to date includes a cultural resource survey of the entire Lower Yellowstone Project, a realty report for all Reclamation lands, and several seasons of fisheries data collection. Reclamation, in conjunction with the Montana Department of Fish Wildlife and Parks, the U.S. Fish and Wildlife Service and the U.S. Geological Survey, has been studying fish passage and entrainment issues associated with the Intake Diversion Dam and Lower Yellowstone Main Canal. Reclamation has provided funding for baseline data collection. The fourth and final year of fisheries data collection will be completed by October 1999. Although this work has taken several years to complete, the information is needed to fulfill policies in Reclamation's Title Transfer Framework and NEPA requirements, and will be used to support future progress.

Question. What is left to be done to complete the transfer?

Answer. Under the Reclamation Title Transfer Framework document, an agreement between Lower Yellowstone Board of Control and Reclamation needs to be developed that outlines what is required to complete transfer. Examples of the items that would be included under the agreement are the costs associated with completion of the realty work items, NEPA, and National Historic Preservation Act. The agreement would include discussion of schedule and assignment of roles and responsibilities to accomplish the work items. After execution of the agreement, the Title Transfer Framework document and NEPA require public scoping meetings to be held in the project area to gain input from local stake holders and provide feedback on issues.

Question. What are your plans to complete this transfer?

Answer. As previously stated, Reclamation is working with the LYBOC to develop an agreement outlining specific tasks, a schedule, cost estimates, and assignment of responsibilities. Reclamation and the LYBOC have developed a good working relationship and both parties are working toward completing the tasks necessary under the Title Transfer Framework.

Question. What, if any, Congressional actions are needed to complete this transfer?

Answer. The enacting legislation for this project did not include a provision for title transfer upon payout of the capital expenditures, therefore an act of Congress would be required to transfer title. We would be happy to assist in congressional efforts, if requested.

COST OVERRUNS

Question. I understand the Bureau is experiencing cost overruns and that these added costs are adversely impacting farmers and rangers[1] since you have shifted these costs onto them. Why is this happening and what measures are you doing to minimize cost overruns in these projects?

Answer. Reclamation projects in Montana were constructed during the period of about 1905 to 1970. In some cases, the costs to operate and maintain the facilities have increased due to extraordinary maintenance work (maintenance work which is of relatively high cost and of a specific duration and does not reoccur from year to year) that we have had to perform in recent years to insure integrity of the facilities. The extraordinary maintenance work is required to ensure that the facilities continue to provide authorized project benefits. In some cases, the estimates we provided to the irrigation districts (who are responsible for paying a percentage of the multipurpose operation and maintenance costs) varied from the actual cost to perform the work. Previously, as additional work items were identified, we did not always update the estimates at appropriate intervals and provide this information to the districts in sufficient time to allow them to budget for their share of the costs. The additional work performed was necessary to provide an adequate level of maintenance. In the past year, we have taken steps to improve the accuracy of these estimates and have a process in place to exchange information with the Irrigation Districts on an ongoing basis and to inform them of any anticipated increases in costs as soon as they are identified. Along this line, Reclamation is doing its best to provide more realistic cost estimates, find cheaper ways to do the work, and anticipate all of the work that would be reimbursed by the users.

In conformance with the Commissioner's memorandum dated September 18, 1998, we are committed to involving the irrigation districts in program formulation. We are and will continue to provide cost estimates and priorities for those parts of projects where our customers share in the responsibility or pay a portion of the costs. For Montana, these include the irrigation districts on the Milk River and irrigation districts benefiting from Pick-Sloan Canyon Ferry Unit. We meet annually with irrigation districts on the Milk River project to receive input on budget formulation. We have begun annual meetings with irrigation districts on the Pick-Sloan Canyon Ferry Unit to receive their input regarding budget formulation. In addition, we have committed to providing semiannual reports on the status of our costs.

Question. Also, what alternatives have you considered to minimize adverse financial impacts on local irrigators?

Answer. We have reviewed the costs associated with operation and maintenance program activities that we perform on an ongoing basis, which we refer to as our base O&M program. We are working toward cost containment for the base O&M program and attempting to limit increases for these activities to what would normally be expected to adjust for inflation. We have developed long-range O&M program plans that forecast major cost items for extraordinary maintenance. This information is provided to irrigation districts on an annual basis to provide as much lead time as possible for them to make financial adjustments and create reserve funds to pay their share of the costs before the work is performed and the costs incurred. We have also provided the irrigation districts with information on how to obtain State grants as a source of funding for their share of the reimbursable costs associated with the operation and maintenance of Reclamation projects.

MEMORANDUM FROM THE UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, WASHINGTON, D.C.

In Reply Refer To: EC–100, SEP 24, 1998
To: Regional Director, PN, MP, LO, UC, GP, Attention: PN–1000, MP–100, LC–1000, UC–100, GP–1000
Director, Program Analysis Attention: D–5000
All Area Managers and Program Managers
From: Eluid L. Martinez, Commissioner
Subject: Directive for Customer Involvement in Operations and Maintenance (O&M) Program Formulation

The House Report 105–190 on the Energy and Water Development Appropriations Bill, 1998 states, in part

[1] Question was received with reference to farmers and rangers. We assume the reference should be farmers and ranchers.

"The Committee strongly encourages the Bureau of Reclamation to create new opportunities for water and power contractors to participate in the review and development of O&M budget priorities for their respective Bureau of Reclamation projects."

The Statement of the Managers accompanying the Fiscal Year 1998 Conference Report for the Energy and Water Development Appropriations Bill reiterated the support of the Conference Committee for this provision.

Customer involvement assists in our effort to deliver quality services in the most efficient and economic manner. We have been working closely with many of our customers and customer organizations (i.e. water and power contractors) for several years in the formulation of the O&M program. We need to continue with activities that are responsive and helpful.

In response to the Committees' encouragement and as an expansion of current efforts, I am establishing this customer involvement directive for use by Regional Directors and their managers with program responsibilities. This directive is to be used in working with customers who are interested in the development and implementation of the O&M program.

Managers will:

1. Contact customers to determine their level of interest and desired participation in program formulation.

2. Provide interested customers with O&M programs, cost estimates and priorities for those parts of projects in which the customers share in responsibility or pay a portion of the cost. The focus will be on the budget being formulated in the Region (Budget Year +2). However, additional information may also be provided to serve as a bridge to Budget Year +2. The total package of information may cover four years including the prior year actual expenditures, current year program, the President's budget for the next fiscal year (Budget Year), and the Budget Year +2 projections. This information should be provided to the customers during the August to September time frame. Using fiscal year 1998 as an example, the information would cover fiscal year 1997 actual expenditures, fiscal year 1998 program, fiscal year 1999 President's budget, and program projections for the fiscal year 2001 budget year. The fiscal year 2000 budget would be in embargo status, therefore unavailable (see table below as further reference). As part of the process, managers should be prepared to explain shifts from projected expenditures to actual expenditures for the prior year.

REFERENCE FOR AUGUST/SEPTEMBER 1998 TIME FRAME

Fiscal year	Time period	Budget nomenclature and status reference
1997	10–1–96/9–30–97	Prior Year—Completed (Actuals).
1998	10–1–97/9–3–98	Current Year—Program being carried out.
1999	10–1–98/9–30–99	Budget Year—Pending in Congress.
2000	10–1–99/9–30–00	Budget Year +1—Under review within Department and OMB (embargoed).
2001	10–1–00/9–30–01	Budget Year +2—Under development within Region.

3. Provide interested customers the opportunity within a reasonable time frame (a minimum of 15 working days) to review and comment on work plans and cost estimates. Managers will provide responses either written or oral, as appropriate, to customers that address their comments.

4. Notify interested customers of any changes in the work plans or cost estimates after the Regional budget deliberations (For example: the Regional deliberations on the fiscal year 2001 budget normally take place between October 1998 and January 1999) and before the Budget Review Committee (BRC) Regional meetings (2001 BRC Regional meetings normally occur in March 1999).

5. Honor executive branch guidelines on non-disclosure of budget materials after the Regional budget deliberations and until the Presidents Budget goes to the Congress (for the fiscal year 2001 budget this will be in February of 2000).

6. Review budget information with the customers, as requested, after the Congress receives the President's budget so that there is an understanding of Reclamation's proposed budget.

The Director of Program Analysis is directed to incorporate this memorandum into the Reclamation Manual. In order to determine whether this directive is overly burdensome for Reclamation managers and also to determine whether it is meeting

our customer's needs it will be reviewed after a full cycle of implementation, presumably in the Spring of 2002. In the interim there may be a need to adapt schedules contained herein to meet local circumstances. Although requiring an additional commitment of time for some managers, I believe this will provide our customers with a meaningful opportunity to comment on O&M activities that affect them.

YELLOWTAIL DAM & BIGHORN LAKE OPERATIONS

As I mentioned at the hearing, the snowpack around Yellowtail Dam area is high this winter. People downstream of Yellowtail experienced massive flooding two years ago. They believe it was created by the Bureau's release of water from Yellowtail Dam.

Question. What are the Bureau's plans to avoid flooding this year due to releases from Yellowtail Dam?

Answer. As is the case with other Reclamation reservoirs with an authorized flood control purpose, the Army Corps of Engineers has the ultimate responsibility for all flood control operations of Bighorn Lake Yellowtail Dam. The amount of storage provided within the lake and the flood control afforded are determined by the Corps of Engineers' flood operating criteria for that particular reservoir. All flood control operations are closely and jointly coordinated between the Corps of Engineers and Reclamation.

Yellowtail Dam and Bighorn Lake, in conjunction with Boysen and Buffalo Bill Reservoirs, played a major role in providing flood control along the Bighorn, Yellowstone and Missouri Rivers during the 1997 runoff. Storage within and releases from these reservoirs were coordinated closely with instructions issued by the Corps of Engineers' in accordance with operating criteria for Bighorn Lake. Without the control provided by these reservoirs, the flooding along the Yellowstone River downstream of the mouth of the Bighorn River would have been much more severe. The Bighorn River Basin comprises about one half of the Yellowstone River drainage basin above the mouth of the Bighorn River. River flow of the Yellowstone River above the mouth of the Bighorn River is unregulated. Therefore, Reclamation is unable to provide flood protection against this unregulated flow. During 1997, flows in the Bighorn River were maintained within safe river channel capacity at all times.

The Bureau of Reclamation is closely monitoring snowpack and is continually revising and updating monthly operating plans for Bighorn Lake. Snowpack in the Bighorn Basin is currently 113 percent of normal on March 15, nearly 20 percent lower than experienced in record water year 1997. Currently storage in Bighorn Lake has been evacuated about 28.5 feet below the top of the joint-use pool. Plans are to continue evacuating storage to about 32.0 feet below the top of the joint-use pool by the end of March. As projected in the March plan and based on normal spring precipitation, this will provide adequate storage to store the snowmelt runoff without making large releases that may cause downstream flooding. Reclamation will continue to work with the Corps of Engineers, Federal Emergency Management Agency, and State and local constituents to provide information on operations plans for Yellowtail Dam.

Question. What does the Bureau plan to do this spring to inform folks downstream from the mouth of the Bighorn River about water releases from Yellowtail Dam?

Answer. Reclamation is responsible for monitoring the conditions of Yellowtail Dam and Bighorn Reservoir, as well as monitoring weather conditions upstream of the dam, that could result in the need to make large releases from the Dam. Reclamation is also responsible for providing notification of all significant incidents occurring at Yellowtail Dam to various Federal, State, and local authorities downstream of the Dam. This includes all affected downstream County Disaster & Emergency Services and law enforcement dispatch centers, Montana DES, and the National Weather Service, which is Federally mandated to issue flood watches and warnings. Additionally, Reclamation is responsible for providing notification to the National Park Service, Crow Tribe, and Bureau of Indian Affairs, as each of these agencies are also integrally involved with the operations of the Dam. Local authorities are responsible for notifying the public at risk, advising the public on safe evacuation routes, and where to go for safe shelter. It is not within Reclamation's authority or responsibility to directly carry out warning and evacuation of the impacted public from large operational releases.

The Bureau of Reclamation continues to closely monitor snowpack and continually revise and update monthly operating plans for Bighorn Lake. These operating plans include projected operations of Yellowtail Dam and Bighorn Lake and are distributed to key members of the Yellowstone River Task Force. The Task Force is en-

couraged to contact Reclamation about any concerns or questions they may have regarding these operating plans.

Daily information about the water levels in Bighorn Lake and streamflows in the Yellowstone and Bighorn River Basins is also available on the Bureau of Reclamation's Great Plains WEB site at address /www.gp.usbr.gov/.

Question. What sort of early warning system have been or will be set up?

Answer. All Reclamation dams are required to conform to agency policy established for emergency management. This policy and its implementation provides for the safety of the public during potential emergency incidents, including high releases, at these dams. Each dam has an Emergency Action Plan that describes what actions, including notification of local disaster and emergency management personnel, will take place during periods of emergency. These plans are exercised on a regular basis. Local, state, and other Federal organizations who might be involved in potential emergencies are encouraged to participate in the exercises and drills.

Reclamation's Emergency Management Policy requires that Emergency Action Plans be developed and implemented at all significant and high hazard dams, including Yellowtail Dam. The EAP must contain initiating conditions for hydrologic (flooding) as well as nonhydrologic events, which trigger specific Reclamation response procedures and notifications to effected downstream agencies. Initiating conditions are typically established at levels that provide as much advance notification of significant incidents to local officials as practicable. EAPs must also contain descriptions of available communication capabilities, descriptions of potentially affected areas in the flood plain, flood inundation maps where appropriate, and tables showing floodwave travel times and other pertinent information that may be needed by local emergency management officials.

On March 11, Reclamation met with County and State Disaster and Emergency Service officials, Bureau of Indian Affairs, Crow Tribe, National Weather Service and the National Park Service to plan an exercise to test the Emergency Action Plans for Yellowtail Dam and Yellowtail Afterbay Dam. The exercise is scheduled to be conducted on May 20, 1999. The DES staff is responsible for immediately contacting residents along the Bighorn and Yellowstone Rivers of any potential dangers that may result from downstream flooding. Yellowtail Dam is monitored 24 hours a day by the Casper Control Center to ensure downstream officials get advance notification, should a problem occur.

Reclamation will continue to monitor daily snowpack and snowmelt runoff in the Bighorn River Basin and maintain close contact with the National Weather Service. The NWS will provide Reclamation with daily river forecasts based upon current hydrologic and forecasted climatic conditions. In addition to monitoring the mountain snowpack conditions, Reclamation will continue to utilize existing satellite telemetered gaging stations to monitor river conditions upstream and downstream of Yellowtail Dam and Bighorn Lake. As hydrologic and climatic conditions change, sudden changes may be required in reservoir and river operations. Reclamation will issue press releases to inform citizens living along the Yellowstone River of these operational changes.

Question. Why hasn't the Bureau considered a stream flow monitoring device to ensure the safety of the downstream citizens and private property?

Answer. On March 25, 1998, personnel from the Bureau of Reclamation attended a meeting with several citizens who live along the Yellowstone River near Hysham, Montana. Many people who attended the meeting believed installing another stream gaging station equipped with satellite telemetry along the Yellowstone River near Custer, Montana would improve the operations and management of Yellowtail Dam and Bighorn Lake.

Reclamation currently utilizes data collected at 8 existing satellite telemetered river gaging stations located along the Yellowstone River from Corwin Springs, Montana to Sidney, Montana. Reclamation currently believes the data collected at these sites are adequate for monitoring river flows under most conditions and installing an additional station near Custer, upstream of the mouth of the Bighorn River, is not required to support the operations at Yellowtail Dam and Bighorn Lake. However, after the record water year of 1997, Reclamation provided funds for installing satellite telemetry at the stream gaging station located near Forsyth. Reclamation investigated the costs to install another satellite telemetered gaging station near Custer. It was determined costs to renovate and reactivate this site would cost $24,000. In addition to this cost, annual maintenance costs were estimated to vary from $6,000 for a seasonal station or $9,850 for an annual station.

Reclamation has informed the Task Force that we are willing to provide funds in the amount of $7,500 for the installation of the satellite telemetry equipment. However no other resources have been identified to fund the remaining costs.

LAND MANAGEMENT AND FISH & WILDLIFE ACTIVITIES

Question. I am getting concerned about the Bureau's growing activities into land management and fish and wildlife activities such as issuing grazing permits and conducting fish restoration projects. Have you considered shifting these responsibilities to more established Federal agencies who are more experienced and staffed to work on these activities such as the Bureau of Land Management and Fish & Wildlife Service. Wouldn't such a reinvention of governmental responsibilities allow you to refocus your limited resource toward the more well-established missions of the Bureau—to develop, manage, and protect water resources for power generation and recreation.

Answer. The development of water projects by Reclamation required inclusion of lands necessary for operation of the projects. These lands were either withdrawn from settlement, sale, location of minerals, or entry under the general land laws or acquired for project purposes by purchase, condemnation, or donation by private landowners. Although these lands were withdrawn or acquired for Reclamation project purposes, the Secretary of the Interior was granted broad authority to allow use of the lands for incidental purposes, including grazing. Therefore, grazing is not a new activity; Reclamation has had these land management responsibilities since its inception and has a great deal of experience in implementing and managing these lease agreements. Where it is more efficient and appropriate to do so, we enter into agreements with other Federal agencies such as the Bureau of Land Management, Fish and Wildlife Service, or Forest Service to manage lands under our jurisdiction. Withdrawn lands that are no longer needed for project purposes are recommended for relinquishment and revocation to Bureau of Land Management or Forest Service jurisdiction.

Reclamation's fish restoration activities have been undertaken in response to specific Reclamation project authorizations as well as congressional legislation such as the Endangered Species and the Fish and Wildlife Coordination Acts. We coordinate these activities with the Fish and Wildlife Service, state wildlife agencies and our water and power users. We must meet the requirements of such legislation in order to meet our contractual obligations to deliver the water and power benefits to authorized Reclamation We agree that our resources are limited, but solving fishery problems is vital for Reclamation's continuing mission to manage, develop, and protect water and related resources in an environmentally and economically sound manner.

QUESTION SUBMITTED BY SENATOR CRAIG

SNAKE RIVER PLAIN AQUIFER

Question. The Snake River Plain Aquifer is the lifeblood of Southern Idaho. Its health is important to everyone that lives there, from the farmer who irrigates the food we eat to the mother who gives a glass of water to her child. It is also vital to Idaho's thriving aquaculture industry, which produces the vast majority of the nation's trout. Concerns have been raised about diminishing spring discharges. What is the Bureau of Reclamation's position on using excess flows in the Snake River to recharge the aquifer?

Answer. The Bureau of Reclamation is participating in a demonstration project that will quantify and document the benefits and impacts of recharge projects in the Snake River Plain Aquifer. This project is a cooperative venture with the State of Idaho to investigate the feasibility of using managed aquifer recharge as an effective tool for conjunctive (ground water/surface water) water resource management in the Snake River Plain. Reclamation's contribution to the effort is to allow use of a canal for delivery of the water to the recharge site. This project should provide answers to many questions about the feasibility of using managed recharge as a tool for slowing, or stabilizing, the decline of the aquifer, thus providing more consistent flows downstream near the Thousand Springs area. This is especially critical during periods of drought.

QUESTIONS SUBMITTED BY SENATOR DORGAN

GARRISON DIVERSION UNIT

The Garrison Diversion Project is the key to water development in North Dakota and water development is the key to economic development in our semi-arid state.

Question. Can you tell the Committee how this year's budget request will generally help North Dakota advance water development?

Answer. The fiscal year 2000 request will be used to continue development of Indian irrigation facilities on the Standing Rock Reservation; to provide grant funds to continue State municipal, rural, and industrial (MR&I) water supply system development; to provide minimum maintenance to assure reliability of completed facilities still in construction status and operate the supply system for freshening flows; to continue mitigation activities associated with meeting refuge compatibility; to continue planning activities associated with a water supply to the Red River Valley; to provide flood control at Jamestown Dam and continue to operate, maintain, and replace facilities; and for construction and planning activities associated with recreation facilities. Reclamation will continue working with three Indian reservations in Garrison Diversion Unit (GDU) to operate, maintain, and replace existing MR&I water treatment and distribution facilities, and provide technical assistance and oversight for planning activities to meet reservation-wide needs.

Question. Would you agree that completing work on the Southwest Pipeline, doing further work on the Northwest Area Waters Supply, and moving to Phase 2 on Indian MR&I mean that thousands of North Dakotans without reliable supplies of clean water will finally have access to the kind of water most of us take for granted?

Answer. These types of projects have been successful in providing reliable, safe drinking water to thousands of people throughout the state whose previous supplies have been unreliable or have not met safe drinking water standards.

Question. One of the funding priorities in the 1986 Garrison Reformulation Act was meeting the Municipal, Residential and Industrial water needs of Indian tribes in North Dakota. The tribes again have reached their funding ceilings which prompted the Congress to add funding to the last two appropriations bills. Can you assure the Subcommittee that the Bureau is prepared to work with us in raising the ceilings and identifying additional resources—in the range of $3 million—to meet critical MR&I needs on the reservation?

Answer. Reclamation has allocated funding to continue Indian MR&I planning and construction activities in each of the past two years in which the appropriation ceiling has been raised, fiscal year 1998 and fiscal year 1999. If the ceiling is raised again in fiscal year 2000, we anticipate that additional funds would be allocated to continue these ongoing activities.

Question. Do you concur that Tribes in North Dakota have some of the poorest quality water in the nation and the Bureau has validated over $200 million in Indian MR&I needs?

Answer. Studies have documented that the Indian reservations in North Dakota have significant domestic water supply problems. Studies commissioned for the Standing Rock, Fort Berthold, and Spirit Lake Indian Reservations have estimated that an additional $220,000,000 could be required to complete facilities to meet all the reservation-wide needs. In addition, it is estimated that another $20,000,000 may be required to meet the domestic water supply needs on the Turtle Mountain Chippewa Indian Reservation. Reclamation is initiating a needs assessment study in fiscal year 1999 through the Native American Affairs Program to refine the needs of the Turtle Mountain Chippewa Tribe.

Question. All but 11 of North Dakota's counties are losing population as farm communities face unparalleled problems from low prices, Canadian grain imports, severe weather disasters, among other factors. The MR&I program has helped breathe new economic life into communities across the state. Can you comment on the specific social and economic benefits of such projects as the Southwest Pipeline in bringing clean, dependable water supplies to towns in our state?

Answer. The benefits associated with improved water quality can include better tasting water, water that does not corrode pipes and appliances, improved health, or some other improvement in lifestyle. Therefore, an improved water supply can help a rural area remain economically viable.

Question. Several North Dakota communities have had been using tobacco-colored water or been in violation of Clean Water standards—through no fault of their own. Can you confirm how many ND communities have been able to comply with Clean Drinking Water standards as a result of Garrison projects?

Answer. In preparing our response to this question, we consulted with the North Dakota State Water Commission (SWC) who administers the GDU MR&I State Grant Program. The SWC provided Reclamation with a spreadsheet, dated November 17, 1998, that summarizes the status of all projects that have submitted applications under this program. The SWC and the Garrison Diversion Conservancy District prioritize each of the projects that submit applications. One of the most important prioritization criteria is water quality, particularly documentation that existing water supplies are violating Safe Drinking Water standards. Based on SWC infor-

mation, since the program began in 1986, the State has received 132 applications for water supply funding assistance, and 32 highest priority projects have been completed. Another 43 projects are in various stages of planning, design, and construction.

Question. As you know, the Bureau of Reclamation has been studying the water development and management needs of the Red River Valley for the past year. Can you apprise the Committee of the status of these studies?

Answer. The Phase IA Needs Assessment has been completed. Initial alternatives to meet the municipal, rural, and industrial water needs of the Red River Valley have been formulated. A working draft of the Phase 2 (alternatives Analysis) report will be forwarded to the Steering committee prior to our March 30th meeting. Phase IB Instream Flow report will be finalized by the end of March 1999, and the results will be incorporated into the Alternatives Analysis.

Question. Has the Bureau worked closely with the ND State Water Commission, local communities and other interested parties to obtain their views and recommendations?

Answer. The Bureau has been working closely with State and local interests to obtain their views and recommendations. It is expected that more meetings may be needed to assure that the views and interests of the State and local interests are fully considered prior to distribution of the public review draft. The Bureau's work is coordinated with a steering committee which is comprised of representatives of the ND State Water Commission, ND State Health Department, the Garrison Diversion Conservancy District, Fargo, Grand Forks, Moorehead, rural water systems, and the environmental community.

Question. Can you please assure the Subcommittee that the Bureau will make these studies a top priority and work closely with ND agencies and groups?

Answer. Completion of this study is a priority.

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

STATEMENT OF DR. JOSEPH W. WESTPHAL, ASSISTANT SECRETARY OF THE ARMY FOR CIVIL WORKS

ACCOMPANIED BY:

LT. GEN. JOE N. BALLARD, CHIEF OF ENGINEERS
MAJ. GEN. RUSSELL L. FUHRMAN, DIRECTOR OF CIVIL WORKS

Senator DOMENICI. Would the Corps of Engineers witnesses, General Ballard, Dr. Westphal, and any supporting witnesses come forward please?

Thank you very much. Can we have order in the back of the room? If you would like to carry on conversations, could you do it in the hall please? Thank you very much.

Dr. Westphal, it is good to see you. General Ballard, General Fuhrman its always a pleasure. And on the end——

General FUHRMAN. That is Fred Caver, sir. He is our budget and programs person.

Senator DOMENICI. All right. Nice to have you with us. Yes, he is the budget man?

General FUHRMAN. Yes, sir.

Senator DOMENICI. Dr. Westphal, we extend an especially warm welcome to you since this is your first appearance before the committee.

The environment is certainly better this year than it was last year when we faced a very difficult budget from the administration where water projects were underfunded. Then we were expected to meet the demands of water projects in the country, and through the goodness of the chairman of the full committee, they gave us money from some other subcommittee for the water projects that the President did not fund.

The Administration have gotten the message this year and the budget looks much better with reference to what you must do to complete your projects and maintain schedules for ongoing work. We hope to be able to meet those responsibilities within the President's budget.

We have many Senators who want to be heard, so that is the extent of my statement. Unless somebody has an urgent, urgent statement, I would like to proceed to have the witnesses——

STATEMENT OF SENATOR STEVENS

Senator STEVENS. Could I just make one statement and ask a question? I want to go to another hearing.

Senator DOMENICI. Absolutely.

Senator STEVENS. Good morning, General Ballard and Dr. Westphal.

Dr. WESTPHAL. Good morning, sir.

General BALLARD. Good morning, sir.

Senator STEVENS. I am here to state to you that we do appreciate the work that you do in Alaska. You are really involved in a number of important military projects. I discussed that with Colonel John yesterday.

Our problem now is that we have, as you know, half the coastline of the United States, 55,000 miles of coastline, and our future development really is dependent upon our being able to get modern facilities there for the village areas in particular.

PROJECT COST SHARING PROBLEMS

As we face this period of higher and higher costs of construction, one of the great problems that I face is how to deal with the local cost sharing formula that is involved with the Corps. These are areas that have no tax base at all, are primarily dependent upon the Federal Government, and are not very well represented in the State government because of the one man/one vote concept. We have an area the size of Texas that has one State representative.

Now, when you look at it in terms of trying to get cost sharing for those areas, for the facilities they need to develop—I hate to use that word—the modern infrastructure for the next century, we just cannot deal with this cost sharing formula that has been worked out. I would like to know if you would be willing to sit down with us and see if we can find some way to justify—I take it it would take an Act of Congress to change your current formula. Is your current formula not based in law rather than regulation?

Dr. WESTPHAL. Yes, sir.

Senator STEVENS. Well, I have got to find some way to relieve some of these places of the burden of cost sharing where there is no tax base.

Dr. WESTPHAL. Well, Mr. Chairman, I think we need to work with you on developing some ability to pay mechanisms that might help these communities. The Chief and I are committed to—in fact, we have been talking about doing something about this issue nationwide, because there are communities all over the country that really in some cases absolutely cannot make the local match, yet they are in danger of flooding or they desperately need some infrastructure help. So, we are committed to finding ways in which we can help those communities either by adapting ability to pay provisions or simply coming to Congress and looking at some other vehicles for doing that for those particular communities in need. We will certainly be willing to work with you and members of your staff.

Senator STEVENS. Well, we worked it out once. The City of Buckland—I do not know if you are familiar with that little city. It has a sewage lagoon. That lagoon just happens to be in the center of the village. Over the years the waste water has gone directly into the lagoon in the middle of the village. Thanks to you, we now have an infrastructure demonstration project. You have a lot of flexibility on those demonstration projects.

I am thinking of looking to this committee or to some committee to help us redefine what we can do in these areas where there is no potential for a local match. Most of us here had something to do with State government. I know I did in the State legislature. They have very little chance of getting a bill through the State legislature to give them an increased percentage of their local matched funds for projects that will enable them to compete with another area of the State.

So, it is something that I would hope we would get some attention to, and I would look forward to working with you if you will do that for me.

Dr. WESTPHAL. We will, yes, sir.

Senator STEVENS. Thank you very much, Mr. Chairman.

Senator DOMENICI. Thank you. Senator Stevens, we are aware of your problem and of some rural counties in the continental United States that actually have similar problems. We will try to work on that with your staff.

Senator STEVENS. Thank you.

Senator DOMENICI. Would you please proceed, Dr. Westphal.

STATEMENT OF DR. JOSEPH W. WESTPHAL

Dr. WESTPHAL. Thank you, Mr. Chairman. It is an honor to be here to testify before this esteemed subcommittee, Mr. Chairman, and to testify and present to you the President's civil works budget for the 21st century. I think it is a good budget, Mr. Chairman.

Accompanying me, as you mentioned earlier, is Lieutenant General Joe Ballard, who is the Chief of Engineers; and Major General Russ Fuhrman, who is the Director of Civil Works; and Mr. Fred Caver, who is the Chief, Programs Management Division for the Directorate of Civil Works.

For just a second, Mr. Chairman, on a personal note, I just want to say how delighted I am to be here, the first time testifying before you. I began my professional career in Washington working for the House Budget Committee the year that you became chairman of the Senate Budget Committee. Of course, I am delighted to be here with my former boss and mentor, Senator Thad Cochran. It is a great opportunity to defend and to support a very strong program for civil works this year.

Let me begin by noting that large differences between the administration's budget proposal last year and what you appropriated in both fiscal year 1998 and fiscal year 1999 are now reconciled in the fiscal year 2000 budget I am about to discuss.

Mr. Chairman, I am just going to summarize a few points here in the interest of time and ask that my full testimony be made part of the record.

BUDGET THEMES

The President has consistently stressed two major themes that I think are particularly important to the way we should formulate and implement a civil works policy. First, policy must be based on building strong partnerships with our States and local communities, as well as with other sister Federal agencies. And second, we must strive to help our economy grow and prosper by combining sound infrastructure management and development with environ-

mental protection and ecosystem restoration. I believe our program excels in both of these mandates and that the budget we present today reflects their importance and priority.

I am pleased to say that funding in the President's fiscal year 2000 budget supports a strong civil works program. It is consistent with levels enacted by Congress in recent years and with the President's overall domestic priorities, his commitment to a balanced budget, and his goal of protecting Social Security and meeting the challenges of the 21st century.

BUDGET OVERVIEW

The President's budget for the civil works program for the year 2000 includes $3.9 billion for the discretionary program, comparable to the amount appropriated for the program in fiscal year 1999 and significantly above last year's budget. With cost-sharing contributions by our partners, the non-Federal sponsors, plus other funding, the fiscal year 2000 program will total about $4.2 billion. In fiscal year 2000, we will be asking non-Federal sponsors to contribute over $251 million as their cost share of projects throughout the Nation. They are our partners in this program and we are committed to a very responsive and timely allocation of resources to meet their efforts. I look forward to working with both houses of Congress to meet the challenges of this partnership.

I would like to point out that the fiscal year 2000 budget for the civil works operation and maintenance general program is $1.84 billion. This level of funding is very strong, demonstrating the administration's commitment to maintaining our existing infrastructure, much of which is aging and requires greater upkeep.

Funding for the construction general program is $1.24 billion, a significant increase from last year's request.

On new investments, the fiscal year 2000 budget for the Army civil works program provides a strong program of new work, including 1 new survey, 19 new construction projects, 5 operation and maintenance new starts, and 6 new plant replacement and improvement program major acquisitions, and the Challenge 21 program.

WATER RESOURCE DEVELOPMENT PROCESS

I also want to emphasize our commitment to water resources development and the biennial authorization cycle. A strong water resources development program is a sound investment in our Nation's economic future and environmental stability. Communities across the country benefit from water resources projects to reduce flood damages, compete more efficiently in world trade, provide needed water and power, provide recreational opportunities, and protect and restore our rich aquatic resources.

In this regard, we will work with Congress to complete a water resources development act in 1999, building on the progress that we made last fall on the proposed 1998 bill. Further, it would put us in a better position to address new policy and project needs in a WRDA 2000 bill that will include such important initiatives as the restoration of the Everglades.

HARBOR SERVICES FUND

A key component of the President's 2000 budget for the Army civil works program is the proposal for a new harbor services user fee. This proposal will provide a reliable source of funding for important navigation needs, including construction, operation, and maintenance. It results in significantly greater funding for these port and harbor activities. The President's budget for fiscal year 2000 includes $951 million to be derived from the Harbor Services Fund, an overall increase of $382 million over the President's fiscal year 1999 budget for harbor related activities. This level of funding will allow us to proceed at an optimal rate on nearly all operation and maintenance and construction activities related to ports and harbors, using funds contributed by the users.

The user fees will generate funds sufficient to pay the Department of the Army's annual cost of developing, operating, and maintaining the Nation's ports. The legislative proposal will make the total amount of user fees collected pursuant to this proposed legislation in one year, available the next fiscal year for appropriations.

We are coming to completion on the details of this proposal and discussions with stakeholders and comments from interested groups. A final proposal will come to you in the next few weeks, Mr. Chairman.

The administration is also committed to the traditional mission areas of improving our navigation and transportation system, protecting our local communities from flood damages and other disasters and maintaining and improving hydropower facilities across the country.

ENVIRONMENTAL PROGRAMS

In addition, the protection and the restoration of the environment is an important and integral part of the civil works mission portfolio. The President has strongly advocated linking economic growth and protection of the environment. To help meet this objective, we will support projects that feature strong economic benefits, as well as incorporate environmental restoration and enhancement. Of course, individual environmental restoration projects are also an important part of the civil works mission.

An example of a program that will integrate the environmental concerns into more traditional civil works missions is our Challenge 21 program, the riverine ecosystem restoration and flood hazard mitigation initiative. Like last year, this year's budget includes $25 million to begin the Challenge 21 program. It is designed to accomplish both flood hazard mitigation and ecosystem restoration and emphasizes nonstructural measures as a means of accomplishing these objectives.

REGULATORY PROGRAM

The fiscal year 2000 budget for the civil works regulatory program is $117 million, an increase of $11 million over the enacted level in fiscal year 1999 funding. In this program we are proud that we not only protect our vital aquatic resources, but we try to help people within the law to find environmentally sustainable solutions to their problems. In fiscal year 1998, the regulatory program au-

thorized 90,000 activities in writing, the most of any year, and nearly 95 percent of all actions were authorized in less than 60 days. This budget will ensure that this level of service is maintained and improved, even with an increasing volume of work.

In summary, the President's fiscal year 2000 budget for the civil works program is a good one. It demonstrates a commitment to civil works missions with strong support for all programs, a plan to solve the constitutional problem with the existing harbor maintenance tax, an especially strong program of new construction, a firm commitment to maintaining existing water resources management infrastructure and increased application of civil works program expertise to environmental protection and restoration.

Mr. Chairman, I am delighted to be here with the Chief of Engineers. We have had an excellent working relationship since I took over this job. We are true partners in this process, along with the Director of Civil Works, in making sure that we address the interests of your constituents and the feasibility of moving this program forward at a very good pace in the future.

PREPARED STATEMENT

With that, Mr. Chairman, I end my remarks and I thank the committee for the opportunity to testify today.

[The statement follows:]

PREPARED STATEMENT OF DR. JOSEPH W. WESTPHAL

INTRODUCTION

It is an honor and a pleasure to testify before this esteemed subcommittee of the Appropriations Committee and to present to you, President Clinton's first Civil Works budget for the 21st Century. It is a good budget.

Accompanying me are Lieutenant General Joe N. Ballard, Chief of Engineers; Major General Russell L. Fuhrman, Director of Civil Works; and Mr. Thomas F. Caver, Jr., Chief Programs Management Division, Directorate of Civil Works.

Let me begin by noting that the large differences between the Administration's budget proposal last year and what you appropriated in both fiscal year 1998 and fiscal year 1999 are now reconciled in the fiscal year 2000 budget I am about to outline.

The President has consistently stressed two major themes that I think are particularly important to the way we should formulate and implement Civil Works policy. First, it must be based on building strong partnerships with our states and local communities as well as among our sister federal agencies. Second, we must strive to help our economy grow and prosper by combining sound infrastructure management and development with environmental protection and ecosystem restoration. I believe our program excels in both of these mandates and that the budget I will present today reflects their importance and priority.

I am pleased to say that funding in the President's fiscal year 2000 Budget supports a strong Civil Works Program. It is consistent with levels enacted by Congress in recent years, and with the President's overall domestic priorities, his commitment to a balanced budget, and his goal of protecting Social Security and meeting the challenges of the 21 Century.

My statement covers the following subjects:

—the fiscal year 2000 Civil Works Program Budget,
—Water Resources Development Acts of 1999 and 2000,
—GPRA and Civil Works Program Performance,
—the Harbor Services Fund Proposal,
—the Economy and Environment,
—New Investments, and
—Highlights of the fiscal year 2000 Continuing Program.

FISCAL YEAR 2000 CIVIL WORKS PROGRAM BUDGET

The President's budget for the Civil Works Program for fiscal year 2000 includes $3.9 billion for the discretionary program, comparable to the amount appropriated for the program in fiscal year 1999, and significantly above last year's budget request. Details are presented in Table A.

The Administration appreciates the significant commitments made by our partners, the non-federal sponsors who cost-share studies and projects of the Civil Works Program. These commitments demonstrate the value of the program to the sponsors. With cost- sharing contributions and other funding, total funding for the fiscal year 2000 program is $4.2 billion. In fiscal year 2000, we will be asking non-Federal sponsors to contribute over $251 million as their cost share of projects throughout the nation. They are our partners in this program and we are committed to a very responsive and timely allocation of resources to meet their efforts. I look forward to working with both Houses of Congress to meeting the challenges of this partnership.

WATER RESOURCES DEVELOPMENT ACTS OF 1999 AND 2000

I also want to emphasize our commitment to water resources development and the biennial authorization cycle. A strong water resources development program is a sound investment in our Nation's economic future and environmental stability. Communities across the country benefit from water resource projects to reduce flood damages, compete more efficiently in world trade, provide needed water and power, and protect and restore our rich aquatic resources. In this regard, we will work with the 3 Congress to complete a Water Resources Development Act (WRDA) in 1999—building on the progress that we made last fall on the proposed WRDA 98.

As you know, the Army, on behalf of the Administration, submitted to Congress a WRDA proposal in 1998. This formed the basis for the Senate version of WRDA 98 that included important Administration policy initiatives such as our Challenge 21 program. We hope that, based on our bill, and the work of the authorizing Committees, we can come to closure on a responsible WRDA 99 early this year that includes important policy initiatives and vital projects, while recognizing the continuing budget constraints. Further, it would put us in a better position to address new policy and project needs in a WRDA 2000 bill that will include such important initiatives as the restoration of the Everglades.

CIVIL WORKS PROGRAM PERFORMANCE

The Government Performance and Results Act of 1993 (GPRA) requires that the Army Corps of Engineers show how improvements in its business processes impact the quality and delivery of our products and services to the Nation.

The Corps is improving its business processes by streamlining decision document review procedures, eliminating duplication of functions at different levels; intensively monitoring policy review to reduce review times; extending the use of standardized project cooperation agreements; continuing to strengthen partnerships with local sponsors; and intensively managing program execution, for more efficient and timely production and greater customer satisfaction. In particular, the Chief of Engineers has developed a process to streamline project planning and I look forward to working with him on this.

The Corps is currently implementing the first annual performance plan required by GPRA on its fiscal year 1999 program. The Corps is testing an initial set of results-oriented program performance measures to assess the benefits of process improvements made at the project level. The Corps will evaluate the initial set of results-oriented program performance measures during fiscal year 1999 program execution and will extend successful applications of the measures into the fiscal year 2000 program and continue to develop improved performance measures in the future.

HARBOR SERVICES FUND PROPOSAL

A key component of the President's fiscal year 2000 Budget for the Army Civil Works program is the proposal for a new Harbor Services Fund and Harbor Services User Fee. This proposal will provide a reliable source of funding for important navigation needs 4 including construction, operation, and maintenance. It results in significantly greater funding for these port and harbor activities. The President's Budget for fiscal year 2000 includes $951 million to be derived from the Harbor Services Fund, an overall increase of $382 million over the President's fiscal year 1999 Budget for harbor related activities. This level of funding will allow us to proceed at an

optimal rate on nearly all operation and maintenance and construction activities related to ports and harbors, using funds contributed by the users.

In March 1998, the U. S. Supreme Court ruled that the Harbor Maintenance Tax (HMT) was unconstitutional, as applied to exports. In that ruling, the Court concluded that the HMT, which imposed a charge based on the value of the commercial cargo being shipped, constituted a tax on goods in export transit and therefore violated the Export Clause of the Constitution. Because of this ruling, the HMT stopped being collected on exports on April 25, 1998. The new Harbor Services User Fee being proposed avoids the constitutional infirmities of the HMT. The assessment is a user fee, not a tax: it fairly approximates the harbor benefits and services vessels in each vessel category receive through port use. It is not imposed based on the cargo of a vessel.

The user fees will generate funds sufficient to pay the Department of the Army's annual costs of developing, operating, and maintaining the Nation's ports. The legislative proposal will make the total amount of the user fees collected pursuant to this proposed legislation in one year available the next fiscal year for appropriation to fund the projected total annual expenditures of the Department of the Army for harbor development, operation, and maintenance.

Thus, this proposal will address all of the biggest problems associated with the existing Harbor Maintenance Tax and Trust Fund (HMTF). First, we will stop collections on imports, domestic shippers, and passengers collected under the existing Harbor Maintenance Tax, eliminating the uncertainties involved with our foreign trading partners.

Second, we would institute a new fee mechanism based on vessel type linking the fee with the level of service provided to certain types of vessels, which will meet the Supreme Court's test for constitutionality. Those fees would be placed in the new Harbor Services Fund, along with remaining balances from the old HMTF. A portion of those balances will be used to fund the program in the first year, fiscal year 2000.

And third, the proposal will directly link the amount of fees collected with the funds appropriated, thus avoiding a build up balances in the Harbor Services Fund. For budget purposes, the user fees will be treated as offsetting collections.

We are coming to completion on details of the proposal in light of discussions and comments from interested groups. We plan to present a legislative proposal to 5 Congress in the near future. Our plan is to pursue the HSF legislative proposal separately from WRDA 99.

ECONOMY AND THE ENVIRONMENT

The Administration is committed to the traditional mission areas of improving our navigation and transportation system, protection of our local communities from flood damages and other disasters, and maintaining and improving hydropower facilities across the country. In addition, the protection and restoration of the environment is an important and integral part of the Civil Works mission portfolio. The President has strongly advocated linking economic growth with protection of the environment. To help meet this objective, we will support projects that feature strong economic benefits, as well as projects that incorporate environmental restoration and enhancement. Of course, individual environmental restoration projects are also an important part of the Civil Works mission.

An example of a program that will integrate environmental concerns into more traditional Civil Works missions is our Challenge 21: Riverine Ecosystem Restoration and Flood Hazard Mitigation Initiative. Like last year, this year's budget includes $25 M to begin the Challenge 21 program. It is designed to accomplish both flood hazard mitigation and ecosystem restoration and emphasizes nonstructural measures as a means to accomplish these objectives. Challenge 21 was proposed for authorization last year, and came close to becoming a reality in the proposed Water Resources Development Act of 1998. In fact, the Senate version of WRDA 1998 included a Challenge 21 program. We will continue to work with Congress to pass this much-needed legislation. The key to this program is that it will be implemented at the request of local communities and not imposed as a solution by the Federal government. To date, over 50 communities have expressed interest in participating in Challenge 21.

Environmental programs make up about 18 percent of the fiscal year 2000 Army Civil Works budget, and are integrated into all of the major areas of work. Some environmental programs of note are in the following areas. There is $100 million in construction funding for the Columbia River Fish Mitigation program in the Pacific Northwest. There is $129 million in overall funding for the ongoing effort in south Florida to restore, preserve and protect the Everglades. We have also budg-

eted $14 million to fund our ongoing environmental restoration continuing authorities programs (Section 204, the Beneficial Uses of Dredged Materials program, Section 206, the Aquatic Ecosystem Restoration program, and Section 1135 Project Modifications for Improvements of the Environment). This funding will allow us to implement projects to create and restore aquatic habitats and to modify Civil Works projects to improve the environment.

The Formerly Utilized Sites Remedial Action Program, FUSRAP, is an environmental 6 cleanup program that was transferred by Congress from the Department of Energy to the Army Civil Works program in the fiscal year 1998 Appropriations Act. We are continuing the smooth implementation of needed clean-up of contaminated sites, with no slippage of the program during the transition from DOE to the Civil Works program. In fact, we have exceeded the DOE schedules for the Middlesex, Maywood, and Wayne sites in New Jersey, and surpassed DOE's planned quantities of soil removed and disposed. This year's budget includes $150 million for this program, an increase of $10 million over the past two years. This will help improve the rate of cleanup for the sites.

NEW INVESTMENTS

The fiscal year 2000 Budget for the Army Civil Works program provides a strong program of new work. Details are presented in Table B.

Our program of new work includes one new survey and 19 new construction projects, 5 new operation and maintenance new starts, and 6 new Plant Replacement and Improvement Program (PRIP) major acquisitions, and the Challenge 21 program.

The Budget includes $80 million in fiscal year 2000 for the new investments in the construction account, including $55 million for new construction starts and $25 million for Challenge 21. Capital costs for these new investments total $1.8 billion. Of that, $1.3 billion will be provided by the federal government. The balance, covering costs of lands, easements, rights-of-way, and relocations, will be financed directly by non-federal sponsors.

The 19 new construction projects include:

—5 for commercial navigation,
—3 for flood damage reduction,
—2 for environmental restoration,
—7 for major rehabilitation, and
—2 for dam safety assurance.

HIGHLIGHTS OF THE FISCAL YEAR 2000 CONTINUING PROGRAM

OPERATION AND MAINTENANCE, GENERAL

The fiscal year 2000 Budget for the Civil Works Operation and Maintenance, General (O&M) Program is $1.84 billion. This level of funding is very strong, demonstrating the Administration's commitment to maintaining our existing infrastructure, much of which is aging and requires greater upkeep. Of the $1.84 billion, $693 million would be for port 7 and harbor activities, derived from the proposed HSF, including $75 million to maintain small boat harbors, important to the economies of local communities. In addition, operation and maintenance of hydropower facilities in the Pacific Northwest will be financed by a transfer of approximately $107 million from the Bonneville Power Administration, pursuant to an agreement signed two years ago.

The budget also provides $226 million to continue the operation and maintenance of recreation areas at Civil Works projects.

CONSTRUCTION, GENERAL

The fiscal year 2000 Budget for the Civil Works Construction, General Program is $1.24 billion, of which $1.16 billion is for the continuing program. Of the total, $258 million would be for port and harbor construction projects derived from the Harbor Services Fund, allowing port related projects to proceed at optimal rates. This will enhance the competitiveness of our Nation's ports and harbors.

Following are highlights of the Continuing Program.

South Florida Ecosystem Restoration.—The Everglades is an ecosystem of international importance. It is also one that has dramatically deteriorated since the turn of the century. It is very important that we aggressively continue the work that we have underway to start the process of restoring this treasure that is so important to the Nation. Construction funding for these projects is $110 million for restoration of the Everglades and South Florida Ecosystem, a major environmental activity to which we are strongly committed. This amount includes $49 million for the Central

and Southern Florida project to continue construction work at West Palm Beach Canal, South Dade County, and manatee pass-through gates, as well as planning, engineering and design work on the Comprehensive Restoration Plan, also known as the "Restudy"; $40 million to continue construction on the Kissimmee River Restoration project; and $21 million for critical restoration projects authorized under the Everglades and South Florida Ecosystem Restoration program.

Pacific Northwest Salmon.—The budget includes $100 million for Corps construction activities associated with the Columbia River Fish Mitigation project at 8 Corps dams on the Columbia and Snake rivers and to continue the mitigation analysis which evaluates additional measures to increase fish survival at those dams. This includes $59 million for studies of surface bypass facilities, drawdown of Lower Snake Reservoirs, John Day drawdown and hatchery mitigation, turbine passage, gas abatement, adult passage, and Lower Columbia configuration.

Montgomery Point Lock and Dam.—The budget includes $20 million for the Montgomery Point Lock and Dam project on the McClellan-Kerr Arkansas River Navigation System to continue construction of the lock and dam. The project is programmed to be financed entirely from the Construction account.

Kentucky Lock and Dam, Kentucky.—The budget includes $7.75 million for the Kentucky Lock and Dam project on the Tennessee River to continue detailed design of the new lock and to relocate the Tennessee Valley Authority's power transmission towers at the project site. The addition of a new lock will greatly reduce delays at the existing lock which is too small to handle modern 15 barge tows without 2 lockages.

Olmsted Locks and Dam, Illinois and Kentucky.—The budget includes $28.6 million to continue construction of 2 new locks on the Ohio River near Olmsted, Illinois , to replace Locks 52 and 53 which are over 60 years old. Virtually all waterway traffic moving between the Ohio and Mississippi Rivers passes through the project area, and both of the existing locks have temporary lock chambers that are inefficient. Projected increases in waterway traffic demands in combination with the limited capacity of the existing locks will result in increased lockage delays without the new locks.

New York and New Jersey Harbors, New York and New Jersey.—The budget includes $60 million for the Kill Van Kull and Newark Bay, New York and New Jersey, project to continue construction of the deepening of 5 miles of Kill Van Kull channels and 3 miles of Newark Bay channels from 40 to 45 feet. The deeper project will accommodate larger, fully loaded, more modern containerships. The budget also includes $2 million for the New York Harbor and Adjacent Channels, Port Jersey Channel, New Jersey, project. Deepening Port Jersey channel from 35 feet to 41 feet will accommodate larger, deeper draft, cargo ships.

Los Angles County Drainage Area, California.—The budget includes $30 million for up grading the existing system, raising channel walls and converting the trapezoidal channel to a rectangular channel, and bridge modifications. These improvements would protect residential, commercial, and industrial properties in Long Beach by accommodating the increased runoff resulting from urbanization over the past 40 years.

Southeast Louisiana.—The budget includes $47 million to continue construction activities for the Southeast Louisiana project including Canal 3, Suburban Canal, Elmwood Canal, Railroad Canal, Whitney Barataria Pumping Station in Jefferson Parish, and Napoleon Avenue Canal, Dwyer Road Pumping Station, and Broad Street Pumping Station in Orleans Parish.

Continuing Authorities Program.—The budget includes $57 million for a full program of continuing and new work under the 9 activities in the Continuing Authorities Program. This amount includes $2.5 million for beach erosion control projects (Section 103), $8.5 million for emergency streambank and shoreline protection projects (Section 14), $26.9 million for flood damage reduction projects (Section 205), $0.5 million for navigation mitigation projects (Section 111), $4.5 million for navigation projects (Section 107), $0.1 million for snagging and clearing projects (Section 208), $4.5 million for aquatic ecosystem restoration (Section 206), $8.5 million for project modifications for improvement of the environment (Section 1135), and $1 million for beneficial uses of dredged material (Section 204).

GENERAL INVESTIGATIONS

The Budget for the Civil Works General Investigations (GI) Program is $135 million. While this is a lower level than usual, it is a key element of our plan to stabilize the Civil Works budget in the future. The study program feeds the pipeline of construction work. There is a large amount of construction work already waiting for funding—far more than the funds we can reasonably expect in the future. This

budget cuts back on project study funding, in order to reduce the backlog of potential construction projects that are beyond our capacity to budget within a reasonable time frame. Once the backlog of costly projects is reduced, then we would be able to resume funding for studies at a higher level.

We believe that cutting back on study funding on a temporary basis is the right thing to do for our local sponsors, who expect timely construction of projects, once studies are completed and the projects are authorized.

REGULATORY PROGRAM

The fiscal year 2000 Budget for the Civil Works Regulatory Program is $117 million, an increase of $11 million over the enacted level of fiscal year 1999 funding. This will ensure that we continue to provide for effective and equitable regulation of the Nation's waters, including wetlands. Through the Regulatory Program the Corps is committed to serving the public in a fair and reasonable manner while protecting the aquatic environment, as required by laws and regulations. In fiscal year 1998, the Regulatory Program authorized 90,000 activities in writing, the most in any year, and nearly 95 percent of all actions were authorized in less than 60 days.

One of the goals of the Corps is to help people find solutions to their problems. In this program, we are proud that we not only protect our vital aquatic resources, but we try to 10 help people, within the law, to find environmentally sustainable solutions to their problems. This budget will ensure that this level of service is maintained and improved, even with an increasing volume of work. The proposed increase would also enable the Corps to broaden its partnerships with States and local communities through watershed planning efforts.

We will also continue to pursue important initiatives as part of the Regulatory Program. For example, under the Regulatory Program, we are also active in the preparation of Special Area Management Plans (SAMPs) to address development in environmentally sensitive areas. With the amount included in the President's Budget, we will establish a full administrative appeals process that will allow the public to challenge permit decisions and jurisdiction determinations without costly, time-consuming litigation.

Again this year, we are proposing a reasonable increase in the permit application fees for commercial applicants as a means to offset a portion of the costs of the Regulatory Program. We are prepared to work closely with this Committee and the public to ensure that any revisions that we may adopt are reasonable.

CONCLUSION

In summary, the President's fiscal year 2000 budget for the Army Civil Works Program is a good one. It demonstrates a commitment to Civil Works missions, with strong support for all programs, a plan to solve the constitutional problem with the existing Harbor Maintenance Tax, an especially strong program of new construction, a firm commitment to maintaining existing water resource management infrastructure, and increased application of Civil Works Program expertise to environmental protection and restoration.

Thank you Mr. Chairman; Members of the Subcommittee. This concludes my statement.

TABLE A—DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS CIVIL WORKS—FISCAL YEAR 2000 DIRECT PROGRAM—PRESIDENT'S PROGRAM FUNDING

[In thousands of dollars]

Program	Fund											
	Special				Trust			General		Transfer—Bnnvll Power Admnstrtn	Trust—Rivers and harbors cntrbtns	Total
	Harbor services [1]	Permanent apprprtns.	Permit applctn. fees [2]	Rcrtn. user fees	Coastal wetlands rstrtn [3]	Harbor mntnnc	Inland waterway	Ultimate [4]	Initial [5]			
COMBINED (discretionary and mandatory):												
DEFENSE: Formerly Utilized Sites Remedial Action Program	.....	.....	.....	.....	.....	.....	.....	150,000	150,000	.....	.....	150,000
DOMESTIC:												
General Investigations	.....	.....	.....	.....	.....	.....	.....	135,000	135,000	.....	39,827	174,827
Construction, General	257,700	.....	.....	.....	.....	.....	55,000	927,200	1,239,900	.....	156,786	1,396,686
Operation and Maintenance, General	692,900	.....	.....	35,700	.....	.....	.....	1,107,300	1,835,900	107,000	8,055	1,950,955
Flood Control, Mississippi River and Tributaries Project	.....	.....	.....	.....	.....	.....	.....	280,000	280,000	.....	45,673	325,673
Regulatory Program	.....	.....	7,000	.....	.....	.....	.....	117,000	117,000	.....	.....	117,000
General Expenses	.....	.....	.....	.....	.....	.....	.....	148,000	148,000	.....	.....	148,000
Flood Control and Coastal Emergencies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Revolving Fund	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coastal Wetlands Restoration	.....	.....	.....	.....	54,180	.....	.....	.....	.....	.....	800	10,800
Permanent Appropriations	18,576	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18,576
ALL	950,600	18,576	7,000	35,700	54,180	.....	55,000	2,864,500	3,905,800	107,000	251,141	4,292,517
DISCRETIONARY	.....	.....	.....	.....	.....	.....	.....	2,864,500	2,864,500	.....	.....	2,864,500
MANDATORY	950,600	18,576	7,000	35,700	54,180	.....	55,000	.....	1,041,300	107,000	251,141	1,428,017

[1] Proposed special fund to replace Harbor Maintenance Trust Fund.
[2] Proposed fees for processing permit applications, to be paid to General Fund receipt account, not available to Corps.
[3] Total for interagency task force; Corps' piece of $10 million is reflected under Total.
[4] Net direct Congressional appropriation after reimbursement from mandatory Special and Trust funds, as applicable.
[5] Direct Congressional appropriation. The total for all accounts comes from the General Fund, initially. Ultimately, it is reimbursed from mandatory accounts in the amount shown opposite Mandatory.

TABLE B—DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS CIVIL WORKS—FISCAL YEAR 2000 DIRECT PROGRAM—PRESIDENT'S NEW STARTS AND OTHER NEW WORK PROGRAM FUNDING

[Dollars in thousands]

ACCOUNT/CATEGORY	Number	FUNDING									
		First cost					Budget year				
		Total	Federa;			Nonfederal	Total	Federa;			Nonfederal
			GF	HSF	IWTF			GF	HSF	IWTF	
GENERAL INVESTIGATIONS											
Surveys: Santa Inez River, CA	1	$100	$100	.....	.....	.....	$100	$100	.....	.....	.....
CONSTRUCTION, GENERAL											
Projects:											
Regular:											
Environmental:											
Cheyenne River Sioux Tribe, Lower Brule Sioux, ND	1	108,000	108,000	.....	.....	.....	2,000	2,000	.....	.....	.....
Willamette River Temperature Control, OR	1	70,600	70,600	.....	.....	.....	1,700	1,700	.....	.....	.....
Flood Protection:											
Arecibo River, PR	1	23,100	12,500	.....	.....	$10,600	8,742	2,500	.....	.....	$6,242
Grand Forks, ND—East Grand Forks, MN	1	350,250	175,900	.....	.....	174,350	30,600	10,000	.....	.....	20,600
Napa River, CA	1	182,000	91,000	.....	.....	91,000	42,528	4,500	.....	.....	38,028
Navigation:											
Baltimore Harbor and Channels, MD, Brewerton Channel	1	14,035	10,530	.....	.....	3,505	13,083	9,578	.....	.....	3,505
Kikiaola Small Boat Harbor, Kauai, HI	1	5,653	4,997	.....	.....	656	185	75	.....	.....	110
Neches River and Tributaries Saltwater Barrier, TX	1	55,860	41,895	.....	.....	13,965	5,661	2,000	.....	.....	3,661
Port Fourchon, LA	1	4,930	2,557	.....	.....	2,373	4,557	2,184	.....	.....	2,373
Santa Barbara Harbor, CA	1	6,700	5,360	.....	.....	1,340	6,300	4,960	.....	.....	1,340
All (Regular Projects)	10	821,128	523,339	.....	.....	297,789	115,356	39,497	.....	.....	75,859
Major Rehabilitation:											
Cape Cod Canal Railroad Bridge, MA	1	30,500	30,500	.....	.....	.....	5,000	5,000	.....	.....	.....
John H. Kerr Powerhouse, VA & NC	1	59,600	59,600	.....	.....	.....	1,400	1,400	.....	.....	.....
Lock and Dam 12, Mississippi River, IA	1	15,500	7,750	.....	$7,750	.....	2,600	1,300	.....	$1,300	.....
Lock and Dam 24, Part 2, Mississippi River, IL & MO	1	38,400	19,200	.....	19,200	.....	1,200	600	.....	600	.....
London Locks and Dam, Kanawha River, WV	1	20,300	10,150	.....	10,150	.....	600	.....	.....	600	.....
Patoka Lake, IN	1	7,200	7,200	.....	.....	.....	2,000	2,000	.....	.....	.....

TABLE B—DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS CIVIL WORKS—FISCAL YEAR 2000 DIRECT PROGRAM—PRESIDENT'S NEW STARTS AND OTHER NEW WORK PROGRAM FUNDING—Continued

[Dollars in thousands]

ACCOUNT/CATEGORY	Number	FUNDING									
		First cost					Budget year				
		Total	Federa;			Nonfederal	Total	Federa;			Nonfederal
			GF	HSF	IWTF			GF	HSF	IWTF	
Walter F. George Powerhouse and Dam, AL & GA	1	37,000	37,000	.....	.....	.....	750	750	.....	.....	.....
All (Major Rehabilitation Projects)	7	208,500	171,400	.....	37,100	.....	13,550	11,050	.....	2,500	.....
Dam Safety Assurance:											
Bluestone Lake, WV	1	107,300	107,300	.....	.....	.....	750	750	.....	.....	.....
Success Dam, CA	1	30,900	30,900	.....	.....	.....	1,250	1,250	.....	.....	.....
All (Dam Safety Assurance Projects)	2	138,200	138,200	.....	.....	.....	2,000	2,000	.....	.....	.....
All (Projects)	19	1,167,828	832,939	.....	37,100	297,789	130,906	52,547	.....	2,500	75,859
Program: Riverine Ecosystem Restoration and Flood Hazard Mitigation Program	1	654,000	425,000	.....	.....	229,000	35,000	25,000	.....	.....	10,000
All (Projects and Program)	20	1,821,828	1,257,939	.....	37,100	526,789	165,906	77,547	.....	2,500	85,859
OPERATION AND MAINTENANCE, GENERAL											
Dredge Wheeler Ready Reserve [1]	1	.....	.....	.....	.....	.....	12,450	12,450	.....	.....	.....
Management Tools for Operation and Management	1	2,265	2,265	.....	.....	.....	975	975	.....	.....	.....
National Dam Security Program [1]	1	.....	.....	.....	.....	.....	20	20	.....	.....	.....
Wetlands Functional Assessment Methodology	1	7,398	7,398	.....	.....	.....	1,000	1,000	.....	.....	.....
Zebra Mussel Research Program	1	13,378	13,378	.....	.....	.....	1,500	1,500	.....	.....	.....
All (Remaining Items)	5	23,041	23,041	.....	.....	.....	15,945	15,945	.....	.....	.....
REVOLVING FUND											
Plant Replacement and Improvement Program (PRIP) Major Acquisitions [2]											
Towboat RAYMOND C. PECK Replacement	1	5,500	5,500	.....	.....	.....	5,160	5,160	.....	.....	.....
Fuel Oil Barge Replacement	1	1,495	1,495	.....	.....	.....	1,390	1,390	.....	.....	.....
Survey Boat GRANADA Replacement	1	1,533	1,533	.....	.....	.....	1,285	1,285	.....	.....	.....
Derrickboat NO. 6 Replacement	1	775	775	.....	.....	.....	660	660	.....	.....	.....
PANAMA CITY Crane Barge Replacement	1	6,400	6,400	.....	.....	.....	125	125	.....	.....	.....

Survey Boat GATLIN Replacement	1	1,800	1,800	.....	.....	.....	1,550	1,550	.....	.....	.....
All (PRIP Major Acquisitions)	6	17,503	17,503	.....	.....	.....	10,170	10,170	.....	.....	.....
ALL	32	1,862,472	1,298,583	.....	37,100	526,789	192,121	103,762	.....	2,500	85,859

[1] Fiscal year 2000 funding reflects annual requirement.
[2] Funding is available from the Revolving Fund.

TABLE C—DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS CIVIL WORKS—FISCAL YEAR 2000 TOTAL (DIRECT AND REIMBURSED) PROGRAM—PRESIDENT'S ENVIRONMENTAL PROGRAM FUNDING

[In thousands of dollars]

Category	Fiscal year								
	Appropriation				Budget 2000 account				
	1996	1997	1998	1999	All	GI	C,G	O&M,G	Others
DIRECT PROGRAM:									
DISCRETIONARY PROGRAM:									
STUDY AND PROJECT SPECIFIC ACTIVITIES:									
MITIGATION	156,010	177,515	128,933	156,840	148,769	3,887	141,516	.....	3,366
RESTORATION	105,752	74,031	181,516	82,289	138,940	15,584	97,154	10,702	15,500
PROTECTION	79,450	90,594	126,875	81,852	86,319	459	3,909	74,044	7,907
CLEANUP	12,020	3,458	317	540	.....	.....	.....	.....	.....
COMPLIANCE	9,864	360	395	2,480	1,327	304	468	.....	555
ALL (Study and Project Specific Activities)	363,096	345,958	438,036	324,001	375,355	20,234	243,047	84,746	27,328
PROGRAMMATIC ACTIVITIES:									
1AQUATIC PLANT CONTROL	4,000	2,000	5,000	3,000	3,000	.....	3,000	.....	.....
AQUATIC ECOSYSTEM RESTORATION (SEC 206)	.....	.....	6,000	11,200	4,500	.....	4,500	.....	.....
BENEFICIAL USES OF DREDGED MATERIAL (SEC 204)	2,500	1,500	2,000	350	1,000	.....	1,000	.....	.....
DREDGING OPERATIONS AND ENVIRONMENTAL RESEARCH (DOER)	.....	1,500	4,000	5,000	8,000	.....	.....	8,000	.....
ENVIRONMENTAL DATA STUDIES	.....	100	100	100	100	100	.....	.....	.....
ENVIRONMENTAL INFRASTRUCTURE	.....	.....	5,000	.....	.....	.....	.....	.....	.....
ENVIRONMENTAL REVIEW GUIDE FOR OPERATIONS (ERGO)	.....	.....	.....	.....	.....	.....	.....	.....	.....
FORMERLY UTILIZED SIRTES REMEDIAL ACTION PROGRAM (FUSRAP)	.....	.....	[1] 162,718	140,000	150,000	.....	.....	.....	150,000
GREAT LAKES REMEDIAL ACTION PROGRAM (SEC 401)	500	500	500	500	.....	.....	.....	.....	.....
HAZARDOUS WASTE SITE RESTORATION INITIATIVE	3,500	.....	.....	.....	.....	.....	.....	.....	.....
NATIONAL RECREATION MANAGEMENT SUPPORT (NRMS)	.....	.....	.....	1,000	.....	.....	.....	.....	.....

TABLE C—DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS CIVIL WORKS—FISCAL YEAR 2000 TOTAL (DIRECT AND REIMBURSED) PROGRAM—PRESIDENT'S ENVIRONMENTAL PROGRAM FUNDING—Continued

[In thousands of dollars]

Category	Fiscal year								
	Appropriation				Budget 2000 account				
	1996	1997	1998	1999	All	GI	C,G	O&M,G	Others
NATURAL RESOURCES TECHNICAL SUPPORT (NRTS)			700						
OIL SPILL RESEARCH PROGRAM	850								
POLLUTION PREVENTION PROGRAM	5,000								
PROJECT MODIFICATION FOR IMPROVEMENT OF THE ENVIRONMENT (SEC 1135)	10,850	17,000	21,175	11,000	8,500		8,500		
REGULATORY PROGRAM	101,000	101,000	106,000	106,000	117,000				117,000
RESEARCH AND DEVELOPMENT	8,331	10,399	17,450	19,450	18,000	4,500	3,000	10,500	
RIVERINE ECOSYSTEM RESTORATION AND FLOOD HAZARD MITIGATION					25,000		25,000		
WETLAND AND AQUATIC HABITAT CREATION	2,500								
WETLANDS FUNCTIONAL ASSESSMENT METHODOLOGY					1,000			1,000	
ZEBRA MUSSEL RESEARCH PROGRAM				1,500	1,500			1,500	
ALL (Programmatic Activities)	135,031	131,999	325,643	296,100	334,600	4,600	42,000	21,000	267,000
ALL (Study and Project Specific and Programmatic Activities)	498,127	477,957	763,679	620,101	709,955	24,834	285,047	105,746	294,328
MANDATORY PROGRAM: COASTAL WETLANDS PLANNING, PROTECTION, AND RESTORATION	35,000	43,000	44,000	10,000	10,000				10,000
ALL (Discretionary and Mandatory Programs)	533,127	520,957	807,679	630,101	719,955	24,834	285,047	105,746	304,328
REIMBURSED PROGRAM (SUPPORT FOR OTHERS):									
EPA SUPERFUND	250,000	250,000	300,000	250,000	250,000				250,000
DEPARTMENT OF ENERGY	31,000	20,000	22,000	2,000					
OTHER GOVERNMENTAL AGENCIES	65,000	45,000	35,000	11,000	8,000				8,000
ALL (Reimbursed Program)	346,000	315,000	357,000	263,000	258,000				258,000
ALL (Direct and Reimbursed Programs)	879,127	835,957	1,164,679	893,101	977,955	24,834	285,047	105,746	562,328

[1] Includes $22,718 in unpaid balance transferred from Department of Energy.

STATEMENT OF JOE N. BALLARD

Senator DOMENICI. Thank you very much, Mr. Secretary.

With the committee's indulgence, we will have General Ballard testify, and then we will inquire. General Ballard, it is nice to have you here.

General BALLARD. Thank you very much, Mr. Chairman and members of the subcommittee. I am pleased to be testifying on the President's fiscal year 2000 budget for the civil works program. I am again honored to be appearing before you again as Chief of Engineers.

Today the Corps' civil works program is strong and highly productive, and I thank you for your great support for this critical program that is really an investment in our Nation's future. This budget request is, I believe, more constructive than the one presented a year ago, setting the stage for an effective dialogue with the Congress on appropriate funding levels.

Mr. Chairman, with your permission, I will now summarize my complete statement and submit that statement for the record. My summary covers four topics: transformation of the Corps, the civil works program execution, the FUSRAP program, and some selected civil works issues.

Mr. Chairman, I would like to begin with a short discussion of what is happening inside of the Corps. We are very proud of what we have accomplished, and there is still much more to come. Several years ago, we developed a vision and a strategic management process. Our intent was to transform the Corps into an organization ready to take on the challenges of the 21st century.

In the last 2 years, we have——

Senator DOMENICI. General, could you excuse me just one moment?

General BALLARD. Yes.

Senator DOMENICI. Would one of you take my place while I go to the Commerce, Justice appropriations? Senator Bennett, would you chair? I will be back shortly.

Senator BENNETT. Yes.

Senator DOMENICI. Thank you very much.

Thank you, General.

General BALLARD. Yes, sir.

EFFICIENCY AND RESPONSIVE MEASURES

I will continue, sir. In the last 2 years, we have worked diligently to become more client focused, dramatically changing our internal processes to become more responsive and cost efficient, and to take advantage of changes in technology. Now, a lot of time and energy was invested up front, and we are now beginning to see the payoff. Time does not permit me to get into very much depth, but I would like to give you a few snapshots of our progress.

PROJECT MANAGEMENT

In the area of project management, we have fully implemented the project management concept providing our clients one point of contact and responsibility for Corps projects and programs. This has greatly enhanced our relationship with our clients, and at the

same time, it integrated the resources of the organization to focus on quality projects delivered on time and within budget.

In the past, we forced our customers to understand our internal organization and navigate the different stovepipes, doing their own coordination. Now our customers will go to their supporting districts who have the responsibility to deliver whatever is needed, accomplishing all coordination and integration seamlessly and transparently.

We are relooking our entire planning process from the time a project is identified until the project cost-sharing agreement is signed. This area has been particularly frustrating for our clients and for us. The process simply takes too long. It is too bureaucratic and too costly. We have approved for implementation the recommendation of a process action team to streamline the process, to minimize the burden on local sponsors, and delegate most of the approval and execution authority to divisions and districts, thus expediting agreements. We have also made significant changes to our continuing authorities program to simplify, expedite, and make it more user friendly. And these efforts are only the beginning.

We are reevaluating our organization at every level. Over the past few years, our General Expense staffing has declined from 1,368 in fiscal year 1996 to 1,181 in fiscal year 1999. Now, that is a 14-percent reduction at the same time we have had an increase in workload. As you know, we have reduced the number of divisions from 11 to 8 and continue our downsizing of division staffs. We are also reducing headquarters staffing. By Washington standards, we were already a lean headquarters before we started this process, at less than 2 percent of the total work force.

I could go on about changes inside of the Corps. I hope that this will give you some insight into a much larger process that will continue to accelerate over the next few years.

Now, let me turn now to some ongoing execution of our civil works program.

PROGRAM EXECUTION

Efficient and responsive execution continue to be a very important priority of the Secretary and mine. In fiscal year 1998, we increased our expenditure execution by $400 million over what has been a flat execution of about $3.7 billion for each of the preceding 3 years. In fiscal year 1999, we have scheduled an additional $500 million in expenditures, meaning that we will have increased the Corps' capacity by $900 million in just 2 years, while maintaining the quality and the professional standards that have marked our work for many years.

But in spite of that record, I am not yet satisfied with our execution rate. We will continue to examine and evaluate ways to expedite our projects from start to finish.

FUSRAP PROGRAM

I would like to report on our progress in the FUSRAP program. We have accomplished our first two priorities in the FUSRAP program, following transfer of execution from the Department of Energy. We have maintained the anticipated schedule during the

transition period and have put a number of cost saving measures in place.

In fiscal year 1999, we expect to complete remedial action at 2 sites and to accomplish work on schedule for 19 other sites.

The highest priority actions are those to remove potential risks to the health of the environment. Budget funding will enable completion of remedial action at 3 sites and continued work at 16 others. At the current rate of funding, we should complete all of our sites by the year 2010. This program is a real success story. I am very proud of our contribution to the Nation and our track record on this program.

As in any large and complex program, there are a few areas that need some attention, so let me highlight a few that may be of some interest.

REGULATORY PROGRAM

In the regulatory funding and appeals, this is an area that we are really struggling with. Our funding level to date has only been enough to provide the most basic level of permit review and response to the public. Trying to meet your intent, we are implementing a limited appeals process this year. The proposed funding level for next year will permit us to implement the complete regulatory appeals process.

OPERATION AND MAINTENANCE PROGRAM

In the area of operation and maintenance, the O&M level of funding proposed for this year is for the first time adequate to meet our current O&M needs. However, we have a large backlog of maintenance and repair for our infrastructure. During this year, O&M will be an area of significant focus for us. We will look at every single area for ways to reduce our operating costs, accomplish needed maintenance and repair and improve our services.

GENERAL EXPENSE ACCOUNT

On the subject of GE funding, earlier in my statement I extolled our progress in reducing division and headquarters staff. We have made great progress in this area, but I do not believe we can go any lower. Since 1991, we have reduced GE staffing levels by almost 33 percent. I am convinced that we must hold at the current staffing level to provide for program direction and oversight, for which you and the public rely on us.

Mr. Chairman, in conclusion, the President's budget for the Corps of Engineers is a good one. Using our strategic management process, we will continue to find ways to reduce our costs and improve our level of responsiveness to the public and our clients. Meanwhile, we will do our very best to execute the civil works program for maximum benefit to the Nation.

PREPARED STATEMENT

Thank you, Mr. Chairman and members of the committee. This concludes our statement, and we are now ready to take your questions.

[The statement follows:]

PREPARED STATEMENT OF JOE N. BALLARD

INTRODUCTION

I am pleased to be testifying on the President's fiscal year 2000 (fiscal year 2000) Budget for the Civil Works Program, and am honored to be appearing before you again as Chief of Engineers.

Today, the Civil Works Program is strong, balanced, and highly productive. I look forward to your continued partnership in this fine program, so broadly beneficial to our Nation.

My statement covers seven topics:

—Fiscal year 2000 Civil Works Program Budget,
—Program Execution and Outlook,
—Restructuring,
—Improvement of Business Operations,
—Corps of Engineers Financial Management System,
—Corps Vision, and
—Headquarters Relocation Planning.

FISCAL YEAR 2000 CIVIL WORKS PROGRAM BUDGET

INTRODUCTION

This is a good budget. New fiscal year 2000 funding for the Civil Works Program, including the Direct and Reimbursed programs, is expected to approach $5.10 billion.

The Direct Program is formulated by the federal government and funded through appropriations of discretionary and mandatory amounts directly to the Corps. Funding for this program totals $4.29 billion. Discretionary amounts total $3.91 billion, including defense and domestic program components of $150 million and $3.76 billion, respectively. The defense component is for the Formerly Utilized Sites Remedial Action Program (FUSRAP), transferred from the Department of Energy to the Corps by Congress in the Energy and Water Development Appropriations Act, 1998.

The Reimbursed Program is formulated, under provisions of law, by the Corps in collaboration with other federal agencies, State and local governments, and other nations. It is funded in either of two ways: from discretionary amounts of the Direct Program, initially, and, ultimately, through reimbursement by the ordering agencies, governments, and nations; or by advance payments by the agencies, governments, and nations. Funding for this program is projected to be $800 million.

Direct Program

OVERVIEW

The proposed fiscal year 2000 Civil Works Direct Program budget reflects the Administration's commitment to continued sound development and management of the Nation's water resources, to which the Corps has been dedicated for over 200 years. It provides for continued efficient operation of the Nation's navigation, flood protection, and other water resource management infrastructure, fair regulation of the Nation's wetlands, and restoration of the Nation's important environmental resources, such as the Florida Everglades. It provides for initiation of a new program to restore riverine ecosystems while mitigating flood hazards for communities. Additionally, it is supported by a proposal to establish a Harbor Services User Fee (HSUF) and Harbor Services Fund (HSF) to fund the federal share of construction cost, as well as operation and maintenance of our harbors and ports. Lastly, it is consistent with the President's overall domestic priorities and continued commitment to a balanced budget. The budget provides for continued funding of nearly all studies and projects underway, including many started in fiscal year 1999. It also provides for funding of new starts under the General Investigations (GI), Construction, General, (CG), and Operation and Maintenance, General (O&M) programs, and the Plant Replacement and Improvement Program (PRIP) of the Revolving Fund.

The new start program includes 1 new reconnaissance study. Additionally, 27 preconstruction engineering and design studies, following cost-shared feasibility studies, are being funded for the first time.

The new start program also includes new construction projects and one new program. The projects include 19 specifically authorized by Congress and an undetermined number generally authorized under the Continuing Authorities Program (CAP). The specifically authorized projects include 10 regular construction projects, 7 major rehabilitation projects, and 2 dam safety assurance projects. The regular construction projects include 5 for navigation, 3 for flood control, and 2 for environ-

mental improvement. The new program is the Riverine Ecosystem Restoration and Flood Hazard Mitigation Program, also known as "Challenge 21."

Additionally, the new start program includes 5 new operation and maintenance items and 6 new PRIP major acquisitions construction projects.

NEW FUNDING

As shown in the table at the end of this statement, the fiscal year 2000 budget includes $3.91 billion in "Discretionary and Related Mandatory" funding being requested through the fiscal year 2000 Energy and Water Development Appropriations Act. All amounts shown under this heading are appropriated from the General Fund; however, amounts shown under the CG and O&M accounts opposite the names of other funds are ultimately reimbursed from those other funds. Accordingly, $1.04 billion, or 27 percent, of the amount requested would be offset with dedicated funding from the HSF ($951 million), Inland Waterway Trust Fund (IWTF) ($55 million), and Special Recreation User Fees (SRUF) Fund ($36 million). Funding for the GI, CG, and Flood Control, Mississippi River and Tributaries (FC, MR&T) Programs, in which new study and construction starts are common, totals $1.65 billion. Of this, $80 million, or 5.0 percent, is provided to fund the new study and construction starts mentioned above, including Challenge 21.

In addition, as shown in the table, the budget includes $387 million in "Mandatory, Only," funding to be made available under existing law. This includes $251 million from the Rivers and Harbors Contributions Trust Fund (R&HCTF), representing nonfederal costsharing contributions paid under 5 programs (the GI; CG; O&M; FC,MR&T Project; 4 and CWPPR Project programs). It also includes $107 million to be transferred from the Bonneville Power Administration (BPA) for operation and maintenance of the Corps' hydropower generation facilities in the Pacific Northwest.

Comparison with Fiscal Year 1999 Funding

As shown in the table, new direct funding for the fiscal year 2000 budget is $83 million less than initial appropriations for fiscal year 1999.

Discretionary and related mandatory funding is $54 million less than, or 99 percent of, last year's initial appropriations. It was increased for three accounts, unchanged for two, and decreased for three others. Accounts increased include FUSRAP (107 percent), O&M (111 percent), and the Regulatory Program (110 percent); unchanged include GE and FC&CE; and decreased include GI (83 percent), CG (87 percent), and FC,MR&T (87 percent).

New mandatory, only, funding is $28 million less than, or 93 percent of, last year's appropriations, largely because of decreased R&HCTF costsharing contributions.

Outlays of discretionary funding for fiscal year 2000 are expected to be about $218 million less than for fiscal year 1999, commensurate with the reduction in funding.

Net New Funding

Of the $4.29 billion in total new direct funding, $1.43 billion, or 33 percent, would come from 9 sources other than Treasury's General Fund, yielding net new funding not specifically collected for the program of $2.96 billion. These sources—8 existing and 1 proposed—include 5 special and 3 trust funds, and 1 transfer. The largest amounts would come from the proposed HSF ($951 million, including $258 million for the CG and $693 million for the O&M programs). Sizeable amounts would also come from the IWTF ($55 million) and SRUF Fund ($36 million). The balance of $387 million would come from the 6 mandatory, only, sources.

We are also proposing changes to the fees collected under the Regulatory Program. These fees would be transferred to a General Fund receipt account and would be unavailable to the Corps. The collections are now projected to be $7 million in fiscal year 2000 and, annually, thereafter. We have scaled back this initiative considerably, and anticipate collecting only about half as much as we had proposed previously. Although unavailable to the Corps for its use, the collections would reduce net federal costs.

Highlights

The budget provides for essentially "flat" annual funding for the 5-year program at the fiscal year 2000 level, which is 99 percent of fiscal year 1999 initial appropriations. Moreover, it provides essentially flat annual funding by individual program for the 5-year program. Generally, work completion schedules will be shortened somewhat from those presented last year. A notable exception is that schedules of the GI Program will be lengthened somewhat.

Proposed funding for the GI Program is 90 percent of fiscal year 1999 budgeted funding. The rationale for this is that studies lead to construction projects of which there is already a large backlog due to competing funding priorities. Given outyear funding ceilings based on these priorities, reduction of this large backlog will be possible only over several years. In light of this, limiting the number of new start studies and setting priorities among ongoing ones appears advisable, for the time being. However, in that programmatic activities such as floodplain management, planning assistance, and international water studies provide important grass-roots support to local communities in solving their water resource problems, they were funded at approximately fiscal year 1999 appropriation levels.

The proposed HSF will replace the Harbor Maintenance Trust Fund (HMTF). The HMTF was funded with an ad valorem tax on freight shipped through the Nation's harbors and ports. This tax was determined to be unconstitutional, as applied to exports, by the U. S. Supreme Court. The HSF will be funded with fees collected from commercial users of the harbors and ports, the rationale being that beneficiaries should be responsible for costs. The fees will be based on the values of benefits that users receive from services provided, and will be sufficient to cover federal costs of harbor and port construction, operation, and maintenance. The rates of the fees will vary based on types and carrying capacities of vessels involved. The proposal will enable nearly all construction, operation, and maintenance of harbors and ports to proceed on optimal schedules.

Proposed fiscal year 2000 funding for the CG Program is 154 percent of fiscal year 1999 budgeted funding. Much of the increase is due to dedicated funding from the proposed new HSF. This dedicated funding covers 100 percent of costs of harbor and port construction. Because of this, completion schedules for 28 harbor and port development projects have been optimized. This will enable accomplishing more work sooner, thereby producing navigation benefits and resultant cost savings sooner. In addition, completion schedules for 9 high priority projects for mitigation, ecosystem restoration, and other purposes have been optimized. On the other hand, completion schedules for flood damage reduction, inland waterway, and shore protection projects are somewhat constrained.

Proposed fiscal year 2000 funding for the O&M Program is 115 percent of fiscal year 1999 budgeted funding. All 6 of this increase is due to dedicated funding from the HSF which will cover 100 percent of costs of harbor and port operation and maintenance. The increase in funding will help improve current services.

REIMBURSED PROGRAM

Through the Interagency and Intergovernmental Support Program we help other agencies and governments with timely, cost-effective implementation of their programs, while maintaining and enhancing capabilities for execution of our Civil Works Direct Program and Military Program missions. Other agencies look to us for help with engineering and construction management because of our vast experience and capabilities, enabling us to do the work better, faster, and cheaper.

We provide reimbursable support for about 60 other federal agencies and several State and local governments through help with environmental, engineering, and construction management work. Total reimbursement for such work in fiscal year 2000 is projected to be $800 million. The largest share—nearly $250 million—is expected from the Environmental Protection Agency (EPA) for cleanup of wastes at numerous sites under its Superfund program. 98 percent of Reimbursed Program funding is provided by federal agencies.

STAFFING

Total staffing for the Civil Works Program for fiscal year 2000 is 24,734 FTEs. This reflects a reduction of 462 FTEs from the fiscal year 1999 total. Of the total, 23,584 FTEs are for the Direct Program and 1,150 FTEs are for the Reimbursed Program. Total staffing is allocated 90.6 percent to districts, 4.9 percent to laboratories and other separate field operating agencies, 2.7 percent to division offices, and 1.8 percent to headquarters.

PROGRAM EXECUTION AND OUTLOOK

INTRODUCTION

Efficient and responsive execution of the program that Congress made appropriations for continues to be a very important priority of mine as Chief of Engineers. In fiscal year 1998, we increased our expenditure execution by $400 million over what had been a flat execution of about $3.7 billion for each of the preceding three years. In fiscal year 1999, we have 7 scheduled an additional $500 million in ex-

penditures, meaning we will have increased the Corps' capacity by $900 million in two years concurrent with maintaining the quality and professional standards that have marked our work for years.

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

As I testified last year, we accomplished our first two priorities in executing FUSRAP following transfer of execution responsibilities from the Department of Energy. We kept the anticipated schedule during the transition period, and implemented numerous cost saving measures. We also completed our assessment of the program and provided a report of our finding to you.

We are working to finalize a Memorandum of Understanding with DOE defining our respective roles and responsibilities, as directed by Congress.

During fiscal year 1999, we expect to complete remedial action at 2 sites and to accomplish work on schedule for 19 others.

The President's Budget includes $150 million in new funding for FUSRAP, reflecting current priorities for remedial action. We are giving highest priority to proceeding in a way that will reduce potential risks to health and the environment. To improve the overall efficiency of the program, we also have assigned a priority to activities and sites that can be completed in the short-term—within the next fiscal year or two. Budget funding will enable completion of remedial action at 3 sites and continuing work at 16 others.

I am very proud of our contribution to the Nation as a result of our effort on this program.

GENERAL INVESTIGATIONS

Scheduled report production for the program in fiscal year 1998 included 83 reconnaissance and 26 feasibility reports. We completed 78 and 28, respectively.

The National Research Council recently completed an independent assessment of our Civil Works project development process. While concluding that the overall length and cost of the planning process are reasonable in light of the many considerations involved, the preliminary report includes some recommendations in the interest of shortening it. These recommendations include that we seek conditional authorizations 8 and reduce gaps between work phases. Additional recommendations include our using a watershed or estuarial region as the basic planning unit, studying a sample of flood control projects to evaluate whether non-structural alternatives have been adequately considered, and revising the Principles and Guidelines to incorporate contemporary analytical techniques and public values. Presently, we are evaluating these recommendations.

The President's Budget includes $135 million in new funding for the GI Program, including $100 thousand for one new start reconnaissance study. The outlook for program workload is healthy. We are striving continually to enhance our performance during these times of limited resources.

CONSTRUCTION, GENERAL

In fiscal year 1998, we scheduled CG Program expenditures totaling $1.3 billion, and actually expended $1.24 billion.

In fiscal year 1999, $1.54 billion is scheduled for expenditure. Our districts and divisions are aggressively seeking opportunities to accomplish work on funded projects. At the end of January, expenditures were on schedule at $342 million. Typically, once Spring arrives and construction operations come up to speed nationwide, the rate of expenditure will begin a steady climb that continues through the end of the fiscal year.

The President's Budget includes $1.24 billion in new funding for the CG Program. Included in this amount is $80 million for initiation of 19 new start projects and one new program initiative for Riverine Ecosystem Restoration and Flood Hazard Mitigation. The balance of $1.16 billion includes $1.04 billion for specifically authorized continuing projects and $125 million for remaining items, including projects under several continuing authorities programs.

Over 25 percent of the budget request will be offset by $313 million in dedicated funding from the proposed HSF ($258 million) and the IWTF ($55 million).

OPERATION AND MAINTENANCE, GENERAL:

The O&M Program covers operation and maintenance of the Corps' water resource management infrastructure. More specifically, the program provides for operation, 9 including monitoring and study, and maintenance, including dredging and repair, as applicable, of 25,000 miles of waterways, 238 navigation locks, 926 har-

bors, 383 dams and reservoir projects, 75 hydroelectric power projects, and recreation facilities for 380 million visits per year. This infrastructure, benefitting navigation, flood damage reduction, hydropower generation, recreation and the environment, contributes significantly to the economic and environmental health of the Nation.

Fiscal year 1998 funding for the program included $1.74 billion in initial appropriation, plus $105 million in an emergency supplemental appropriation for repair of Corps projects impacted by storms primarily in California and along the Gulf Coast. In fiscal year 1998, we completed consolidation of O&M fiscal management activities into our Programs Management Division to simplify and streamline fiscal operations.

The initial fiscal year 1999 O&M appropriation was $1.65 billion. Also, in fiscal year 1999, for the first time, BPA began funding operation and maintenance of hydropower facilities in the Pacific Northwest directly, thereby eliminating need for Corps appropriations for this work. BPA will transfer $106 million to the Corps for the work in fiscal year 1999. Total funding for the O&M Program from these two sources is $1.76 billion, or 1 percent more than the initial fiscal year 1998 amount. In addition, the program received a $100 million emergency supplemental appropriation for repair of storm damage to navigation facilities in the Southeast and, again, along the Gulf Coast, particularly from Hurricane Georges.

The President's Budget includes $1.84 billion in new funding for the O&M Program. In addition, BPA will provide $107 million. Accordingly, total initial funding is $1.94 billion, or 11 percent more than in fiscal year 1999. This increase will be used to maintain and repair our aging infrastructure. For years, because of budget constraints, we have deferred work not critical to project operation during the budget year, thereby building our backlog of desired maintenance work. Eventually, after repeated deferrals, facilities become deteriorated to the extent that repair must be done to avoid serious failure. We continue to search for and implement more cost-effective ways to accomplish our stewardship with limited resources. We are determined keep this infrastructure in condition to provide the products and services so essential to sustaining our national prosperity.

Nearly 40 percent of the budget request will be offset by $729 million in dedicated funding from the proposed HSF ($693 million) and the SRUF Fund ($36 million).

GENERAL EXPENSES

The General Expenses (GE) Program provides for executive direction and management of the Civil Works program by the headquarters and 8 division offices. It also provides for support of executive direction and management by 4 field operating activities. Funding for the program is allocated approximately 70 percent for labor; 24 percent for fixed costs such as rent, utilities, communications, and contractual services; and 6 percent for discretionary costs, such as travel, training, supplies and materials.

Together, headquarters and division offices provide executive direction and management for the Civil Works program. They are funded from appropriations for the GE Program, for which the President's Budget includes $148 million in new funding. This supports staffing of 1,142 FTEs, reduced from 1,177 FTEs in fiscal year 1999. This staffing represents only 4.6 percent of the total Civil Works Program workforce. Headquarters staffing of 437 FTEs represents less than 2 percent of the total workforce.

During the past 10 years, GE Program staffing has been reduced by one-third. It will continue to decline through fiscal year 2002 to about 1,050 FTEs. Despite inflation and cost increases in personnel compensation and benefits, we continue to look at ways to streamline and economize, although we may have few opportunities left. Personnel reductions, reorganizations, and other efficiency measures allow our request to remain at $148 million for the third consecutive year.

I am keenly aware of expectations of the Committee and the American public that the Corps get the job done right at least cost. Executive direction and management under this program plays a key role in developing ways to meet these expectations. We appreciate your strong support for this program, so important to continued high performance of the Civil Works Program.

RESTRUCTURING

INTRODUCTION

We continue to restructure our organization with a view to achieving greater efficiency and effectiveness in the resourcing, planning, design, and execution of our Civil Works and Military Programs. I would like to update you on continued

progress in the restructuring of our organization through consolidation, streamlining, and downsizing of 11 our headquarters, divisions, and the emergency operations organization.

HEADQUARTERS

Resource Management Consolidation

Last year I achieved my goal of establishing a full-service Deputy Chief of Staff, Resource Management, at Corps headquarters. Before consolidation, resource management functions were fragmented throughout the headquarters. This was inefficient and diminished our ability to plan, program, budget and manage use of our total resources. Now, our financial data collection and maintenance and oversight of corporate resources are consolidated into the Resource Management Directorate. All financial and staffing data are now generated in this Directorate. This enables me to get integrated information on all resource matters of the Command.

Staffing

We have been reducing staffing of Corps headquarters as well as of the 4 field support activities. We expect that headquarters staffing will be about 90 percent of the fiscal year 1997 level in fiscal year 2000, and only 81.5 percent of the fiscal year 1997 level by fiscal year 2002. Staffing of the 4 support activities has already been reduced to 83 percent of the fiscal year 1997 level, and is projected to be further reduced to 78.5 percent of the fiscal year 1997 level by fiscal year 2002.

DIVISIONS

Regional Business Centers

In February 1998, I approved establishment of each division office as a Regional Business Center (RBC) with a view to getting divisions and their districts to operate as single business entities in the interest of efficiency and effectiveness. Implementation of this plan required dramatic changes in business style and organizational cultures. Our efforts at this have been very productive. This year the division Regional Management Boards (RMBs) have all reviewed the same budgeting and accounting 12 practices for the purpose of achieving Corps-wide consistency and standardization. The RMBs also significantly improved vertical and horizontal communications within their regions and established a Corps-wide forum for sharing lessons learned and enhancing the RBC concept. This year, I expect that the RMBs will identify optimal business practices for the region, most efficient organizations for each district, and initiatives to maximize the use of regional resources.

Resource Management Consolidation

Management of corporate resources within one office at all levels is critical to efficient, effective, full-service operations. Accordingly, in November 1998, I directed divisions to consolidate all facets of operations regarding resources within their Resource Management Offices, much as we have done at headquarters. Consolidation is now complete.

Staffing

As reported last year we have completed restructuring our divisions, from 11 to 8, to provide a more efficient and effective organization. We expect that staffing for the 8 divisions will be about 84 percent of the fiscal year 1997 level in fiscal year 2000, and about 77 percent of the fiscal year 1997 level by fiscal year 2002.

EMERGENCY OPERATIONS ORGANIZATION

In July 1997, we began implementation of our "Readiness 2000 Initiative" to transform our readiness group into a corporate team sharing planning responsibilities and response capabilities, and to organize and manage emergency operations resources through a national strategy. The goal is to provide for rapid set-up of effective response organizations and immediate initiation of emergency contracting and other critical services for impacted communities. The program provides for establishing and training teams in each of our 37 districts for 46 specific emergency response missions, and supporting these teams with a "deployable tactical operations system" (DTOS), including 24 vehicles, 2 transportable systems, and 37 "fly away" equipment packages.

To date, we have established all 46 teams and formally trained 24 of them. We have 13 also purchased roughly 50 percent of the DTOS. Although not fully implemented, the program has already significantly improved our overall readiness and response capability. This was evident following Hurricane Bonnie and Georges last

Fall. We spent substantially less time setting up for and commencing effective emergency operations in the disaster areas of these storms.

We plan to train another 18 teams in fiscal year 1999, and retrain the 24 already trained based on lessons learned. The balance of the DTOS is scheduled for delivery by June, in time for the upcoming hurricane season. Once the program is fully implemented, we will be able dispatch our nation-wide resource of highly-trained personnel and state-of-the-art DTOS to any area where our presence is required in support of emergency activities of federal, State and local agencies.

IMPROVEMENT IN BUSINESS OPERATIONS

INTRODUCTION

We continue to improve our business operations through implementation of better regulations, systems, processes, and practices in the interest of more efficient and effective execution of our Civil Works and Military Programs. I would like to update you on continued progress at this in strategic planning, project management, and our small business program.

STRATEGIC PLANNING

For the Corps to continue to fulfill its role in serving the Army and the Nation we must continually look out beyond current initiatives and anticipate what changes will be needed next. Working from our Corps-wide Vision we are developing the strategic management processes that will guide the Corps of the future.

Our first initiatives were aimed at quickly identifying things we needed to improve right away. Headquarters and Division Campaign Plans, and District Operations Plans were the result of these initiatives. Next, we started the more deliberate work of identifying where the Corps needs to focus efforts for additional change. We have now merged the quick-start initiatives and the deliberate analysis into an integrated ongoing strategic management process led by the senior officers and civilians in my Headquarters who compose our newly established Strategic Management Board.

PROJECT MANAGEMENT

New Regulation

A year ago, I issued a new Programs and Project Management Regulation which revolutionizes the way we conduct our work. This regulation established a Project Management Business Process for accomplishing our activities. This change is making the Corps far more customer focused than in the past, with an orientation toward project rather than process. Through a number of initiatives, I am continuing this revolution by removing Corps headquarters from the business of managing projects on a day-to-day basis, and delegating more execution responsibility and accountability to the field.

Planning Process

We are relooking our entire planning process from the time a project is identified until the PCA is signed. I have approved, for implementation, the recommendations of a Process Action Team to streamline the process, minimize burdens on local sponsors, and delegate much of the approval and execution authority to divisions and districts, thus expediting agreements. We are undertaking immediate, near-term, and long-term measures to address the recommendations. These steps should simplify and expedite project negotiations, strengthening our partnership with non-federal sponsors in execution of our Civil Works Program, to the benefit of the Nation.

Continuing Authorities Program

Late last year, on recognizing that our Continuing Authorities Program (CAP) was not performing at full potential, we established a Process Action Team to review the process and make recommendations for change to improve execution. Presently, we are working to implement the team's recommendation that we effect a uniform and streamlined process for all 9 CAP authorities. The recommendation envisions changes in current regulations and guidance to: vest approval authority for all CAP matters in 15 divisions; allocate most of appropriated funding for CAP to divisions, vesting authority for financial management in divisions; and develop and provide model PCAs especially for the CAP. These steps should breath new life into the CAP, promoting maximum performance of this very important part of our Civil Works Program, to the considerable benefit of the Nation. We are also recommended statutory changes to standardize costsharing and project cost limits.

SMALL BUSINESS PROGRAM

I am committed to ensuring that small businesses have the opportunity to participate in our procurements and that we provide the training and counseling to help them succeed. I have put this program on the front burner for two reasons. First, it's the policy of our government to assist qualified small businesses in obtaining and executing procurement contracts. But, beyond policy, it makes strategic business sense to promote competition and develop businesses to insure a broad base of capable suppliers. I consider the Small Business Program mission vital to the Nation's economic prosperity.

The Corps of Engineers exceeded all expectations in the Small Business Program for fiscal year 1998. We led all other Army Commands in prime contract awards to small businesses, small disadvantaged businesses, and woman-owned small businesses. The Corps of Engineers accounted for one third of Army's prime contract awards to small businesses, small disadvantaged businesses, and woman-owned small businesses.

We maintain a strong outreach program to promote participation of small disadvantaged business in our procurements, and counsel them on how to do business with us. We have made contracting with women and minorities a priority. This past December we hosted our second Annual Small Business Conference. The conference focused on engineering, construction, environmental, and research and development activities of the Army Corps of Engineers. It provided a forum for direct exchange of information and ideas between our commanders and small business leaders.

An example of our success in partnering with small businesses is the recent recovery effort in Puerto Rico following Hurricane Georges. Our commanders were committed to promoting small business participation in the recovery, and, in turn, the small business involved gave outstanding support. I commend them both.

GOVERNMENT PERFORMANCE AND RESULTS

The Government Performance and Results Act of 1993 (GPRA) requires that we show how improvements in our business processes, and efforts to balance scarce budgetary resources between operation and maintenance and new investments, ultimately impact delivery of our products and services to the Nation.

The already effected and proposed improvements in our business processes and practices, discussed elsewhere in this statement, have already resulted and in, and will continue to result in, more efficient and timely production of our Civil Works Program products, less burden on local sponsors who participate in the production through financial support and otherwise, greater capability to be responsive to the water resource management needs of the Nation, and greater customer satisfaction.

Until recently, benefits of these process improvements could be shown only at the project level, and not the program level. Likewise, we could show the impacts of alternative funding on program services levels, and the timing of program results at the project level; but not the program level. Now, we are testing an initial set of results- oriented performance measures for demonstrating the contributions of internal process improvements and impacts of different levels of funding for programs. Our goal is to comply with GPRA in development of a comprehensive set of results-oriented program performance measures. We are discussing these measures with OMB.

CORPS OF ENGINEERS FINANCIAL MANAGEMENT SYSTEM

In March 1998 we completed the process of deploying the Corps of Engineers Financial Management System (CEFMS) to all 61 locations (63 databases). Project and program managers can now benefit from accurate/timely financial information.

We have begun to modernize CEFMS by moving it into a Graphical User Interface (GUI) environment. This will take advantage of Internet browser technology to enable modern application processing, improve usability of the system, and reduce future operations and support costs. Deployment of the CEFMS GUI version is scheduled for fiscal year 2000.

In December 1998 CEFMS was certified in Army's Y2K (year 2000) database as compliant with requirements for operating in Y2K. The US Army Audit Agency has completed an independent review of our test results and, based on a draft report, will 17 confirm that CEFMS is Y2K compliant.

The rest of our systems will be Y2K compliant by the end of this month. As a result, our business operations will continue into the new century without a hitch. I am proud of this accomplishment.

CORPS VISION

Finally, Mr. Chairman, each year I brief you on the status of the Corps Vision. It remains as I showed you last year:

The U. S. Army Corps of Engineers is:

—the world's premier engineering organization, trained and ready to provide support any time, any place.

—a full-spectrum engineer force of high quality, dedicated soldiers and civilians:

—a vital part of the Army;

—the engineer team of choice—responding to our Nation's needs in peace and war; and

—a values-based organization—respected, responsive, and reliable

—changing today to meet tomorrow's challenges!

This Vision is the foundation of all of our strategic planning, restructuring, and process improvements already accomplished, or to be accomplished near- and long-term. Improvements discussed elsewhere in this statement are a direct result of this Vision. As mentioned, we now have an integrated ongoing strategic management process overseen by the newly formed Strategic Management Board, led by the senior officers and civilians in headquarters. Through this process and this board our Vision will endure to the continued significant benefit to the Corps, Army, and Nation.

CONCLUSION

The President's Budget for the Corps of Engineers is a good one. However, we must continue to find ways to reduce our costs and shift more of those remaining to direct 18 beneficiaries of our services. Meanwhile, we will do our very best to execute the Civil Works Program for maximum benefit to the Nation.

Our Vision commits us to dramatic improvement in performance and customer satisfaction within available resources, with a goal of making revolutionary, not evolutionary, improvements in our processes and products—continually maximizing actual and potential values of our organization to the Civil Works Program, the Army, and the Nation.

Thank you Mr. Chairman and Members of the Committee. This concludes my statement.

DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS CIVIL WORKS—FISCAL YEAR 2000 DIRECT PROGRAM

[New obligation authority in thousands of dollars]

Source/program/account	Fiscal year		
	Initial appropriation		Budget
	1998	1999	2000
APPROPRIATION:			
Discretionary and Related Mandatory:			
Defense: Formerly Utilized Sites Remedial Action Program (FUSRAP)	140,000	140,000	150,000
Domestic: General Investigations	156,804	161,747	135,000
Construction, General:			
General Fund	1,394,167	1,353,372	927,200
Harbor Maintenance Trust Fund	.....	3,255	.....
Harbor Services Fund	.....	.....	257,700
Inland Waterway Trust Fund	79,206	73,258	55,000
Total	1,473,373	1,429,885	1,239,900
Operation and Maintenance, General:			
General Fund	1,209,137	1,617,551	1,107,300
Harbor Maintenance Trust Fund	496,900	.....	.....
Harbor Services Fund	.....	.....	692,900
Special Recreation User Fees Fund	33,988	35,701	35,700
Total	1,740,025	1,653,252	1,835,900
Flood Control, Mississippi River and Tributaries	296,212	321,149	280,000

DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS CIVIL WORKS—FISCAL YEAR 2000 DIRECT PROGRAM—Continued

[New obligation authority in thousands of dollars]

Source/program/account	Fiscal year		
	Initial appropriation		Budget
	1998	1999	2000
Regulatory Program	106,000	106,000	117,000
General Expenses	148,000	148,000	148,000
Flood Control and Coastal Emergencies	4,000	.....	.....
Total (Domestic)	3,924,414	3,820,033	3,755,800
Total (Defense and Domestic)	4,064,414	3,960,033	3,905,800
Mandatory, Only:			
Permanent Appropriations	14,627	18,098	18,576
Coastal Wetlands Restoration Trust Fund:			
Corps	10,000	10,000	10,000
Others (excluded)	37,541	38,300	44,180
Total	47,541	48,300	54,180
Rivers and Harbors Contributions	262,274	280,896	251,141
Bonneville Power Administration	.....	106,000	107,000
Washington Aqueduct (borrowing authority, excluded)	24,000	22,000	.....
Total	286,901	414,994	386,717
TOTAL (Discretionary and Mandatory)	4,351,315	4,375,027	4,292,517

STATEMENT OF SENATOR BENNETT

Senator BENNETT [presiding]. Thank you very much. We appreciate your being here.

There are some who think you should get hazard pay for the times you appear before this committee. You have an unthankful task in some of the responsibilities you assume, but we agree that your work is of the utmost importance in protecting the water resources.

I would like to make the same comment to you gentlemen that I made to the previous panel with respect to the Army Corps personnel in Utah. They are very capable and very thorough in their duties and take their responsibilities very seriously. We have had differences of opinion with them from time to time, but we have enjoyed working with them and recognize the seriousness with which they approach their tasks.

Now, I want to reiterate my support for a few minor projects we have worked on together, again as was the case with the last panel, to get this in and on the record so that you understand how seriously I take them.

UPPER JORDAN RIVER RESTORATION, SECTION 206, PROJECT

The progress on the restoration of the upper Jordan River is going well. The environmental restoration project has been com-

pleted. Plans and specifications for the project have been initiated, and we think we will be ready to proceed with construction in 2001.

Salt Lake County has worked closely with EPA and the Corps and the Interior Department to properly manage water resources on a watershed basis. Pollution from non-point sources is still, of course, a matter of concern, and channel restoration of the upper Jordan River is a critical factor in reducing non-point source pollution. We need about $1 million to complete the plans and specifications, as well as an exemption from the 800 cfs flow requirement required for Federal participation in urban flood control. We hope to discuss those things with you.

Now, the Belco dispute. Again, this is a parochial issue. It is matter that concerns me. It is an ongoing contract dispute between a contractor in Utah and the Corps office in Jackson, Wyoming. I know that my staff has communicated with you on this issue. It has resulted in a suit against the Corps being filed in Federal court over an alleged breach of contract.

I am not taking a position one way or the other. That would not be appropriate for a Senator with respect to something where there is a legal action pending. I want to ensure, however, as every Senator does, that my constituents are treated fairly, and based on a limited review, I have the feeling that that has not been the case here. I would hope we could avoid litigation.

I have found in some other situations that sitting down in my office in the next couple of weeks with the contractor and your staff to see if something cannot be worked out might be a worthwhile activity. I am willing to do that. If nothing comes out of it, then the lawsuit goes forward, but we will at least have tried.

General, would you be open to such a suggestion, or has the matter gone so far that you are not willing to talk about it in that kind of a setting?

General BALLARD. Well, I am very much aware of this particular lawsuit, Senator, and share your concern about doing what is fair both for your constituent and the Federal Government. At the current time, as you know, we are reviewing the status of that case in the office of my General Counsel. What I would like to do—and I have not had a chance to discuss this case in detail with him. So, prior to agreeing to come and meet with you, I would like some time to review the case and then provide you an answer to your question about our willingness to meet.

I think it is important that we do whatever it takes to make sure that we seek a fair solution, and if the case has not gone so far that it would not be inappropriate to meet, I would be willing to do that.

Senator BENNETT. Unlike a super majority of the Senate, I am not a lawyer.

General BALLARD. Yes, sir.

Senator BENNETT. So, I would try to act as the honest arbiter here to see if the two sides can get together. I am not anxious to see the legal bills go up either for the Federal Government or for the contractor. So, I am available to perform that function if you think it would be useful. If not, I understand that you must protect your rights and I respect you for that.

General BALLARD. Well, I share your concerns, sir, and I promise we will get back to you in the next day or so.

Senator BENNETT. Okay.

REGULATORY PROGRAM

Now, I have some real concerns regarding the administrative appeals process related to your regulatory functions. Putting it directly, I am concerned that the Corps has not implemented the administrative appeals program despite the instruction of both the President and the Congress. I will not go into it here, but I have a rather strong statement that I will submit for the record, as well as several questions that I will submit to you in the expectation that the Corps will answer in detail.

Senator BENNETT. I will be working with my colleagues to raise awareness of the need for a workable appeals process that is fair to the landowners. We provided the Corps with resources and instructions in the past which unfortunately in my view have been ignored, and I will be more than willing to provide the Corps with some more explicit legislative direction as to how to implement this. I would hope that Chairman Domenici would back me in this effort, but all of that will become clear when I file my statement and give you my questions.

Those are the only issues that I was ready to raise.

Senator Craig.

Senator CRAIG. Thank you very much, Mr. Chairman.

Generals, Dr. Westphal, thank you for being with us today.

Let me echo what the Senator from Utah has said about the quality of staff and the working relationships we have. They are good and we appreciate them in Idaho. That is always valuable dialogue for both me and my staff with all of you folks as we work on some of these important issues.

SNAKE RIVER DAM REMOVAL

I have before me a press release from the Walla Walla district office of the Army Corps on March 5 denouncing a release coming out of the Sierra Club on March 4. The Sierra Club release tried to depict preliminary findings in what is known as the DREW study as supporting the notion that removing the four lower Snake dams would be advantageous to the economy of the Pacific Northwest region.

Thank you for quickly correcting this inaccurate information. It is critically important that we have accurate facts. We are watching with an eagle eye the EIS you are all involved in to make sure that it is science and not politics. Let me very clearly admonish you, though I do not think it is necessary. Please do not get involved in the politics of this issue or you will destroy your credibility. Stay with the science and stay with the engineering facts that you deal with so well.

You can see the loaded nature of this issue by the silliness of the Sierra Club release. Headlines: DREW Finds Huge Economic Benefits from Partial Removal of Four Lower Snake Dams. Wishful thinking on their part to stymie and destroy the growth in the economy of the region. No question about it. And yet, the science

is not even in to suggest that breaching dams will save these endangered species of salmonoids that we are talking about.

So, we are awaiting your studies. They will be important to the overall character of how we develop a mitigation plan for those fish, and it is going to be critical to the region. As you heard me say—you were here when I was talking with the Bureau of Reclamation—we have spent the last 80 or 90 years taking an arid State like Idaho and watering it and making it habitable not only for species of plants and animals, but the human species, and I do not want to see it dewatered in the name of a single species when science would lead us to a different, and I hope, better course.

I noted there is an item in the Corps budget for engineering activities directed at the dams and fish passage on the Snake-Columbia Rivers. Could you supply for the record how much money is in this budget for planning, design, or construction of such things as dam modification, surface collectors, irrigation project changes, or other activities for salmon recovery?

Dr. WESTPHAL. We will do that.

General BALLARD. Yes, sir.

Senator CRAIG. If you would please. And then please be specific as to how the money is being requested for each of the activities. I think that would be very helpful to us.

Is there anything being done through the fiscal year 2000 budget to address the CASPIAN tern issue on Rice Island at the mouth of the Columbia? I am recommending you go out and buy some coyotes or foxes and put them on that island. [Laughter.]

[The information follows:]

COLUMBIA RIVER FISH MITIGATION, IDAHO, OREGON & WASHINGTON

Subproject/item	Fiscal year 2000		
	Planning	Engineering & design	Construction
Ice Harbor:			
Auxiliary Water Supply		350	
Anadromous Fish Evaluation Program (AFEP)		60	
Lower Monumental:			
Auxiliary Water Supply		350	
Adult Passive Integrated Transponder Facilities		100	
End Bay Deflectors			10
Little Goose:			
Auxiliary Water Supply		350	
Extended Screen Barrier Screen Mods		310	1,200
Trash Boom		550	3,460
Adult Passive Integrated Transponder Facilities		110	
Lower Granite:			
Auxiliary Water Supply		350	
Juvenile Bypass Facility Improvements		970	
Extended Screens Barrier Screen Mods		310	1,200
Barges Moorage Cells		250	80
McNary:			
Fish Ladder Exit Mods			890
Cylindrical De-water Test		110	1,190
Orifice Shelters		15	765
Extended Screens Barrier Screens Mods		250	3,290
Replace Gates/Stoplogs		180	2,770

COLUMBIA RIVER FISH MITIGATION, IDAHO, OREGON & WASHINGTON—Continued

Subproject/item	Fiscal year 2000		
	Planning	Engineering & design	Construction
Adult Passive Integrated Transponder Facilities	.....	110	.....
John Day:			
Extended Screen Barrier Screen	.....	2,310	4,770
Smolt Monitoring facility	.....	100	1,080
End Bay Deflectors	.....	205	1,565
The Dalles:			
Auxiliary Water Supply	.....	1,120	.....
Adult Channel Dewatering	.....	730	.....
Bonneville:			
Bonneville 1st Downstream Migrant & Outfall Facilities	.....	3,530	600
Bonneville 2nd Downstream Migrant & Outfall Facilities	.....	570	3,210
Bonneville 2nd Gatewell Debris	.....	380	800
Mitigation Analysis:			
Walla Walla District Study Activities [1]			
Turbine Study	1,450	.....	.....
Ice Harbor Separator Evaluation	890	.....	.....
Gas Abatement Study	475	.....	.....
Snake River Feasibility Study	890	.....	.....
Fish Ladder Temp Evaluation	710	.....	.....
Fallback Study Ice Harbor/McNary	710	.....	.....
Lower Granite Surface Bypass Collection	8,260	.....	.....
Multiple Bypass (AFEP)	770	.....	.....
Estuary PIT Recovery (AFEP)	770	.....	.....
Gas Fastrack	2,960	.....	.....
Portland District Study Activities [1]			
Lower Columbia Feasibility Study	5,900	.....	.....
Gas Abatement Study	950	.....	.....
Turbine Survival Program	2,900	.....	.....
Bonneville Surface Bypass	12,390	.....	.....
Bonneville 1st Fish Guidance Efficiency	2,360	.....	.....
Bonneville Flat Plate Passive	60	.....	.....
Integrated Transponder Facilities Bonneville Adult Fallback	590	.....	.....
Bonneville 2nd Fish Guidance Efficiency	1,770	.....	.....
The Dalles Surface Bypass	2,920	.....	.....
The Dalles Spillway Survival	2,720	.....	.....
Powerhouse Surface Bypass	590	.....	.....
Spillway Surface Bypass	1,770	.....	.....
John Day 24 Hour Spill Test	2,950	.....	.....
John Day Mitigation Relocation to Ringold Hatchery	180	.....	.....
Lower Columbia Adult Measures	2,360	.....	.....
Gas Fastrack	975	.....	.....
Adult Passive Integrated Transponder Facilities	180	.....	.....
Total Planning Activities	59,450	13,670	26,880

Note: Columbia River Fish Mitigation Project Fiscal Year 2000 Budget Request—$100,000,000.

[1] Some of the study activities for the Mitigation Analysis subproject require engineering, design, and construction of prototype facilities. If this is so, the cost for this engineering, design, and construction is included in the Planning column.

CASPIAN TERN

Senator CRAIG. Other than that, no.

Dr. WESTPHAL. I will let General Fuhrman answer this, but I think we do have a project to move the Caspian——

General FUHRMAN. We are looking at that in conjunction with other agencies as an——

Senator CRAIG. But you are a player in that, are you not, General?

General FUHRMAN. Yes, we are. We certainly are.

Senator GORTON. How about some cats?

Senator CRAIG. Let the record show that the Senator from Idaho is not totally off base here. [Laughter.]

Senator BURNS. How about some wolves?

Senator CRAIG. Well, we could be a supplier there is no question.

But it is important that we see what you are doing there and how much you are a player. That is important that we resolve that issue, for the sake of the young salmon.

PORTS OF CLARKSTON AND LEWISTON

Is there sufficient O&M budget money for dredge work needed on the ports of Clarkston and Lewiston in your current budget, do you think? I am talking about the ongoing necessary works to keep those channels open.

General FUHRMAN. Senator, yes, there is.

Senator CRAIG. Thank you.

Dr. WESTPHAL. Mr. Chairman, Senator Craig, if I could just mention one thing——

Senator CRAIG. Excuse me, Doctor.

Dr. WESTPHAL. I am sorry. I just wanted to mention to you that I took a trip to the Northwest late last year. In fact, I think I spoke with Senator Gorton while I was on that trip. I was at Bonneville at the time. I went to the Lower Snake and viewed all the projects there with the Corps. It was a very short trip and I did not have a chance to really talk to local folks, so I just basically talked to the Corps.

But we are definitely working this whole process, which is, as you know, a very, very lengthy and difficult process in a way, as carefully as we can, and we are trying to be as responsible as we can in responding to the scientific information that is required to make these decisions. But the release of that information is just a very small piece of the overall EIS that is about to come out, hopefully by September of this year, and that is why we responded that way. We think that in the end we will have a good study that we can stand behind.

Senator CRAIG. Well, I certainly hope that is the case. You saw with your tour out there what I think is a tremendously proud legacy and one that we ought to be trying to enhance and perfect. And yes, it has problems and one of our problems is developing a mitigation plan to try to save these species of fish. But it should not be one that we run from at all because it has afforded the Pacific Northwest some tremendous assets that I am certainly proud of. That is why I am as strident as I am with organizations that try

to recreate the region in their own image for political purposes and ignore the science.

Thank you.

DEVILS LAKE, NORTH DAKOTA

Senator BENNETT. Senator Dorgan.

Senator DORGAN. Mr. Chairman, I will be very brief. I do want to thank Dr. Westphal, General Ballard, General Fuhrman, and Mr. Caver. I must confess that I used to think that dealing with the Corps of Engineers was like dealing with pre-democratic Eastern European countries, except Romania's Ceauescu was easier to deal with. [Laughter.]

But I have changed my mind. We have gone through some significant disasters, the Grand Forks and Devils Lake flooding, and the Corps of Engineers has been of invaluable assistance to us and has spent a lot of time and a lot of effort trying to help us get through these tough times. So, I deeply appreciate your commitment to help.

Dr. Westphal, you have worked with us closely on both Devils Lake and Grand Forks. I want to just mention to you—members of the subcommittee will be tired of hearing this but Devils Lake is continuing to rise. The Senator from Utah, Senator Bennett, once offered pumps that they bought apparently for the Great Salt Lake and did not use. The problem is that if you use pumps, you would have to find a place to pump the water. This is not a region where there is an empty pail. So, we cannot transfer one region's problem to cause a problem in another region in our State. That is the difficulty.

But we are working through a range of issues, including the design of an outlet and a series of other matters. I want to impress upon you once again the urgency that I know you understand. That lake is expected to rise again this summer. It is the most vexing thing in the world to us. It is one of only two closed basins in America. The other is the Great Salt Lake. It is a flood that comes and stays unlike most other things that we deal with. Most floods we deal with are river floods where we see a house floating down a raging river someplace and then the flood is over and the river subsides. That is not what is happening to us in this basin.

We had a meeting with the Governor and legislative leaders and others in Bismarck last Friday talking about the time line and other issues, but I would just ask again how you see the time line on the Devil's Lake outlet and if you have enough resources—I expect you do—committed to this in order to try to reach a conclusion on it.

Dr. WESTPHAL. We have the resources, and the last update I had is a little bit dated. It is the end of last year when I asked for an update on where we were with the studies. The Corps at the District level was incorporating some new data into the analysis to try to look at the regional impacts. But since then I have not had an update, unless General Fuhrman has one. So, let me just say that I will get you an update on when we expect to have a report on that.

Senator DORGAN. I would appreciate that.

General FUHRMAN. Just to add to that, as you are well aware, Senator, we are continuing to look at alternatives, along with the local sponsors, and hope to have an update to Congress by the last of April.

[The information follows:]

DEVILS LAKE OUTLET

The time line for completion of the Devils Lake outlet will be addressed in the Interim Report to Congress and is dependent on the alternatives evaluated and eventual direction provided. Once there is a recommended course of action, additional funding resources of at least $5M would be required to initiate and complete plans and specifications for approved actions.

GRAND FORKS, ND

Senator DORGAN. One other question on the Grand Forks dike. The President requested $10 million I believe in his 2000 budget request. Does this adequately reflect the capability of the Corps for the initial construction on the permanent levy in the coming fiscal year?

Dr. WESTPHAL. Yes, that does.

General FUHRMAN. Yes.

Senator DORGAN. If additional funds would become necessary, I assume that the Corps would seek a reprogramming or some other approach?

Dr. WESTPHAL. Yes.

General FUHRMAN. Yes, we would.

Senator DORGAN. Well, I am not usually so reasonable or so agreeable, but I must say that my experience both with the previous panel, and also with the Corps of Engineers the last few years, has been really quite a remarkable experience. They have men and women in the field who work day and night and have put a lot on the line for those of us in North Dakota who have been threatened by these flooding crises, and I want to say thanks to a lot of people who work down in the bowels of your agency and who do some awfully good work.

Dr. WESTPHAL. Thank you, Senator.

Senator DORGAN. Mr. Chairman, I would like to be able to submit a couple of additional questions for the record.

Senator BENNETT. Without objection.

Senator DORGAN. Thank you very much.

YELLOWTAIL DAM, MT

Senator BENNETT. Senator Burns.

Senator BURNS. We can handle most of your problem up there. We will just declare all North Dakota wilderness. We will ship our wolves over there. I am just trying to get rid of some wolves.

Senator DORGAN. What is that fellow's name? [Laughter.]

Senator BURNS. Up in our State, just so the people in this room understand my previous comment, you cannot touch these protected wolves. There is a pack of 10 that is laying 200 yards off of a guy's barn. He is trying to calve and he estimates that he has lost 30 calves and 25 cows, and he cannot do anything to stop the wolves. All you can do is watch them wolves carry your calf crop off, and you get pretty excited.

I think I want to raise one issue again, the Yellowtail Dam. I think you have some joint responsibilities on the Yellowtail with the Bureau of Reclamation on flood control and water release. I would suggest that you start the dialogue now between the Bureau of Reclamation, because we have a tremendous snowpack this year, General, and I fear for that.

REGULATORY ADMINISTRATIVE APPEALS PROCESS

I am also concerned, General Ballard, in your appeals process, that you have got the rules written for those permits that were denied, the denied permits, and you are sort of shying away from the jurisdictional part of that language of the law. I will tell you we have more problems with the jurisdictional end of this situation on wetlands, that problem, than we do any other part. So, I would suggest to take the language of the law and implement it where you have the most problems, and I think most of it is in jurisdiction.

I can tell you that the Corps has really overstepped its bounds in some areas in the wetlands. It is not contiguous to impaired waters or to navigable streams or anything like that.

So, those are the only things that I want to—other than that, we have got a lot of work to do on the Missouri that is above the Yellowstone, and we want to do that. We are losing land every day along the Missouri between Culbertson and Williston and we should deal with that. Of course, there again that has to do with Fort Peck.

I am also very interested in working with you as far as the Fort Peck interpretive center and those kinds of things, and we will work our way through that.

But you have done some good work up there and we appreciate that, but those are the areas that concern me most. I would start that dialogue with the Bureau of Reclamation, though, because we have a tremendous snowpack this year.

And thank you for coming, and thank you, Mr. Chairman.

Senator BENNETT. Senator Kohl?

LAFARGE LAKE, WI

Senator KOHL. Thank you, Senator Bennett.

Gentlemen, good to see you here.

Dr. WESTPHAL. Thank you, Senator.

Senator KOHL. I would like to ask a series of questions on the La Farge Lake deauthorization project.

The Water Resource Development Act of 1996 deauthorized the flood control project at La Farge. The Army Corps of Engineers was instructed to transfer the 9,000 acres acquired during the 1960's and 1970's to the State of Wisconsin and the Department of the Interior to be held in trust for the Hochunk Nation.

Also, as part of the flood control project, the Corps of Engineers was given jurisdiction over the relocation and maintenance of State highway 131 and a few of the county highways.

Three questions. Number one, when will the land transfer project deauthorization and completion of remaining project features be accomplished?

General FUHRMAN. I will take that one, Senator. Currently field documentation of historic cultural resource protection, site safety, environmental remediation of abandoned farm sites and wells and real estate activities, all of which need to be accomplished prior to the land transfer, are fully funded and are on track to be completed by 30 September of this year.

Senator KOHL. Thank you.

Will the Corps be including a request for funding to implement section 361 in future presidential budgets?

Dr. WESTPHAL. Well, while we cannot really commit today to what we are going to include in the 2001 budget, since we have yet to even begin developing that, I will tell you that we will proceed on this project as expeditiously as we can, and if we need to, we will make an effort to fund what is required. I will work with you and your staff to do that.

Senator KOHL. I do appreciate that.

One last question. Does the Corps agree that the Wisconsin Department of Transportation is in the best position to conduct the road relocation, and if so, when will the Corps be completing the necessary contractual arrangements with the State of Wisconsin on this issue?

General FUHRMAN. Senator, we believe that the Wisconsin Department of Transportation has the necessary expertise to do an excellent job at accomplishing the highway work that is needed and identified out there. We are currently reviewing that to determine what types of authorities we have to allow us to work with the Department, and we will be working closely with you to resolve that issue.

Senator KOHL. Did I get a clear answer on that? Not as clear as I would like.

General FUHRMAN. Well, there is an authorities issue here in our ability to grant money to the State, and we will need to work with the Congress on that piece of it.

Senator KOHL. I thank you, and I thank you, Senator Bennett.

Senator BENNETT. Thank you.

MISSISSIPPI RIVER AND TRIBUTARIES BUDGET REQUEST

Senator Cochran.

Senator COCHRAN. Mr. Chairman, it is a pleasure for me to be here today to welcome our witnesses. It is my first opportunity to congratulate publicly my friend, Dr. Joe Westphal, on his service as Assistant Secretary of the Army.

In looking at the budget request, I noticed that for the Mississippi River and Tributaries project, in which I am very interested, the President has requested a total of $280 million for this next fiscal year. This is the same as the request for the current fiscal year.

Congress reviewed that request last year and found it to be woefully inadequate in terms of the capability of the Corps for that project and also to protect lives and property in the region. So, the amount for fiscal year 1999 was increased to $323.6 million, which we hope will go a long way toward getting us back on schedule and on track with many of the programs in the Mississippi River and Tributaries project.

My question is—and General Ballard or whoever you suggest should answer this—I understand that this is still short of the Corps' capability for these activities. I wonder if, for the record, you could give us the figure, the dollar amount, that the Corps has within its capability for projects within the Mississippi River and Tributaries program.

General BALLARD. I think that figure, Senator, is about $350 million.

Dr. WESTPHAL. $350 million.

Senator COCHRAN. Which means that if the Congress appropriated that amount and the President would sign the bill, you could use that money efficiently and effectively to carry out the authority that has already been granted to the Corps on those projects. Is that correct?

General BALLARD. That is correct, Senator.

Senator COCHRAN. I know that some of these projects have controversies surrounding them, and I know you are trying to deal with those and involve the public. I have been in Mississippi on occasions when meetings have been held. We have tried to encourage those who have opinions on these to come forward. Sometimes they overdo it, but the fact is we are trying to make sure that these projects are sensitive to environmental concerns, to the needs of production agriculture, the people who live in the area, and it is a very, very big challenge.

This is a project that was authorized a long time ago. It continues to be short of funds and behind schedule, and a lot of people are suffering because of that. We hope that the Corps will give added impetus to the work being done in that region of the country.

I notice in the other parts of the budget there are some increases being requested, and this is not one of them. I am disappointed in that. I hope we can work with you in this committee to try to deal with the challenge of meeting our responsibilities to the people in that area of the country.

Dr. WESTPHAL. Yes, sir.

Senator COCHRAN. Thank you, Mr. Chairman.

Senator BURNS [presiding]. I guess the chairman ran away.

Senator COCHRAN. You are it. [Laughter.]

Senator BURNS. The Senator from Washington.

COLUMBIA AND SNAKE RIVERS

Senator GORTON. General Ballard, a year or so ago, we had a meeting that was very unpleasant and unhappy for both of us in my office about a recreation study carried out by the Walla Walla office. Because I remember that and I suspect you do as well and do not like unhappy meetings like that, I cannot do anything but start my comments off by saying in how positive a way you responded. I am still not sure I like much about the new survey, but it is much improved over the old one.

More important than that, however, were the comments that Senator Craig made, that when some portions of its results were leaked and were put out in a distorted fashion, that you stepped forward and said that this was highly misleading and that you are going to wait until you have finished with what you have done and

are going to try to come up with an as objective set of answers as you possibly can. That is in the finest traditions of the Corps. Having started out unhappily, I wanted to tell you how very positively I respond to that kind of work on your behalf. It was absolutely first rate.

General BALLARD. Thank you very much, Senator. I do remember our meeting and your words are very complimentary. I commit to you my continued support as we try to work these issues together.

Senator GORTON. Good.

JOHN DAY DAM DRAWDOWN STUDY

Now, I do want to state, again following the same philosophy that Senator Craig did, my unhappiness—my opposition to two elements in this budget. I have supported both the studies that are taking place with respect to the Snake River dams and phase one of the John Day studies. I have done so in spite of the fact that many of my constituents and many on the other side of the river have lobbied me not to allow you even to have undertaken those initial studies because they feel that any draw-down on John Day and any destruction of the Snake River dams would be so overwhelmingly damaging to them. My response has been that I did not think that we could be against undertaking such studies and that, in fact, that I thought they would end up showing the value of those dams.

Nevertheless, I have to tell you that to ask for money, even on a contingent basis, for a second phase of a study when you have not completed phase one of the study, and when obviously there has been no opportunity for the people of the area to respond to phase one, seems to me to be highly premature. I am not telling you that at this point that under any and all circumstances I would oppose a phase two, although it is a lot of money over a considerable period of time, but I certainly do want to tell you that I will oppose authorizing it or appropriating money even on a contingent basis now before we have seen phase one, not only we have seen phase one, but even more importantly the people of the area have seen phase one.

And the McNary study falls in exactly the same category.

I think we need an opportunity for the people of Washington, Oregon, Idaho, and Montana, for that matter, to respond to what we are already doing before we take additional steps. So, I want to make it clear that I am going to try to see to it that those appropriations are not made this year without necessarily saying that there are not further studies that are appropriate at some time in the future.

Having said that and having said that you have done so many things so well, I do want to ask a question of you now on a different subject.

BONNEVILLE DAM AND THE DALLES DAM POWERHOUSE REHABILITATION

Major rehabilitation efforts have been authorized on the Bonneville Dam and on the Dalles Dam, but the requests from the administration for powerhouse improvements seem to be significantly less than what you could actually use in the year 2000 by a margin

of less than $11 million to more than $16 million. The Bonneville work that sometime ago was slated to be completed in the year 2003 is likely not to be completed until the year 2008. Obviously, that drives up costs with the contractors that you are working with and power generation capability of the dams diminishes as the houses age.

Why do we not have a request for the amount of money that you can efficiently and effectively spend on the Dalles and Bonneville for the year 2000?

General FUHRMAN. The amount that we can effectively use is $3.3 million, sir.

Senator GORTON. That is for the Dalles.

General FUHRMAN. Yes.

Senator GORTON. And Bonneville?

General FUHRMAN. I will have to provide that for the record, sir.

[The information follows:]

BONNEVILLE POWERHOUSE PHASE II, OREGON AND WASHINGTON (MAJOR REHABILITATION)

The fiscal year 2000 amount that we can effectively use for Major Rehabilitation at Bonneville is $16.3 million.

DRAWDOWN STUDIES

Senator GORTON. Okay, this is the kind of question that you are probably better off answering in writing than directly to me in any event.

I simply want to echo what Senator Craig said. You were asked to undertake studies at a certain level, come up with engineering feasibility, come up with a number of other answers. The determination as to what to do about the results of those studies, of course, is a policy determination for Congress and recommendations by the President of the United States. I just echo what Senator Craig said. I have no reason to think that you are not doing this objectively and without political considerations in mind, and I simply encourage you to keep moving in that direction.

The Assistant Secretary, in his conversation with me, earlier emphasized that as well, and I include him so far in the compliments.

General FUHRMAN. Thank you.

Dr. WESTPHAL. Thank you.

Senator, I am not 100 percent sure on this, but I believe that perhaps one of the reasons that you see funding in there for the phase two is that we start the budgeting process so early in the previous year and we did not know when the phase one EIS feasibility study would be completed. We thought it would be completed early, that the NEIMS part of the process would be done earlier. In fact, we expected something at the beginning of the year. I believe probably that is the reason that we went into that proposed——

Senator GORTON. One of you said September.

Dr. WESTPHAL. Now it is pushed back to September.

Senator GORTON. Now it is December.

General FUHRMAN. For that particular John Day phase one study, it is due to Congress in December, Senator.

Senator GORTON. December, okay.

Mr. Chairman, I thank you very much. That is all I have.

CREDITS AND REIMBURSEMENTS

Senator DOMENICI [presiding]. Thanks for your patience in waiting so long.

Let me talk with you a minute, General. At the last year's hearing, I believe the Corps estimated that there was potential for around $800 million of unfunded liabilities over the next several years for potential reimbursements, credits, and other payments for work that has been authorized to be undertaken.

Could you update the committee on this situation? Do you believe this is a big problem? Is it not possible that the types of financing arrangements could consume very large portions of the construction budget if we are not careful? And what are the potential impacts or pitfalls with this kind of funding?

General BALLARD. Mr. Chairman, as a way of updating, we are looking at credits and potential reimbursement in an amount that is approaching roughly $950 million, so a growth of about $150 million from what we were forecasting for last year. That represents some 46 projects that are both approved, pending or in the cue in some fashion or other. Now, all of those that are not approved will have to be coordinated with the Congress.

My concern is that as this amount continues to grow, there is some potential that the Corps could end up becoming a grant agency in some of our districts. That possibility is there.

But I am more concerned about the potential loss of technical talent and capability within the districts as we migrate more toward a grant or a pass-through organization. This moves us away from the intent of Congress when the Corps of Engineers program was first developed, and that was to have a trained cadre of engineers and scientists available to respond to a national emergency. So, that is where my concern is as this program continues to grow.

Senator DOMENICI. Dr. Westphal, you are aware that the committee in the conference report on the 1998 energy and water appropriations bill placed certain restrictions on the approval of reimbursement agreements, acceptance of advanced funds and other arrangements, because of our concerns related to the potential outyear budget impacts. Now, obviously, the General is concerned about what that would do if it became very big.

Do you feel that the conditions we imposed were reasonable? What suggestions do you have which would allow some of these financing mechanisms to be used, but still would have some reasonable limitation in terms of the overall effect?

Dr. WESTPHAL. Mr. Chairman, first let me say I echo the Chief's concerns about this. I do believe that your concerns are justifiable and I do think that there is a need for us to work together to come to some understanding on how to deal with these demands in the future. It is obvious that we want to try to help projects move faster and we want to help constituents get the work done in a more rapid fashion perhaps, but it is turning out to be a system that in large part is only used by those communities and sponsors that have the cost share money available, and so other opportunities are not available to other communities.

So, we hope to work with you on some resolution. I do not know what that would be today. I think obviously it is the prerogative of Congress to make that decision. It has an effect on the balance between the appropriators and the authorizers. It has an effect on the balance of power within the Congress and outside the Congress. I think it is an important decision that I would be willing to work with you on, whether it is setting caps on the amount of money that we are allowed to go through or simply making some determination as to the type of project that can be allowed to go forth under a reimbursement.

Senator DOMENICI. We look forward to working with you technically how we could word it and what would be a reasonable limitation. I think we ought to start thinking about it. Maybe we can be ready in a couple of months when we are ready to mark up and see what we could put in the appropriations bill.

NEW STUDY STARTS

While we praise the budget with reference to it having a higher funding level requested over last year and not being so difficult to try to implement up here on the Hill, I note that you only have one new study start included in the 2000 budget. Why is this and what makes that one study, the Santa Ynez River study in California, so special that it was singled out over all others that the Corps has requested to OMB? Did you not have about 100 with studies eligible to be initiated?

Dr. WESTPHAL. We originally recommended 90, sir.

Senator DOMENICI. All right. So, 90 that you recommended and 1 got funded. I wonder why it got funded. Does anybody know?

Dr. WESTPHAL. Well, the President's budget was working under also very significant caps as he tried to provide a balanced budget to Congress, one that does not use the surplus, uses the surplus for Social Security purposes. Under those caps, we had to make some determinations about where we felt there was the greatest need to move the program forward. In that regard, the O&M part of the budget, taking care of the tremendous need that there is out there for maintenance of our aged infrastructure, was a higher priority.

We also felt that we do have a backlog of projects that we need to move——

Senator DOMENICI. Wait now. I understand all that. Frankly, I would like you to provide for the record the 90 and tell us how much you requested for each. A lot of them are very small.

Dr. WESTPHAL. We can do that.

[The information follows:]

GENERAL INVESTIGATIONS FISCAL YEAR 2000 REQUESTS

[In thousands of dollars]

Study name	Prim. capability	
	State	Fiscal year 2000
BARROW COASTAL STORM DAMAGE REDUCTION, AK—Shoreline protection for the threatened public facilities at Barrow, AK	AK	80
CHANDALAR RIVER WATERSHED STUDY, AK—Environmental protection for the watershed in conjunction with navigation and flood protection measures	AK	80

GENERAL INVESTIGATIONS FISCAL YEAR 2000 REQUESTS—Continued

[In thousands of dollars]

Study name	Prim. capability	
	State	Fiscal year 2000
CHESTER CREEK WATERSHED STUDY, AK—Environmental restoration measures for Chester Creek	AK	100
GASTINEAU CHANNEL, JUNEAU, AK—Channel accessibility for current vessel spectrum requirements	AK	100
SKAGWAY HARBOR, AK—Harbor depth and size for current and projected vessel needs	AK	100
THORNE BAY HARBOR, AK—Potential for new and expanded harbors at both North and South Thorne Bay	AK	100
SOUTHWEST ARKANSAS, AR—Environmental restoration of the Corps reservoirs (Millwood, Dequeen, Dierks and Gillham Lakes) in Little River basin	AR	100
RIO SALADO OESTE, SALT RIVER, AZ—Restoration of riparian habitat and water quality in the city of Phoenix, AZ	AZ	100
SEDONA, AZ—Flood damage prevention for Coconino and Yavapi Counties and the City of Sedona, AZ	AZ	100
KERN RIVER VALLEY (ISABELLA LAKE), CA—Comprehensive review of project operations for environmental measures	CA	100
KLAMATH RIVER, ECOSYSTEM RESTORATION, CA—Environmental restoration measures for anadromous fish and ripariam habitat	CA	100
PAJARO RIVER WATERSHED, CA—Flood damage prevention and environmental restoration for 1,300 sq. mi. of central California	CA	100
SAN JACINTO RIVER, CA—Flood damage prevention and environmental enhancement opportunities in the San Jacinto Watershed	CA	100
SANTA CLARA COUNTY SHORELINE, CA—Flood damage prevention in low lying areas of Santa Clara County	CA	100
WILLIAM G. STONE LOCK, CA (Feasibility)—Review justification of lock operations for commercial navigation	CA	200
OAK CREEK, FLORENCE, CO—Flood damage prevention for the city of Florence, CO	CO	100
CHESAPEAKE & DELAWARE CANAL, ENV REST, DE &—Environmental restoration including habitat restoration through the beneficial use of dredged material	DE	100
MID DELAWARE RIVER BASIN COMPREHENSIVE STUDY—Environmental restoration and flood damage prevention including dredged material disposal	DE	100
HILLSBOROUGH RIVER BASIN, FL—Flood damage prevention and environmental restoration through Temple Terrace, Sulphur Springs and Tampa, FL	FL	100
MILE POINT, FLORIDA—Erosion along the north bank of the St. Johns river in Duval County, Florida	FL	100
LONG ISLAND, MARSH, AND JOHNS CREEKS, GA—Comprehensive watershed master plan for parts of metropolitan Atlanta, GA	GA	100
SAVANNAH HARBOR TIDEGATE, GA—Tidegate Federal maintenance versus transfer to non-Federal entity	GA	100
UTOY, SANDY & PROCTOR CREEKS, GA—Environmental restoration and flood damage prevention for central Fulton Co., GA and metropolitan Atlanta	GA	100
HILO HARBOR NAVIGATION IMPROVEMENTS, HI—Modification or expansion of existing harbor	HI	80
KAWAIHAE DEEP DRAFT HARBOR MODIFICATIONS, HI—Modifications to existing harbor	HI	80
NAVIGATION IMPROVEMENTS, HONOLOLU DISTRICT—Harbor size and configurations for the Commonwealth of the Northern Mariana Islands	HI	120
SOUTHEAST ILLINOIS, IL—Ecosystem restoration in the area of two Corps constructed projects (Harrisburg Local Protection and Saline River Channelization)	IL	100
METROPOLITAN REGION OF INDIANAPOLIS, IN—Flood damage prevention including the center of Marion County, Indiana and metropolitan Indianapolis	IN	100

GENERAL INVESTIGATIONS FISCAL YEAR 2000 REQUESTS—Continued

[In thousands of dollars]

Study name	Prim. capability	
	State	Fiscal year 2000
ARKANSAS RIVER CHANNEL STUDY, KS—Environmental restoration and flood damage prevention of the Arkansas River and adjacent lands from the Colorado-Kansas state line to the vicinity of Great Bend, KS	KS	100
BANKLICK CREEK BASIN, KY—Flood damage prevention for Kenton county, KY	KY	100
EAGLE CREEK RIVER BASIN, KY—Flood damage prevention for communities of Carroll county, KY	KY	100
GREEN RIVER HEADWATERS WATERSHED, KY—Ecosystem restoration through the modification to the operation of two existing Corps projects	KY	100
METROPOLITAN REGION OF LOUISVILLE, KY ECOS—Ecosystem restoration along the Ohio River and tributaries including wetlands creation	KY	100
TRADEWATER RIVER WATERSHED ECOSYSTEM RESTORATIONS—Ecosystem restoration of west central Kentucky including Christian, Hopkins, Caldwell, Webster Crittenden and Union Counties	KY	100
ST. BERNARD PARISH, LA—Flood damage prevention for the St. Bernard Parish, LA	LA	100
CHARLES RIVER WATERSHED RESTORATION, MA—Environmental restoration for the watershed portions of Middlesex, Suffolk, Norfolk, and Worcester counties, MA	MA	100
COASTAL MASSACHUSETTS ECOSYSTEM RESTORATION, MA—Ecosystem restoration including dredge material disposal and coastal wetlands	MA	100
NANTICOKE RIVER BASIN, MD & DE—Environmental restoration including watershed planning, wetland restoration, and beneficial uses of dredged material	MD	100
REDWOOD RIVER BASIN, MN—Environmental restoration and flood damage prevention for Redwood county in the vicinity of Marshall, MN	MN	100
BIG FIVE LEVEE SYSTEM, MO—Flood damage prevention for Union and Alexander counties, Illinois	MO	100
MONROE COUNTY, MO—Flood damage prevention for Monroe County, Illinois	MO	100
PRAIRIE DU ROCHER (IFC), MO—Flood damage prevention for Randolph County, Illinois	MO	100
BROAD RIVER BASIN, NC & SC—Environmental restoration and flood damage prevention for portions of 18 counties in both North and South Carolina	NC	100
CAPE FEAR RIVER LOCKS & DAMS, NC—Review operation of locks and dam for disposition and/or environmental restoration	NC	100
CURRITUCK SOUND, NC—Environmental restoration in Currituck and Dare counties in the northeastern part of North Carolina	NC	100
VERDIGRE CREEK AT VERDIGRE, NE—Flood damage prevention for the Village of Verdigre, NE	NE	90
SHREWSBURY RIVER & TRIBUTARIES, NJ—Flood damage prevention and environmental restoration in Monmouth County, New Jersey	NJ	100
CIMARRON RIVER AND TRIBUTARIES, NM, OK, CO, & KS—Ecosystem restoration and flood damage prevention of the Cimarron River basin	NM	100
RATON, NM—Flood damage prevention for city of Raton, NM	NM	100
GREAT CHAZY RIVER BASIN & TRIBUTARIES, NY—Flood damage prevention and environmental restoration for the communities of Champlin, Mooers Forks, Ellenburg, and Ellenburg Depot	NY	100
HUDSON & MOHAWK RIVERS AT WATERFORD, NY—Flood damage prevention and environmental restoration for Waterford, New York	NY	100
MOHAWK RIVER BASIN, NY—Flood damage prevention for Oneida, Herkimer, Schoharie, Greene, and Montgomery Counties, New York	NY	100
SARANAC RIVER BASIN & TRIBUTARIES, NY—Flood damage prevention and environmental restoration for the communities of Plattsburgh and Morrisonville	NY	100
BIG DARBY CREEK BASIN, OH—Environmental restoration in the central part of Ohio within the counties of Pickway, Franklin, Madison, Union, Logan, Champaign, and Clark counties	OH	100

GENERAL INVESTIGATIONS FISCAL YEAR 2000 REQUESTS—Continued

[In thousands of dollars]

Study name	Prim. capability	
	State	Fiscal year 2000
METROPOLITAN REGION OF CINCINNATI, BUTLER CT—Flood damage prevention and ecosystem restoration in southwestern Ohio	OH	100
METROPOLITAN REGION OF CINCINNATI, OH & KY—Ecosystem restoration for Hamilton and Clermont Counties in Ohio and Boone, Campbell, and Kenton Counties in Kentucky	OH	100
ILLINOIS RIVER BASIN, OK—Ecosystem restoration integrating the Tenkiller Ferry Lake hydropower operations with overall basin plan, including land management	OK	100
OPTIMA LAKE, OK—Optimize lake usage	OK	100
LOWER COLUMBIA RIVER, OR & WA—Comprehensive long range approach to the Ecosystem restoration for the Lower Columbia River	OR	100
UMATILLA RIVER, OR—Environmental restoration on the Umatilla Indian reservation	OR	100
ALLEGHENY RIVER NAVIGATION, PA—Develop optimum future plan for river locks and dams to include current operation, closure and disposition	PA	100
CHRISTINA RIVER WATERSHED, PA, MD, & DE—Environmental restoration and flood damage prevention in Chester, Delaware, and Lancaster Counties, PA; New Castle Co., DE; and Cecil Co., MD	PA	100
RIO BAYAMON AT BAYAMON, PR—Flood damage prevention at Rio Bayamon, Puerto Rico, ten miles west of San Juan	PR	100
RIO NIGUA AT ARROYO, PR—Flood damage prevention for the southeast part of Puerto Rico, Arroyo	PR	100
PENNINGTON COUNTY & VICINITY, SD—Flood damage prevention for Pennington County, South Dakota, including Rapid City	SD	90
BUFFALO BAYOU & TRIBUTARIES, TX—Flood damage prevention and environmental restoration for the Houston, TX channel extending from the Houston Ship Channel upstream to Barker Dam	TX	100
GALVESTON BEACH EROSION, TX—Prevent or mitigate shore damages attributable to the Federal navigation works	TX	100
GULF INTRACOASTAL WATERWAY—BRAZOS RIVER, TX—Modification of floodgate configuration to reduce traffic accidents and delays	TX	100
GULF INTRACOASTAL WATERWAY—COLORADO RIVER, TX—Modification to the Colorado River Locks to reduce traffic accidents and delays	TX	100
GULF INTRACOASTAL WATERWAY—SABINE RIVER, TX—Review navigational needs and environmental restoration (Sabine River to High Island, TX)	TX	100
LOWER BRAZOS RIVER, TX—Flood damage prevention for the Texas counties of; Brazoria, Fort Bend, Austin and Waller	TX	100
LOWER GUDALUPE & SAN ANTONIO RIVERS, TX—Flood damage prevention and environmental restoration for potions of Calhoun, Dewitt, Gonzales, and Victoria counties	TX	100
UPPER GUADALUPE & SAN ANTONIO RIVER BASINS, TX—Ecosystem restoration and flood damage reduction within the south-central part of Texas	TX	100
CLINCH RIVER WATERSHED, VA—Environmental restoration and flood damage reduction in southwest Virginia and includes the communities of Raven, Richlands, Doran, and Dante	VA	100
JOHN H. KERR RESERVOIR, VA & NC—Flood damage prevention and environmental restoration of north-central North Carolina and south-central Virginia	VA	100
LOWER RAPPAHANNOCK RIVER BASIN, VA—Environmental restoration for a ten county area east of Richmond and south of Washington, DC	VA	100
LYNNHAVEN RIVER BASIN, VA—Environmental restoration including wetland restoration on the south shore of the Chesapeake Bay	VA	100
OMPOMPANOOSUC RIVER, VT—Environmental restoration in east central Vermont	VT	100

GENERAL INVESTIGATIONS FISCAL YEAR 2000 REQUESTS—Continued

[In thousands of dollars]

Study name	Prim. capability	
	State	Fiscal year 2000
MOUNT ST. HELENS ENV RESTORATION, WA—Environmental restoration of wetlands, riverine, riparian, and upland habitats lost or altered due to the Mt. St. Helens eruption	WA	100
NEW CREEK WATERSHED, WV—Environmental restoration and flood damage prevention in Mineral and Grant Counties, West Virginia	WV	100

SANTA YNEZ, CA STUDY

Senator DOMENICI. So, I understand budgeting and caps. I appreciate your reminding me, but do not worry about it.

What I want to know is why the only one to be chosen was this Santa——

Dr. WESTPHAL. Santa Ynez?

Senator DOMENICI. Ynez. Yes, gee, I should know that. Ynez.

Dr. WESTPHAL. Santa Ynez, right.

Well, it was a model project that had elements of flood protection, good environmental restoration. It was a good study that was well supported by its cost share sponsors. It was a good model project and it was determined to be one that we could support.

Senator DOMENICI. Well, my guess is that it has some unusual support within the administration. [Laughter.]

You know, you would be better off if you just said it.

In any event, would you please tell us in detail why it is so great since you are here defending it. Give it to us in writing.

Dr. WESTPHAL. Yes, sir.

[The information follows:]

SANTA YNEZ

The selection was based upon a combination of factors including: flood threat, potential economic viability of a recommended plan, environmental impacts, and the support and likelihood of non-Federal participation for the implementation of a solution.

HARBOR SERVICES FUND

Senator DOMENICI. I have nothing against it. Obviously, I do not know much about it. I could hardly pronounce its name. So, I have no prejudices or bias.

Now, while we said the budget looked better, there is something in it that is kind of difficult because, as the President has done in a number of appropriations, he does not break the caps, because he gets some receipts, some new taxes or new revenues, and he puts that in the appropriations bill. Obviously that offsets the spending. So, if you wondering what is the big magic about breaking the caps but not breaking them, it is this kind of thing.

In this budget, you have a very large amount of money for a Harbor Services Trust Fund, almost $1 billion, $900 million. Probably part of that is old taxes, old revenues, but what portion of it would levy new burdens on somebody or some entity to pay taxes or fees?

Dr. WESTPHAL. It is a fee proposed on the vessel carriers. It is a user fee. It would collect about $1 billion, $951 million, and that is the amount that we project to expend on the maintenance, dredging, and construction side on the navigation projects. So, we are attempting to collect only the amount that would be required to spend every year to develop and maintain these ports.

Senator DOMENICI. Yes. Well, I guess what I need to know is—maybe your budget man could tell me—in this new trust fund how much of that is from residual old user fees or old taxes?

General FUHRMAN. About $600 million of that would be equivalent to what came out of the existing Harbor Maintenance Trust Fund, and the new piece of that would be about $300 million, which is designated toward the new construction.

Senator DOMENICI. If we did nothing and did not even create this Harbor Services Fund, there is about $600 million coming in. If the appropriations process chose to put in the bill, it pays for $600 million of this $900 million, meaning somewhere between $250 million and $300 million is new. Now, can somebody explain to me where the $300 million new in fees come from? Not the old ones. Nobody is complaining about those. They already exist. We do not want to bother a sleeping dog.

I happen to be the first one to pass one of those, in case you are wondering. The first tax for the user fees came up in a little committee I was on 26 years ago. I almost got thrown out of the Senate for it. [Laughter.]

Everybody wondered what the hell a New Mexican had to do with asking southern States to pay a little fee for the lock and dam. But it passed eventually. So, it is in there, that diesel tax. It has gone up since then.

Now, what is the new one? What is the new stuff? Does anybody know?

Dr. WESTPHAL. If I understand your question—and maybe I am not understanding exactly, but there is about $1 billion in the existing fund. The proposal is to repeal that existing fund and transfer the balances over to the new fund and make those balances available for appropriations.

Senator DOMENICI. Now, let me start over. There is $250 million for construction that is currently not authorized. Does this budget propose that we raise the money for that from new source of revenue?

Dr. WESTPHAL. From the harbor services user fee.

Senator DOMENICI. Is that new?

Dr. WESTPHAL. Well, it is a proposed fee that Congress would have to approve.

Senator DOMENICI. I guess I would like to just know, how much are we going to raise fees and on whom to make this trust fund as solvent as you want it to fit your budget, $250 million worth. Who is going to pay that?

General FUHRMAN. Currently we have the Harbor Maintenance Trust Fund which is funded by a tax, and that is used for maintenance and repair. That is generating about $600 million a year for operations and maintenance. That would be done away with and a new fee structure established for a user fee that would generate $950 million a year, of which about $300 million would be used for

new construction and the remainder would be used for the same thing the old harbor maintenance trust fund was used for, which was maintenance.

Senator DOMENICI. So, somebody has to be able to tell us of this $950 million—I understand what you are saying—how much resembles, looks like, is very close to what we are currently doing, what we are going to do under a new trust fund, and how much would be new? Where would the new money come from that we are getting? Can you do that for me? If you cannot do it today, you can do it in a report to me, or how can you do that?

Dr. WESTPHAL. Typically we need about $900 million. We want to be able to raise that amount of money with the use of the new fee to not have any carryover balances, essentially be able for you to appropriate what we collect in the fee annually and put in the fund.

Senator DOMENICI. I understand.

Dr. WESTPHAL. Now, this first year, since you do not have the proposal yet—the proposal is coming in a few weeks—if you approve the harbor services fee proposal, we will not have enough money in the new fund to fund fully the $1 billion. We will have to be able to transfer the monies from the existing fund to the new fund to be able to do that.

Senator DOMENICI. The fund never paid for new construction, but it is going to pay for new construction under the new proposal.

Dr. WESTPHAL. Right.

Senator DOMENICI. So, it is a bigger fund with a bigger purpose.

General FUHRMAN. Yes, sir. New construction up to this point in time has been paid out of general revenues.

Senator DOMENICI. Now, obviously, when you increase the size of the trust fund on the receipt side so that you will have more money to spend, you have got to tax somebody that is not being taxed now, and that is what I would like to get. Now, maybe it is not ready yet.

Dr. WESTPHAL. Well, no, the harbor maintenance tax was found unconstitutional last year by the Supreme Court—the portion of that tax at least that was levied on exports. That tax was being levied on the commodities. So, with that, we had to basically only collect the import side of that. On the import side, we have got problems with GATT and some of our trading partners in Europe who are challenging the import side of that fee.

So, our plan that we are going to submit to Congress is to repeal the entire harbor maintenance tax and replace it with a harbor services user fee, which essentially would shift from a tax on the commodities to a fee on the vessel carrier, so on the carriers of those commodities; in other words, relating the fee to the services we provide to the ships as they enter the channels and enter the ports and make that fee equivalent to the work we have to do to maintain the ports and maintain their accessibility nationwide.

SUPPORT FOR THE HARBOR SERVICE FEE

Senator DOMENICI. There is an argument against this that will be made obviously that the whole Nation benefits, not just those from a system of harbors and inland waterways and the like. But

is there general agreement and support within the shipping community for this approach that the administration is talking about?

Dr. WESTPHAL. Well, Senator, when I first came on board, we had a proposal ready to go, and I did some vetting of that proposal with various stakeholders. There was very little, if any, support for it at the time. We had some difficulty defending the proposal, to be honest with you. So we sent that proposal back to our analysts and our folks that had put it together to work up some of the recommendations and concerns of the stakeholders. We spent almost 6 to 7 months doing that.

Today, we have a proposal that is now currently being vetted with the other Federal agencies that I think is a much more acceptable proposal. I think that it will get a fair assessment from stakeholders. It may still be opposed by some, but essentially I think we have addressed many of their concerns and it is a much more defensible proposal. We hope to be able to bring it to you within the next few weeks after we go through that interagency process.

Senator DOMENICI. So, the acceptability of that and the ability of us to count it in the budget is going to be very important as to whether you have a good program or not a good program. So, we are right back or we might be. If Congress says we are not going to do this thing, then we are very short in terms of having enough money to do this.

Dr. WESTPHAL. It will affect approximately about $300 million roughly for the construction side on the navigation part of the budget. Yes, sir.

ADMINISTRATIVE APPEALS

Senator DOMENICI. Now, just two questions about the regulatory program, administrative appeals. The conference report in 1998 stated, "The conferees expect that the increase provided over the amount appropriated in fiscal year 1997 will be used to begin implementation of an administrative appeals process for the Corps of Engineers Regulatory Program." The Energy and Water Subcommittee of the House and Senate both stated their concern for implementing this process again in 1999.

Have you complied with the directions of Congress, and if you have not, why not?

Dr. WESTPHAL. Well, Mr. Chairman, I have to be honest and say, no, we have not complied with it in the sense that it has taken us much longer to develop the rule and to put it together and get it ready to go to the Federal Register. The rule on the denial part is at the Federal Register today as we speak. But it has taken much longer than you and the committee wanted us to take on that.

On the jurisdictional determination, the rule is also ready to go forward, and we believe that with the added funds that we have proposed in the budget this year, we will be able to implement that part of the rule once it gets vetted through the Federal Register process.

Senator DOMENICI. So, the expectation that we had was that the Corps would implement both an administrative appeals process and the jurisdiction determination appeals process. So, what is the timetable for implementing those processes and procedures now?

Dr. WESTPHAL. I probably have to get back to you specifically on the dates, but the rule is now in the Federal Register on the denial part, and the other, the jurisdictional part, is getting ready to go anytime now. So, I do not recall if it is a 30-day or 60-day period for response to the rule, and then there is the final draft that has to be submitted later in the summer. So, I am hoping that by the end of this year we will be able to say we are implementing the rule.

General FUHRMAN. With regard to the denial piece, Senator, that is essentially in effect as soon as it hits the Federal Register. So, any permit actions that take place out there after that are subject to the appeals process for that.

Senator DOMENICI. Well, Congress has specifically earmarked or provided $5 million for the Corps to implement the administrative appeals process for 1998 and for 1999. In light of the fact that you have not implemented the appeals process, how were these funds used and why did you not take appropriate action to initiate and fund the administrative appeals process pending the rules? How was the money used? Was it used, that $5 million?

General FUHRMAN. Yes, sir. Last year you appropriated $106 million to us, which was $5 million over the previous year's appropriation of $101 million. Our budget in the regulatory business is primarily personnel. Some 80 to 90 percent of that is personnel, some 900 people spread throughout the country, some 90,000 actions each year.

And we have worked hard at moving forward in trying to satisfy the report language of the Congress in implementing these rules. We decided to do it in a phased fashion, given the resources that we had to move forward with. From my perspective, our folks out there are very dedicated. The folks out there have done a good job of trying to reach that goal.

Senator DOMENICI. So, you used it to maintain the quality of your staff.

General FUHRMAN. The quality of the program, sir.

General BALLARD. Not only the quality of the program, but Senator, as you know, we had a tremendous backlog and so we used quite a bit of that money to work the backlog off and to maintain the quality of the staff.

LEVEL DEFERRED MAINTENANCE

Senator DOMENICI. I have only three remaining questions and they will not take long. General Ballard and General Fuhrman, what is the level of deferred critical maintenance work in the civil works program, and does it concern you? Can you give the committee an example of the type of work which falls into this category of critical deferred maintenance and what the impacts would be on project operations or efficiencies if this failed to occur?

General BALLARD. Sir, we are looking at a backlog of deferred maintenance of about $1.6 billion. It is a concern of ours if we are to maintain those critical infrastructures that we have out there. This particular budget is a good budget and will put a curb to some of that growth, but it does not address the fact that we still have back there some $1.6 billion.

I would ask General Fuhrman to read you some of those examples.

General FUHRMAN. I will submit a summary for the record, Senator, but just a couple of examples, for instance, to replace two miter gates at the Gulf Intercoastal Waterway. It is a $3 million cost. Concrete repairs at one of our upper Mississippi River locks, about $600,000. Repair structural elements at several of our other locks, another $4.4 million.

[The information follows:]

Operation and Maintenance—Backlog of Deferred Maintenance

[Dollars in Thousands]

Work Category	*Estimate*
Additional Operations And Investigations To Optimize Project Effectiveness	$109,781
Construction And Maintenance Of Dredged Material Disposal Facilities For Navigation	26,952
Dredging	294,850
Environmental Compliance	13,073
Maintenance and Development Of Recreation Facilities, Visitor Centers, Operating Equipment, Etc	190,023
Maintenance Of Dams, Reservoirs, Structures, Service Facilities, Equipment, Etc.—Flood Damage Reduction	132,046
Maintenance of Hydropower Projects	96,960
Maintenance Of Locks, Dams, Reservoirs, Service Facilities, Equipment, Etc. For Navigation	714,029
Maintenance Of Natural Resources Facilities Including Fish And Wildlife	12,983
Mitigation Of Archeological And Cultural Resources	14,110
Real Estate Activities, Including Claims, Audits, Encroachments, Etc	22,421
Remaining O&M Funded Major Rehabilitations For Navigation	252
Water Management Equipment	1,537
Total	1,629,017

PROJECT CONDITIONS

Senator DOMENICI. What is the condition that we are talking about here that makes these critical? What is wrong?

General FUHRMAN. Very close to failing in the next several years, and we need to get in and fix it now. It is not a safety issue right now, but has the potential to be a safety issue in the very near term.

General BALLARD. And we have similar problems, Senator, in powerplants and all of the infrastructure that we own. As you know, we have some structures that are well over 100 years old, and they are in a sad state of repair and we need to do something about it.

Senator DOMENICI. Well, let me tell you, every year when we go through the individual budgets up here, I bite my lip and get more and more concerned. The President of the United States goes on national television and tells America how great we are and says I need 81 new programs, and we have got a backlog of projects that may fail on us causing significant economic impact to the country. It seems like it is better to announce that you have got something new for everyone than to do what you are obligated to do.

I cannot find $1.6 billion. I cannot find $300 million or $400 million to get it started. They did not give us enough of a budget, and

the Congress is not going to invent this money. It all comes out of the same pot.

So, I wish I could remember these when I have to go debate and talk about all these new programs. We could probably add up things that line agencies of the Federal Government submitted as projects they need, and it probably exceeds all the new money for new programs. But just to repeat myself, it is not very politically sexy to get up there and say we need $1.6 billion in the State of the Union for water projects to fix locks and dams that are going to fall apart.

You do not have anything to do with that. That is above your pay grade too, except you can fight for it. I hope you did. Did you submit these requests for these deferred maintenance stuff in your budget process?

Dr. WESTPHAL. Yes, I did.

DAM SAFETY

Senator DOMENICI. Now, the same question that I asked with reference to dam structure safety of the Bureau of Reclamation. Can you submit for the record a summary of what processes and procedures you used to end up being able to tell this committee, as I assume you will, that the dams that you are in control of and manage, et cetera are in good shape and there is no imminent danger, unless it is something untoward, of failures? Can you submit that to us in writing?

General FUHRMAN. Yes, we can, sir.

Senator DOMENICI. Is that a true statement that you would answer in some way similar to what I just stated?

General FUHRMAN. Yes, sir. We have a very effective dam safety program and consider it one of our most important pieces of business.

[The information follows:]

CORPS OF ENGINEERS DAM SAFETY PROGRAM

The Corps of Engineers has a very effective dam safety program and consider it one of our most important pieces of business. The Army Corps of Engineers actively manages our dams to ensure that the risks to the public are minimized. We have no dams which are known to present an imminent danger to the public.

Our dam safety program was established and has been maintained to be in compliance with the Federal Guidelines for Dam Safety. We are an active member of the Interagency Committee on Dam Safety (ICODS)—a group of Federal officials who exchange information and ideas on dam safety and work to foster interstate cooperation; and the National Dam Safety Review Board—which provides a forum to elevate dam safety issues of National importance.

Each Corps District has a senior engineering official designated as the Dam Safety Officer. It is the Dam Safety Officer's responsibility to ensure the proper operation, maintenance, and funding for all of the dams under his or her control. Each Dam Safety Officer has the proper technical expertise available either on staff, by contract, or from other Corps Districts, to safely operate, maintain and assess our dams.

Our formal programs which help us to ensure dam safety include the following:

Operations and Maintenance Program.—Under this program, we fund our day-to-day work on our dams, including smaller repairs and some emergency repairs. The staff who operate and maintain our dams, are our everyday eyes and ears who keep an eye on the condition and performance of their project. This program also funds our monitoring instrumentation, which allows us to monitor and evaluate the performance and safety of our dams under all loading conditions and provides data on project behavior for application to future evaluation and designs.

Formal Periodic Inspection Program.—Our PI program requires a thorough inspection and continuing technical evaluation of each dam on a 5-year cycle (or more often). This program allows us to uncover problems with our structures that are not readily apparent during day-to-day surveillance.

Dam Safety Assurance Program.—Our DSAP provides us with a mechanism to evaluate and remediate dam safety concerns related to earthquakes, flood capacity, and changes in the state-of-the-art. design and construction criteria.

Major Rehabilitation Program.—Under this program, we fund larger, long-duration construction projects which improve the long-term reliability or functionality of a dam.

And finally, each dam which, due to its location, could pose a potential risk to life or of serious property damage, has an Emergency Action Plan (EAP) which provides procedures to ensure that proper actions are taken during a highly unlikely event of a dam safety situation beyond our control. An EAP includes procedures for identifying and evaluating emergency situations, guidance for emergency operations and potential repairs, and notification of affected parties concerning existing and potential emergencies.

In summary, we continue to make dam safety a priority in the Corps of Engineers. Our aging inventory of dams will require our continued commitment to uphold our dam safety obligation to the American people.

ACEQUIAS IRRIGATION SYSTEM, NM

Senator DOMENICI. Back to two things in my State. The Acequias irrigation system, which is a very special historic system being preserved for both utilization and historic purposes. We expressed concerns about the progress being made in this irrigation system rehabilitation in my State. In addition, the committee expressed the expectation that the Corps would strengthen its communication and coordination efforts with the State and local interests. What can you report to the committee in this regard?

Dr. WESTPHAL. Well, I think I will let General Fuhrman give you the details, but I think we have made some really good progress in this area.

Senator DOMENICI. General Fuhrman.

General FUHRMAN. As you remember, Senator, before we were going at these piecemeal with requiring an annual supplement to project cooperation agreements [PCA's] between the Corps and the State of New Mexico. I am happy to report that now we have moved beyond that and have established programmatic PCA's with the State and we are in the process of initiating the programmatic NEPA so that these projects can move forward under those umbrella agreements.

Senator DOMENICI. So, if that reaches fruition, that means we will not be doing one project at a time with all the delays, but will be qualifying a system.

General FUHRMAN. Yes, sir.

Senator DOMENICI. Thank you very much.

UPPER RIO GRANDE WATER OPERATION MODEL

The Upper Rio Grande water operations model in New Mexico. The committee requested a report, in consultation with the Bureau, on the progress and plans to complete the Upper Rio Grande water operations model. What is the status of this report?

General FUHRMAN. That is scheduled for completion in fiscal year 2000. We are happy to report that the testing to date has been very successful in that model. It is looking good.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. Thank you very much, we have some additional questions that you can answer for the record.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR DOMENICI

PROGRAM OVERVIEW

Question. Does the increased budget request of the fiscal year 1999 request reflect a change in the Administration's attitude toward your entire program or just parts of it?

Answer. This budget request reflects the Administration's concern for the preservation of the Nation's infrastructure and environmental values. Further, it recognizes the importance of the Nation's ports and harbors to America's place in the global economy.

Question. As and example, how does your budget request treat flood control and inland navigation waterway projects compared to last year? How much more would these projects cost the taxpayer based on the budgeted completion schedules than they would if funded at an efficient rate or schedule?

Answer. The fiscal year 2000 budget request for flood control and inland navigation projects is substantially better than last year although it does not fund these projects at optimum schedules. For fiscal year 1999, the budget request for flood control and inland navigation projects was $497,000,000; for fiscal year 2000, the budget request for these projects totals $785,000,000. It is not possible to conduct a definitive analysis of the delay costs because so many assumptions about the future are required, and many of these decisions have not yet been made. Let it suffice to say there are costs associated with inflation and costs associated with inefficiencies.

Question. General Ballard, how are completion schedules impacted based on the budget request compared to the Corps' most efficient schedule?

Answer. Generally, 28 port development projects and activities are funded to meet optimum completion schedules in accordance with the proposed Harbor Services User Fee which will cover all construction costs. Amounts for 165 flood damage reduction, inland waterways, and shore protection projects and activities which rely on general tax revenues to finance their construction costs are constrained to a level that is about two-thirds of what is needed to maintain optimum completion schedules. In addition, 9 high priority projects for mitigation, ecosystem restoration, and other purposes are funded to meet optimum completion schedules. Specifically, completion dates for 136 projects and activities would be unchanged from the fiscal year 2000 budget and completion dates for 66 projects and activities would be moved up if projects and activities were funded on their most efficient schedules. The average change in the completion dates for affected projects would be 5 months.

Question. What was your request to OMB for the construction program, and generally, how would completion schedules be impacted if projects were funded at the level requested of OMB?

Answer. The Army recommended a fiscal year 2000 construction program to OMB that totaled $1.815 billion. This program was based on completing projects on their most efficient schedules and the impacts would be the same those noted previously. This amount was later reduced to $1.725 billion after enactment of appropriations for fiscal year 1999.

Question. Dr. Westphal, you have indicated that "* * * the plan is to stabilize the Civil Works budget in the future" by reducing the General Investigations program of the Corps of Engineers. You have also correctly noted that the study program is the pipeline that feeds the Corps' construction effort. What do you mean by "stabilize" the Corps' budget? Given past history with substantially underfunded budget requests, why isn't this another effort to put the Corps of Engineers out of business by turning off the "spigot" of work that feed the construction program?

Answer. There is a large buildup of ongoing work in this part of the Corps program. When you compare the eventual large, future construction requirements that these projects will incur with the tight budgetary ceilings that we are subject to in the outyears, it is prudent to slow down continuing projects and severely limit the number of new starts in the General Investigations account, for the time being. The nationwide activities such as the floodplain management, planning assistance and

international water study efforts, provide for important, grass roots level support for helping local areas with their water resource problems and, therefore, were generally kept at the fiscal year 1999 appropriations level funding.

Question. Dr. Westphal, in a recent statement before the Water Resources Subcommittee of the House Transportation and Infrastructure Committee you said, "Once the backlog of costly projects is worked down somewhat, then we expect to resume funding for studies at a higher level." Now this sound strangely similar to statements a few years back related to the Bureau of Reclamation's program, when the Secretary of the Interior indicated that new construction work would be suspended for a few years in order to work off some of their backlog and then resume funding at higher levels. Yet, we never seemed to get back to some of the traditional work of the Bureau, but have now gotten heavily involved in environmental enhancement and other work that is not part of the Reclamation mission. What can you tell this subcommittee that will lessen our concerns about the future of the Corps' Civil Works program, realizing that you and the current Administration will not be around if the Corps program is adversely impacted by this approach?

Answer. My plan is definitely not to go out of the design and construction business. The Corps Civil Works mission is very much in the business of addressing, evaluating and solving the nations water resource infrastructure problems. But this year is still a difficult one from the standpoint of the current budgetary situation and choices must be made. Consequently, while the program presented is a good one, particularly from the Operation & Maintenance and construction standpoint, including 20 new construction starts, this is achieved by holding back on several items, one of which is General Investigations and the outyear commitments that it can create. We need a pause in the study program in order to put a sizeable dent in the number of projects currently in the construction pipeline. I hope, if all goes well with the Corps program in 2000 as well as with the economy and the budget in general, that we can resume a higher new start program in the outyears.

HARBOR SERVICES FUND

Question. A key component of the President's Budget is a legislative proposal to replace the existing Harbor Maintenance Trust Fund with a New Harbor Services Fund which would fund the annual maintenance and construction requirements for deep draft harbors around the country. While maintenance has been accomplished through this sort of financing for many years, expanding the program to include construction is a step which creates some inequities and imbalances in the overall water resources program nationwide.

For example, the fiscal year 2000 budget for the Corps of Engineers would "fully fund" the annual needs for deepening deep draft harbors at the expense of other activities which again are underfunded and have completion schedules that are stretched out.

Dr. Westphal, what is the rationale for extending the availability of the Harbor Services Fund to include construction of deeper navigation channels? Why wasn't construction authority provided as part of the Harbor Maintenance Trust Fund? What is wrong with the present way funding is provided through the general fund of the Treasury for deepening projects? What would be the impact if this financing mechanism was not approved?

Answer. The Harbor Services Fund would provide the funds necessary to pursue improvements of deep draft ports and channels at the optimum level, that is, with no delays due to funding constraints. This translates into more work accomplished in less time. The revenue targets for the Harbor Services User Fee were calculated to allow this to happen without the accrual of large surpluses. Who are the winners? The ports, the shippers, the economy.

Extending the authority of the Harbor Maintenance Trust Fund to include construction would not be productive. The Supreme Court ruled the Harbor Maintenance Tax unconstitutional on exports in March 1998. The tax is still being collected on imports and domestic goods. However, a replacement needs to be addressed in a timely manner since the tax on imports is under scrutiny as the European Union claims that it violates articles of the General Agreement on Tariffs and Trade (GATT). While the Administration wants to abolish the tax, it also wants to offer an alternative, equitable funding mechanism at the same time. That mechanism is the proposed Harbor Services User Fee.

The realities of the Federal Budget process necessitate looking for innovative, equitable ways to ensure funds are available to produce the navigation benefits that accrue to ports and shippers. It is good for the Nation's business to get navigation benefits on line as quickly as we can and at the least cost possible. To do this, a funding source other than the General Fund is needed. The Harbor Services User

Fee will ensure the Army has the resources necessary to meet the growing demands of the Nation's ports.

Because the collection of the Harbor Services User Fee will be credited to the Operation and Maintenance, General, and Construction, General, accounts as offsetting receipts, the lack of the fee would constrain obligation authority within the discretionary caps of the Budget Enforcement Act. Under such a constrained program, project work likely would not be funded at capability levels, which is what the use of the Harbor Services Fund would do. The greatest impacts would be in the construction program as project schedules would have to be stretched out over time in order to keep total budget authority within the discretionary ceilings of the Budget Enforcement Act.

Question. Since the Nation as a whole benefits from a sound system of ports and channels, why should the cost of building and maintaining them be placed solely on shippers?

Answer. While it is true that the Nation's economy benefits from a healthy port system, it is also true that our economy allows individuals to profit from their industries. User fees charged by the Federal Government, for whatever reason, are based on the long-established principle that those who benefit from a government-provided service may be required to help pay for it. Vessel owners and operators are the beneficiaries of the port improvement, operation and maintenance activities of the Federal Government. They are good at what they do and profit from it. Therefore, it is only fitting that they contribute financially to a developed, reliable, safe U.S. port system.

Another reason for a Harbor Services User Fee addresses an even more basic economic issue: the allocation of scarce resources. The realities of the Federal Budget process necessitate looking for innovative, equitable ways to ensure funds are available to produce the navigation benefits that accrue to shippers. It is also good business practice to get benefits on line as quickly as we can and at the least cost possible. To do this, a funding source other than the General Fund is needed. The Harbor Services User Fee will ensure the Army has the resources necessary to meet the growing demands of the Nation's ports.

Question. Is there general agreement and support within the shipping community with the approach of the Administration has put forth related to the Harbor Services Fund?

Answer. I believe they are still thinking very hard about the proposal. The shippers would pay the users fee and the ports are concerned about competitiveness. Last year, I conducted several outreach sessions with port representatives and listened carefully to their concerns. We have been working the key issues very hard to draft a proposal which reaps navigation benefits without placing an unreasonable financial burden on the shippers.

Question. General Ballard, do you perceive any problems with financing the construction deepening of ports through this type of arrangement? Do you think that this approach will adversely impact the construction program? How about the fiscal year 2000 budget request, are there any impacts as a result of this proposal, in your judgement?

Answer. I do not see a problem with financing port deepening construction projects from the Harbor Services Fund if legislation is enacted to allow this arrangement. It will be similar to the manner in which port maintenance requirements have been met in prior years, and will provide a reliable funding source so that port deepening projects could proceed on their most efficient construction schedules. However, non-Federal sponsors of other types of projects will very likely not be pleased with this proposal because most other projects which rely on general tax revenues to finance their construction will proceed on constrained schedules. This situation has created two groups projects that are treated differently from one another in the fiscal year 2000 budget request. It may adversely impact the construction program as the groups compete for scarce resources.

Question. Have any projects had to be delayed or under-funded in order to accommodate the port deepening construction? What will these delays mean in terms of increased costs and delayed benefits?

Answer. As I indicated previously, 28 port development projects and activities that would be funded from the Harbor Services Fund are included in the fiscal year 2000 budget request to meet optimum completion schedules. Amounts for 165 flood damage reduction, inland waterways, and shore protection projects and activities which rely on general tax revenues to finance their construction costs are constrained to a level that is about two-thirds of what is needed to maintain optimum completion schedules. In addition, 9 high priority projects for mitigation, ecosystem restoration, and other purposes are funded to meet optimum completion schedules. It is not possible to conduct a definitive analysis of the delay costs and delayed ben-

efits because so many assumptions about the future are required, and many of these decisions have not yet been made. Let it suffice to say there are costs associated with inflation, costs associated with inefficiencies, and costs associated with forgone benefits.

FULLY FUNDED PROJECTS BUDGETED FOR FISCAL YEAR 2000

Question. General Ballard, could you provide for the record a list of all projects that are included in the budget which are "fully funded" at or near the optimum rate for fiscal year 2000?

Answer. Yes, I will provide such a list for the record.

FISCAL YEAR 2000 ''FULLY FUNDED'' CONSTRUCTION, GENERAL PROJECTS

[In thousands of dollars]

DIV	ST	PROJECT	2000 BUDGET
PO	AK	CHIGNIK AK	4,357
PO	AK	COOK INLET, AK	500
PO	AK	KAKE HARBOR, AK	2,568
PO	AK	ST. PAUL HARBOR, AK	500
SA	AL	MOBILE HARBOR, AL	700
SP	CA	GUADALUPE RIVER, CA	5,000
SP	CA	HUMBOLDT HARBOR AND BAY, CA	3,200
SP	CA	LOS ANGELES HARBOR CA	9,785
SP	CA	SANTA BARBARA HARBOR, CA	4,960
SA	FL	CANAVERAL HARBOR DEEPENING, FL	830
SA	FL	CANAVERAL HARBOR, FL	2,750
SA	FL	CENTRAL AND SOUTHERN FLORIDA, FL	52,300
SA	FL	EVERGLADES AND SOUTH FLORIDA ECOSYSTEM RESTORATION, FL	21,100
SA	FL	KISSIMMEE RIVER, FL	39,800
SA	FL	MANATEE HARBOR, FL	4,700
SA	FL	MIAMI HARBOR CHANNEL, FL	15,000
PO	HI	KIKIAOLA SMALL BOAT HARBOR, KAUAI, HI	75
PO	HI	MAALAEA HARBOR, MAUI, HI	272
LR	IL	CHICAGO SHORELINE, IL	7,629
MV	LA	PORT FOURCHON, LA	2,184
NA	MA	BOSTON HARBOR, MA	1,000
NA	MD	BALTIMORE HARBOR AND CHANNELS (BREWERTON CHANNEL), MD	9,578
SA	MS	PASCAGOULA HARBOR, MS	7,792
SA	NC	WILMINGTON HARBOR NC	18,300
MV	ND	DEVILS LAKE ND	10,000
NA	NJ	DELAWARE RIVER MAIN CHANNEL, NJ, PA & DE	16,500
NA	NJ	NEW YORK HARBOR & ADJACENT CHNLS, PORT JERSEY CHNL, NJ	2,000
NA	NY	KILL VAN KULL AND NEWARK BAY CHANNEL, NY & NJ	60,000
NA	PA	WYOMING VALLEY, PA (LEVEE RAISING)	20,000
SA	PR	SAN JUAN HARBOR, PR	8,000
SA	SC	CHARLESTON HARBOR, SC	37,284
SW	TX	CHANNEL TO VICTORIA, TX	8,700
SW	TX	HOUSTON—GALVESTON NAVIGATION CHANNELS TX	60,000
NA	VA	NORFOLK HARBOR AND CHANNELS (DEEPENING), VA	550
NW	WA	COLUMBIA RIVER FISH MITIGATION, WA, OR & ID	100,000
XX	XX	DREDGED MATERIAL DISPOSAL FACILITIES PROGRAM	20,000
XX	XX	RIVERINE ECOSYSTEM RESTORATION AND FLOOD HAZARD MITIGATION	25,000

FISCAL YEAR 2000 CONSTRUCTION CAPABILITIES

Question. Also, could you provide for the record a list which shows the Corp's construction capability, how the funds would be used, and how much the schedule could be advanced with the additional funding?

Answer. Yes, I will provide the requested list for the record.

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
	ALABAMA:						
AL 1	BLACK WARRIOR AND TOMBIGBEE RIVERS, VICINITY OF JACKSON, AL.	(N)	18,900	3,000 (C)	3,000 (C)	NO ADDITIONAL REQUIREMENT	.....
AL 1	MOBILE HARBOR, AL	(N)	305,568	700 (C)	700 (C)	NO ADDITIONAL REQUIREMENT	.....
AL 2 GA 2	WALTER F GEORGE POWERHOUSE AND DAM, AL & GA (MAJOR REHAB).	(MP)	37,000	750 (MR)	750 (MR)	NO ADDITIONAL REQUIREMENT	.....
AL 2 GA 2	WALTER F GEORGE POWERPLANT, AL & GA (MAJOR REHAB).	(MP)	30,800	3,600 (MR)	3,600 (MR)	NO ADDITIONAL REQUIREMENT	.....
	ALASKA:						
	ALASKA ENVIRONMENTAL INFRASTRUCTURE, AK	(E)	25,000	(C)	13,911 (C)	COMPLETE BUCKLAND CONSTRUCTION	$8,911
						INITIATE NOME CONSTRUCTION	5,000
						NOTE: THE ADMINISTRATION HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
							13,911
AK AL	BETHEL BANK STABILIZATION, AK	(FC)	[1] 18,031	(C)	(C)	FULLY FUNDED	.....
	CHIGNIK HARBOR, AK	(N)	[1] 5,589	4,357 (C)	4,357 (C)	NO ADDITIONAL REQUIREMENT	.....
AK AL	COOK INLET, AK	(N)	[1] 9,450	500 (C)	2,178 (C)	ADVANCE CONSTRUCTION BY 1 YEAR	.....
AK AL	DILLINGHAM EMERGENCY BANK STABILIZATION, AK	(FC)	[1] 3,277	(C)	(C)	FULLY FUNDED	.....
						NOTE: THE ADMINISTRATION HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
AK AL	HOMER SPIT STORM DAMAGE REDUCTION, AK	(FC)	[1] 6,600	(C)	(C)	FULLY FUNDED	.....
AK AL	KAKE HARBOR, AK	(N)	[1] 18,000	2,568 (C)	2,568 (C)	NO ADDITIONAL REQUIREMENT.	
	ST PAUL HARBOR, AK	(N)	[1] 14,349	500 (C)	2,500 (C)	ADVANCE COMPLETION OF CONTRACT #1 BY 6 MO AND INITIATE CONTRACT #2.	2,000
	ARIZONA:						
AZ 6	CLIFTON, AZ	(FC)	[1] 16,100	645 (C)	645 (C)	COMPLETE PROJECT	.....
AZ 2, 5	NOGALES WASH, AZ	(FC)	[1] 523	(C)	180 (C)	CONSTRUCT FLOODWARNING SYSTEM	.....
AZ 2, 5	RILLITO RIVER, AZ	(FC)	[1] 28,600	(C)	2,643 (C)	COMPLETE PROJECT	.....
	ARKANSAS:						
AR 2	ARKANSAS RIVER, TUCKER CREEK, AR	(FC)	[1] 418	(C)	(C)	FULLY FUNDED	.....
AR 2, 3	DARDANELLE LOCK AND DAM POWERHOUSE, AR (MAJOR REHAB).	(MP)	[1] 29,700	11,964 (MR)	11,964 (MR)	NO ADDITIONAL REQUIREMENT	.....

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
AR 1, 2, 3, 4	MCCLELLAN—KERR ARKANSAS RIVER	(N)	[1] 632,500	3,080 (C)	3,500 (C)	CONTINUE EVALUATION STUDIES OF CUT-OFF STRUCTURE EROSION.	420
OK 2, 3	NAVIGATION SYSTEM, AR & OK						
AR 1, 4	MONTGOMERY POINT LOCK AND DAM, AR	(N)	[1] 242,000	20,000 (C)	45,000 (C)	ADVANCE COMPLETION OF PROJECT ONE YEAR	25,000
AR 4 LA 3, 4, 5	OUACHITA AND BLACK RIVERS, AR & LA	(N)	[1] 261,000	(C)	(C)	LACK OF LOCAL COOPERATION	.....
AR 3	OZARK (POWERHOUSE), AR (MAJOR REHAB)	(MP)	44,700	(MR)	500 (MR)	INITIATE REDESIGN OF EXISTING FIVE TURBINES	500
AR 2, 4	PLUM BAYOU LEVEE SYSTEM, ARKANSAS	(FC)	1,700	(C)	1,000 (C)	INITIATE CONSTRUCTION OF PROJECT. NOTE: THE ADMINISTRATION'S REVIEW RIVER LEVEES, AR OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	1,000
AR 3, 4, LA 4	RED RIVER EMERGENCY BANK PROTECTION, AR & LA	(N)	[1] 120,262	(C)	4,000 (C)	CONTINUE CONSTRUCTION CONTRACTS FOR BLACK LAKE, PLEASANT VALLEY AND HUNTERS ISLAND.	2,600
						INITIATE DESIGN BOIS D'ARC REVETMENT	1,000
						CONSTRUCTION MANAGEMENT REVETMENT	400
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
							4,000
	CALIFORNIA:						
CA 3, 4, 5 11	AMERICAN RIVER WATERSHED (NATOMAS), CA	(FC)	[1] 28,510	4,000 (C)	4,000 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 3, 4, 5 11	AMERICAN RIVER WATERSHED, CA	(FC)	[1] 47,600	17,000 (C)	17,000 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 3	CACHE CREEK SETTLING BASIN, CA	(FC)	[1] 15,740	(C)	(C)	FULLY FUNDED	.....
CA 6	CORTE MADERA CREEK, CA	(FC)	21,700	500 (C)	500 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 13,15,16	COYOTE AND BERRYESSA CREEKS, CA	(FC)	[1] 55,735	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
CA 1	CRESCENT CITY HARBOR, CA	(N)	1,446	(C)	(C)	FULLY FUNDED	.....
CA 15,16	GUADALUPE RIVER, CA	(FC)	[1] 78,500	5,000 (C)	5,000 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 1	HUMBOLDT HARBOR AND BAY, CA	(N)	12,300	3,200 (C)	3,200 (C)	COMPLETE PROJECT	.....

CA 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 37, 38, 39, 42	LOS ANGELES COUNTY DRAINAGE AREA, CA	(FC)	[1] 150,000	30,000 (C)	50,000 (C)	INITIATE RELOCATION OF UPRR-COMPTON CREEK BRIDGE ... ADVANCE COMPLETION BY 12 MONTHS	20,000
1CA 32, 36, 38, 42	LOS ANGELES HARBOR, CA	(N)	[1] 116,200	9,785 (C)	9,785 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 2, 3, 5, 7, 11	LOWER SACRAMENTO AREA LEVEE RECONSTRUCTION, CA.	(FC)	[1] 4,660	2,317 (C)	2,317 (C)	COMPLETE PROJECT	.....
CA 2, 3	MARYSVILLE/YUBA CITY LEVEE RECONSTRUCTION, CA	(FC)	[1] 32,260	300 (C)	300 (C)	COMPLETE PROJECT	.....
CA 18, 19	MERCED COUNTY STREAMS, CA	(FC)	[1] 91,800	500 (C)	500 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 2, 3, 5, 7, 11	MID-VALLEY AREA LEVEE RECONSTRUCTION, CA	(FC)	[1] 14,900	4,000 (C)	4,000 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 1	NAPA RIVER, CA	(FC)	91,000	4,500 (C)	4,500 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 4, 11, 18	NEW MELONES LAKE, CA	(MP)	[1] 402,000	(C)	(C)	FULLY FUNDED	.....
CA 43	NORCO BLUFFS, SANTA ANA RIVER, CA	(FC)	5,580	(C)	(C)	FULLY FUNDED	.....
CA 36, 38	PORT OF LONG BEACH (DEEPENING), CA	(N)	[1] 19,800	(C)	(C)	FULLY FUNDED	.....
CA 2, 3, 5, 7, 11	SACRAMENTO RIVER BANK PROTECTION PROJECT, CA	(FC)	[1] 179,900	7,000 (C)	7,000 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 3	SACRAMENTO RIVER DEEPWATER SHIP CHANNEL, CA	(N)	[1] 24,900	(C)	(C)	COST SHARING AND FINANCING BY LOCAL INTERESTS ARE UNAVAILABLE.	
CA 2, 3, 5, 7, 11	SACRAMENTO RIVER FLOOD CONTROL PROJECT, CA (DEF CORR).	(FC)	[1] 76,322	(C)	(C)	FULLY FUNDED	.....
CA 2, 3	SACRAMENTO RIVER, GLENN-COLUSA IRRIGATION DISTRICT, CA.	(FC)	[1] 16,550	3,000 (C)	6,000 (C)	ADVANCE PROJECT COMPLETION 6 MONTHS	.....
CA 3, 5	SACRAMENTO URBAN AREA LEVEE RECONSTRUCTION, CA.	(FC)	[1] 28,215	(C)	(C)	FULLY FUNDED	.....
CA 3, 7, 10, 11	SAN FRANCISCO BAY TO STOCKTON, CA	(N)	[1] 172,250	(C)	(C)	LACK OF ADEQUATE LOCAL SUPPORT	.....
CA 15, 17	SAN LORENZO RIVER, CA	(FC)	[1] 13,230	4,800 (C)	4,800 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 48	SAN LUIS REY RIVER, CA	(FC)	[1] 61,100	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
CA 39, 40, 41, 42, 43, 44, 45, 46, 47	SANTA ANA RIVER MAINSTEM, CA	(FC)	[1] 896,000	20,000 (C)	28,000 (C)	INITIATE CONSTRUCTION PRADO DAM INITIATE K-RAT MITIGATION	5,000 3,000
							8,000

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
CA 22	SANTA BARBARA HARBOR, CA	(N)	[1] 5,360	4,960 (C)	4,960 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 29	SANTA MONICA BREAKWATER, CA	(N)	[1] 4,660	(C)	(C)	FULLY FUNDED	.....
CA 23	ANTA PAULA CREEK, CA	(FC)	[1] 36,000	14,800 (C)	16,195 (C)	COMPLETE PROJECT	.....
CA 49	SILVER STRAND SHORELINE, IMPERIAL BEACH, CA	(BE)	15,300	(C)	351 (C)	COMPLETE GRR NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED POLICY CONCERNS.	351
CA 20	SUCCESS DAM, TULE RIVER, CA (DAM SAFETY)	(FC)	30,900	1,250 (DS)	1,250 (DS)	NO ADDITIONAL REQUIREMENT	.....
CA 45, 47	SURFSIDE—SUNSET—NEWPORT BEACH, CA	(BE)	43,200	(C)	400 (C)	INITIATE ENGINEERING & DESIGN FOR PERIODIC NOURISHMENT.	400
CA 2, 3	UPPER SACRAMENTO AREA LEVEE RECONSTRUCTION, CA.	(FC)	[5] 5,640	3,055 (C)	3,055 (C)	COMPLETE PROJECT	.....
CA 10	WALNUT CREEK, CA	(FC)	[1] 71,930	(C)	(C)	FULLY FUNDED	.....
CA 3	WEST SACRAMENTO, CA	(FC)	[1] 24,700	7,700 (C)	7,700 (C)	NO ADDITIONAL REQUIREMENT	.....
CA 7	WILDCAT AND SAN PABLO CREEKS, CA	(FC)	[1] 20,200	(C)	(C)	FULLY FUNDED	.....
CA 3	YOLO BASIN WETLANDS, SACRAMENTO RIVER, CA	(E)	[1] 12,145	(C)	(C)	FULLY FUNDED	.....
	COLORADO:						
CO 3	ALAMOSA, CO	(FC)	[1] 5,552	(C)	(C)	FULLY FUNDED	.....
	CONNECTICUT:						
CT 3	FAULKNERS ISLAND, CT	(FC)	4,500	(C)	582 (C)	COMPLETE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
	DELAWARE:						
DE AL	DELAWARE COAST PROTECTION, DE	(BE)	[1] 11,800	259 (C)	259 (C)	NO ADDITIONAL REQUIREMENT	.....
DE AL	DELAWARE COAST-REHOBOTH TO DEWEY BCH, DE	(BE)	46,090	(C)	325 (C)	INITIATE CONSTRUCTION THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED POLICY CONCERNS.	.....
	DISTRICT OF COLUMBIA:						
	AQUATIC ECOSYSTEM RESTORATION (SECTION 206		49,000	4,500 (C)	6,000 (C)	FULLY FUND PROGRAM	.....
	AQUATIC PLANT CONTROL		32,000	3,000 (C)	5,000 (C)	FULLY FUND PROGRAM	.....
	BEACH EROSION CONTROL PROJECTS (SECTION 103		27,600	2,500 (C)	4,000 (C)	FULLY FUND PROGRAM	.....
	BENEFICIAL USES OF DREDGED MATERIAL (SECTION 204).		10,200	1,000 (C)	2,000 (C)	FULLY FUND PROGRAM	.....
	DREDGED MATERIAL DISPOSAL FACILITIES PROGRAM		248,255	20,000 (C)	20,000 (C)	NO ADDITIONAL REQUIREMENT	.....

	EMERGENCY STREAMBANK PROTECTION PROJECTS (SECTION 14).		100,000	8,500 (C)	13,000 (C)	FULLY FUND PROGRAM	.....
	EMPLOYEES COMPENSATION		214,197	19,554 (C)	19,554 (C)	NO ADDITIONAL REQUIREMENT	.....
	FLOOD CONTROL PROJECTS (SECTION 205)		295,500	26,900 (C)	35,000 (C)	FULLY FUND PROGRAM	.....
	INLAND WATERWAYS USERS BOARD—BOARD EXPENSE		750	45 (C)	45 (C)	NO ADDITIONAL REQUIREMENT	.....
	INLAND WATERWAYS USERS BOARD—CORPS EXPENSE		2,220	185 (C)	185 (C)	NO ADDITIONAL REQUIREMENT	.....
	MITIGATION OF SHORE DAMAGES (SECTION 111)		5,100	500 (C)	500 (C)	NO ADDITIONAL REQUIREMENT	.....
	MODIFICATIONS FOR IMPROVEMENT OF ENVIRONMENT (SECTION 1135).		126,475	8,500 (C)	12,000 (C)	FULLY FUND PROGRAM	.....
	NAVIGATION PROJECTS (SECTION 107)		52,509	4,500 (C)	7,000 (C)	FULLY FUND PROGRAM	.....
	RIVERINE ECOSYSTEM RESTORATION AND FLOOD HAZARD MITIGATION.		925,000	25,000 (C)	25,000 (C)	NO ADDITIONAL REQUIREMENT	.....
	SNAGGING AND CLEARING PROJECTS (SECTION 208)		1,100	100 (C)	500 (C)	FULLY FUND PROGRAM	.....
	FLORIDA:						
FL 15	BREVARD COUNTY, FL	(BE)	154,000	(C)	1,000 (C)	INITIATE NOURISHMENT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED POLICY CONCERNS.	.....
FL 11, 15	CANAVERAL HARBOR DEEPENING, FL	(N)	6,600	830 (C)	830 (C)	NO ADDITIONAL REQUIREMENT	.....
FL 11, 15	CANAVERAL HARBOR, FL	(N)	124,470	2,750 (C)	2,750 (C)	NO ADDITIONAL REQUIREMENT	.....
FL 13	CEDAR HAMMOCK (WARES CREEK)	(FC)	11,600	(C)	238 (C)	INITIATE PROJECT	.....
FL 5, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23	CENTRAL AND SOUTHERN FLORIDA, FL	(FC)	2,586,300	52,300 (C)	52,300 (C)	NO ADDITIONAL REQUIREMENT	.....
FL 18, 22	DADE COUNTY, FL	(BE)	163,300	2,000 (C)	4,000 (C)	COMPLETE RENOURISHMENT OF BAL HARBOUR, AWARD TEST BEACH FILL CONTRACT.	.....
FL 7, 8, 12, 14, 16, 17, 18, 19, 20, 21, 22	EVERGLADES AND SOUTH FLORIDA ECOSYSTEM RESTORATION, FL.	(E)	75,000	21,100 (C)	21,100 (C)	NO ADDITIONAL REQUIREMENT.	.....
FL 12	FORT PIERCE BEACH, FLO	(BE)	28,000	(C)	500 (C)	CONTINU PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED POLICY CONCERNS.	.....
FL 11	INDIAN RIVER COUNTY, FL	(BE)	.....	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
FL 3, 4, 11, 12, 14, 15, 16, 17, 18, 19, 22, 23	INTRACOASTAL WATERWAY, PALM BEACH COUNTY, FL	(N)	1,085	(C)	400 (C)	INITIATE PROJECT	.....

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
AL 2 FL 2 GA 2	JIM WOODRUFF LOCK AND DAM POWERHOUSE, FL & GA (MAJOR REHAB).	(MP)	35,600	6,000 (MR)	6,000 (MR)	NO ADDITIONAL REQUIREMENT	.....
FL 5, 8, 10, 11,12,15, 16	KISSIMMEE RIVER, FL	(E)	243,500	39,800 (C)	39,800 (C)	NO ADDITIONAL REQUIREMENT	.....
FL 22	LAKE WORTH INLET SAND TRANSFER PLANT	(N)	4,500	(C)	1,000 (C)	INITIATE PROJECT	.....
FL 14	LEE COUNTY, FL (REIMBURSEMENT)	(BE)	8,900	(C)	185 (C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
FL 13	MANATEE HARBOR, FL	(N)	19,885	4,700 (C)	4,700 (C)	NO ADDITIONAL REQUIREMENT	.....
FL 10, 12, 16	MARTIN COUNTY, FL	(BE)	25,600	(C)	213 (C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
FL 18, 22	MIAMI HARBOR CHANNEL, FL	(N)	47,566	15,000 (C)	15,000 (C)	NO ADDITIONAL REQUIREMENT	.....
FL 4	PALM VALLEY BRIDGE, FL	(N)	18,700	3,000 (C)	5,000 (C)	ADVANCE PROJECT COMPLETION 1 YEAR	.....
FL 1	PANAMA CITY BEACHES, FL	(BE)	22,905	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS.	
FL 8, 9	PINELLAS COUNTY, FL	(BE)	144,600	2,000 (C)	3,476 (C)	RENOURISH SAND KEY & TREASURE ISLAND	.....
FL 4	ST. JOHNS COUNTY (ST. AUGUSTINE BEACHES), FL	(BE)	153,400	(C)	300 (C)	COMPLETE DESIGN NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED POLICY CONCERNS.	.....
FL 11	TAMPA HARBOR—BIG BEND	(N)	6,932	(C)	1,000 (C)	INITIATE PROJECT	.....
	GEORGIA:						
GA 9	BUFORD POWERHOUSE, GA (MAJOR REHAB)	(MP)	32,900	3,650 (MR)	3,650 (MR)	NO ADDITIONAL REQUIREMENT	.....
GA 11 SC 3	HARTWELL LAKE POWERHOUSE, GA & SC (MAJOR REHAB).	(MP)	[1] 20,800	1,500 (MR)	1,500 (MR)	NO ADDITIONAL REQUIREMENT	.....
GA 1 SC 2	LOWER SAVANNAH RIVER BASIN, GA & SC	(N)	[1] 3,196	(C)	200 (C)	INITIATE PROJECT	.....
GA 10 SC 3	RICHARD B RUSSELL DAM AND LAKE, GA & SC	(MP)	[1] 618,100	8,500 (C)	8,500 (C)	NO ADDITIONAL REQUIREMENT	.....
GA 10 SC 3	THURMOND LAKE POWERHOUSE, GA & SC (MAJOR REHAB).	(MP)	[1] 69,700	8,000 (MR)	8,000 (MR)	NO ADDITIONAL REQUIREMENT	.....
GA 1	TYBEE ISLAND, GA	(BE)	[1] 17,244	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
	HAWAII:						
HI 2	IAO STREAM FLOOD CONTROL, MAUI, HI (DEF CORR)	(FC)	[1] 14,297	219 (C)	340 (C)	ADVANCE COMPLETION OF GENERAL DESIGN MEMORANDUM BY 6 MONTHS.	.....
HI 2	KIKIAOLA SMALL BOAT HARBOR, KAUAI, HI	(N)	[1] 4,997	75 (C)	75 (C)	NO ADDITIONAL REQUIREMENT	.....

HI 2	MAALAEA HARBOR, MAUI, HI	(N)	[1] 11,329	272 (C)	272 (C)	NO ADDITIONAL REQUIREMENT	.....
	ILLINOIS:						
IL 12, 20 MO 8	ALTON TO GALE ORGANIZED LEVEE DISTRICT, IL & MO (DEF CORR).	(FC)	109,018	(C)	(C)	COST SHARING AND FINANCING BY LOCAL INTERESTS ARE UNLIKELY.	.....
IL 12	CHAIN OF ROCKS CANAL, MISSISSIPPI RIVER, IL (DEF CORR).	(N)	[1] 24,500	1,600 (C)	2,200 (C)	COMPLETE PLACEMENT OF RIPRAP IN IN DRAINAGE DITCH ADVANCES PROJECT COMPLETION BY THREE MONTHS.	600
IL 13	CHICAGO SANITARY AND SHIP CANAL DISPERSAL BARRIER, IL.	(E)	[1] 2,000	100 (C)	600 (C)	COMPLETE DESIGN AND INITIATE CONSTRUCTION OF PHASE II.	500
IL 1, 2, 5, 7, 9	CHICAGO SHORELINE, IL	(BE)	[1] 169,100	7,629 (C)	18,629 (C)	ADVANCE CONSTRUCTION REACH 2 (IRVING TO BELMONT)	2,000
						ADVANCE CONSTRUCTION REACH 4 (I–55 TO 30TH ST).	1,300
						ADVANCE CONSTRUCTION REACH 4 (33RD ST TO 37TH ST)	4,000
						INITIATE CONSTRUCTION REACH 4 (37TH ST TO 43RD ST)	3,000
						CONSTRUCTION MANAGEMENT	700
							11,000
IL 8, 10, 12	DES PLAINES WETLANDS DEMONSTRATION PROJECT, IL	(FC)	[1] 2,200	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
IL 12	EAST ST LOUIS & VICINITY (INTERIOR FLOOD CONTROL), IL.	(FC)	1,369	(C)	488 (C)	COMPLETE GENERAL REEVALUATION REPORT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	488
IL 12	EAST ST LOUIS, IL	(FC)	[1] 32,335	2,000 (C)	2,000 (C)	NO ADDITIONAL REQUIREMENT	.....
IL 20 MO 9	LOCK AND DAM 24 PART 1, MISS RIVER, IL & MO (MAJOR REHAB).	(N)	[1] 25,000	3,844 (MR)	3,844 (MR)	NO ADDITIONAL REQUIREMENT	.....
IL 20 MO 9	LOCK AND DAM 24 PART 2, MISS RIVER, IL & MO (MAJOR REHAB).	(N)	[1] 38,400	1,200 (MR)	1,200 (MR)	NO ADDITIONAL REQUIREMENT	.....
IL 20 MO 9	LOCK AND DAM 25, MISSISSIPPI RIVER, IL & MO (MAJOR REHAB).	(N)	[1] 25,900	4,456 (MR)	4,456 (MR)	NO ADDITIONAL REQUIREMENT	.....
IL 16	LOVES PARK, IL	(FC)	[1] 22,500	3,888 (C)	3,888 (C)	NO ADDITIONAL REQUIREMENT	.....
IL 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13	MCCOOK AND THORNTON RESERVOIRS, IL	(FC)	[1] 490,000	2,500 (C)	4,500 (C)	ADVANCE COMPLETION OF GROUNDWATER PROTECTION SYSTEM.	.....
IL 12, 20 MO 2	MELVIN PRICE LOCK AND DAM, IL & MO.	(N)	[1] 740,700	2,900 (C)	4,000 (C)	ADVANCE CONTRACT FOR PUBLIC ACCESS FACILITIES BY 36 MONTHS SUBJECT TO COMPLETION OF 215 AGREEMENT.	1,100
IL 12, 20 MO 2	MELVIN PRICE LOCK AND DAM, SECOND LOCK, IL & MO	(N)	[1] 215,000	(C)	(C)	FULLY FUNDED	.....
IL 9, 10, 11	NORTH BRANCH CHICAGO RIVER, IL	(FC)	[1] 21,735	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
IL 3, 5, 6, 8, 9,10, 13	O'HARE RESERVOIR, IL	(FC)	[1] 31,377	(C)	(C)	FULLY FUNDED	.....

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Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
IL 19 KY 1	OLMSTED LOCKS AND DAM, OHIO RIVER, IL & KY	(N)	[1] 1,020,000	28,634 (C)	51,000 (C)	ADVANCE PROJECT COMPLETION BY 12 MONTHS	22,366
IA 1, 2, 3, 4, 5 IL 16, 17, 18, 20 MN 1, 2, 3, 4, 5, 6 MO 1, 2, 4, 6, 8, 9 WI 1, 2, 3, 4, 5, 6, 7, 8, 9	UPPER MISS RVR SYSTEM ENV MGMT PROGRAM, IL, IA, MO, MN & WI.	(E)	[1] 242,862	18,955 (C)	18,955 (C)	NO ADDITIONAL REQUIREMENT	.....
	INDIANA:						
IN 4	FORT WAYNE METROPOLITAN AREA, IN	(FC)	[1] 37,021	4,000 (C)	4,000 (C)	NO ADDITIONAL REQUIREMENT	.....
IN 1	INDIANA SHORELINE EROSION, IN	(BE)	[1] 184,000	(C)	40 (C)	CONTINUE MONITORING PROGRAM NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	40
IN 9, 10	INDIANAPOLIS CENTRAL WATERFRONT, WHITE RIVER, IN	(FC)	[1] 39,975	(C)	10,991 (C)	CONTINUE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	10,991
IN 6, 7, 10	INDIANAPOLIS, WHITE RIVER (NORTH), IN	(FC)	[1] 11,837	(C)	1,588 (C)	INITIATE CONSTRUCTION	1,588
IN 1	LAKE GEORGE, HOBART, IN	(FC)	[1]6,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
IN 1	LITTLE CALUMET RIVER, IN	(FC)	[1] 131,618	3,900 (C)	9,400 (C)	ADVANCE CONSTRUCTION ON STAGE IV–1 COMPLETE BURR STREET LEVEE INITIATE PUMP STATION 1A CONSTRUCTION MANAGEMENT	3,600 500 1,000 400 5,500
IN 8, 9	NEW HARMONY, IN	(FC)	[1] 2,455	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....

IN 9	OHIO RIVER (GREENWAY CORRIDOR), IN	(N)	[1] 18,000	(C)	500 (C)	INITIATE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	500
IN 8, 9	OHIO RIVER FLOOD PROTECTION, IN	(FC)	[1] 4,378	(C)	1,318 (C)	COMPLETE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	1,318
IN 8, 9	PATOKA LAKE, IN (MAJOR REHAB)	(FC)	[1] 7,200	2,000 (MR)	3,500 (MR)	ADVANCE PROJECT COMPLETION THREE MONTHS	1,500
	IOWA:						
IA 3, 4, 5	DES MOINES RECREATION RIVER AND GREENBELT, IA	(FC)	[1] 28,000	(C)	6,600 (C)	AWARD LUMP-SUM CONTRACT FOR RED ROCK TRAILS, SEG IVB;. CONTINUE P,E&D FOR 11 PROJECTS; CONTINUE SUPERVISON AND INSPECTION CONTINUE PROGRAM MGT. AND ADVISORY COMMITTEE ACTIVITIES. NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	4,550 1,430 370 250
							6,600
	LOCK AND DAM 12, MISSISSIPPI RIVER, IA (MAJOR REHAB).	(N)	[1] 15,500	2,600 (MR)	2,600 (MR)	NO ADDITIONAL REQUIREMENT	.....
IA 1 IL 17	LOCK AND DAM 14, MISSISSIPPI RIVER, IA (MAJOR REHAB).	(N)	[1] 20,000	4,092 (MR)	4,092 (MR)	NO ADDITIONAL REQUIREMENT	.....
IA 4, 5 KS 2, 3 MO 1, 2, 4, 5, 6, 9 NE 1, 2, 3	MISSOURI RIVER FISH AND WILDLIFE MITIGATION, IA, NE, KS & MO.	(E)	[1] 81,400	5,000 (C)	10,000 (C)	ADVANCE COMPLETION OF CONSTRUCTION AT VARIOUS SITES BY SIX MONTHS. ADVANCE PROJECT COMPLETION BY SIX MONTHS.	.....
IA 4, 5 KS 2, 3 MO 1, 2, 4, 5, 6, 9 NE 1, 2, 3	MISSOURI RIVER LEVEE SYSTEM, IA, NE, KS & MO	(FC)	[1] 139,193	3,000 (C)	3,000 (C)	NO ADDITIONAL REQUIREMENT	.....
IA 1	MUSCATINE ISLAND, IA	(FC)	[1] 6,820	2,500 (C)	2,500 (C)	NO ADDITIONAL REQUIREMENT	.....
IA 5	PERRY CREEK, IA	(FC)	[1] 42,580	9,500 (C)	9,500 (C)	NO ADDITIONAL REQUIREMENT	.....
IA 3, 4	RED ROCK DAM AND LAKE RED ROCK, IA	(FC)	[1] 44,500	(C)	400 (C)	CONTINUE REAL ESTATE ACQUISITION ACTIVITIES NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	400
IA 4	WEST DES MOINES, DES MOINES, IA	(FC)	[1] 12,996	(C)	(C)	FULLY FUNDED	.....
	KANSAS:						
KS 4	ARKANSAS CITY, KS	(FC)	[1] 27,400	4,300 (C)	4,300 (C)	NO ADDITIONAL REQUIREMENT	.....

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
KS 4	WINFIELD, KS	(FC)	[1] 6,600	154 (C)	154 (C)	NO ADDITIONAL REQUIREMENT	.....
	KENTUCKY:						
KY 1 TN 7, 8	BARKLEY DAM AND LAKE BARKLEY, KY & TN	(MP)	[1] 159,799	1,450 (C)	2,750 (C)	ADVANCE PROJECT COMPLETION 12 MONTHS	1,300
KY 5	DEWEY LAKE, KY (DAM SAFETY)	(FC)	[1] 13,700	2,500 (DS)	4,900 (DS)	ADVANCE PROJECT COMPLETION BY 12 MONTHS	2,400
AL 4, 5 KY 1, 5 MS 1 TN 2, 3, 4, 5, 6, 7, 8	KENTUCKY LOCK AND DAM, TENNESSEE RIVER, KY	(N)	[1] 533,000	7,750 (C)	15,000 (C)	ADVANCE PROJECT COMPLETION 9 MONTHS	7,250
IN 9 KY 3	MCALPINE LOCKS AND DAM, OHIO RIVER, KY & IN	(N)	[1] 268,000	2,800 (C)	10,800 (C)	ADVANCE AWARD OF PHASE I LOCK CONSTRUCTION 24 MONTHS; AWARD BOAT MOORING CONTRACT; ADVANCE PROJECT COMPLETION BY 24 MONTHS.	8,000
KY 3, 4	METROPOLITAN LOUISVILLE, POND CREEK, KY	(FC)	[1] 12,115	3,251 (C)	3,251 (C)	NO ADDITIONAL REQUIREMENT	.....
KY 5	SALYERSVILLE, KY	(FC)	[1] 8,630	(C)	(C)	FULLY FUNDED	.....
KY 4, 5	SOUTHERN AND EASTERN KENTUCKY	(E)	[1] 10,000	(C)	2,000 (C)	INCREASE COMMUNITY PARTICIPATION IN PROGRAM	.....
KY 2, 6	TAYLORSVILLE LAKE, KY	(FC)	[1] 92,980	(C)	(C)	FULLY FUNDED EXCEPT FOR UNPROGRAMMED RECREATION FACILITIES.	.....
	LOUISIANA:						
LA 5, 6	ALOHA—RIGOLETTE, LA	(FC)	[1] 7,078	581 (C)	581 (C)	NO ADDITIONAL REQUIREMENT	.....
LA 1, 4, 6	COMITE RIVER, LA	(FC)	[1] 82,700	4,000 (C)	4,000 (C)	NO ADDITIONAL REQUIREMENT	.....
LA 3	GRAND ISLE AND VICINITY, LA	(FC)	[1] 36,547	(C)	(C)	ENGINEERING AND DESIGN WILL CONTINUE WITH AVAILABLE FUNDS.	
LA 1, 2, 3	INNER HARBOR NAVIGATION CANAL LOCK, LA	(N)	[1] 533,000	13,000 (C)	15,900 (C)	INITIATE DEMOLITION OF EASTSIDE BUSINESS	500
						ADVANCE ENGINEERING AND DESIGN	2,400
							2,900

LA 1, 2, 3	LAKE PONTCHARTRAIN AND VICINITY, LA (HURRICANE PROTECTION).	(FC)	[1] 520,000	11,887 (C)	27,046 (C)	PARALLEL PROTECTION:	
						COMPLETE LONDON, SIMON–LONDON	151
						COMPLETE GENTILLY	383
						COMPLETE ORLEANS, PHASE 1C	1,200
						COMPLETE LONDON PUMPING STATION #4	3,320
						COMPLETE LONDON PUMPING STATION #3	6,150
						INITIATE ORLEANS PHASE 1B LEE & LONDON	100
						INITIATE MIRABEAU AND FILMORE	2,516
						CONTINUE ENGINEERING AND DESIGN AND CONSTRUCTION MANAGMENT.	1,339
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
							15,159
LA 1, 2	LAKE PONTCHARTRAIN STORMWATER DISCHARGE, LA	(E)	[1] 22,800	(C)	500 (C)	COMPLETE PROJECT	
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
LA 2, 3	LAROSE TO GOLDEN MEADOW, LA (HURRICANE PROTECTION).	(FC)	[1] 80,000	2,000 (C)	2,000 (C)	NO ADDITIONAL REQUIREMENT	
LA 1, 2, 3, 4, 6	MISSISSIPPI RIVER SHIP CHANNEL, GULF TO BATON ROUGE, LA.	(N)	[1] 171,000	1,500 (C)	1,500 (C)	NO ADDITIONAL REQUIREMENT	
LA 1, 2, 3	NEW ORLEANS TO VENICE, LA (HURRICANE PROTECTION).	(FC)	[1] 171,000	1,400 (C)	2,000 (C)	ADVANCE INITIATION OF ONE CONSTRUCTION CONTRACT BY 12 MONTHS.	600
LA 4, 5, 6	OUACHITA RIVER LEVEES, LA	(FC)	29,500	(C)	3,300 (C)	INITIATE CONTINUING CONTRACTS FOR LEVEE ITEM 2, GRAVEL SURFACING FOR MONROE TO SANDY BAYOU AND INITIATE P&S FOR ITEM 3.	3,300
						NOTE: THE ADMINISTRATIOIN'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
LA 3	PORT FOURCHON, LA	(N)	2,557	2,184 (C)	2,184 (C)	COMPLETE PROJECT	
AR 3, 4 LA 4, 5 TX 1	RED RIVER BELOW DENISON DAM, LA, AR & TX	(FC)	[1] 83,069	(C)	600 (C)	INITIATE CONTINUING CONTRACTS TO CONSTRUCT LEVEE ITEMS 5 & 9A.	400
						INITIATE DESIGN OF LEVEE ITEM 6	100
						CONSTRUCTION MANAGEMENT	100
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
							600

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
LA 4, 5, 6	RED RIVER WATERWAY, MISSISSIPPI RIVER TO SHREVEPORT, LA.	(N)	1,895,691	21,113 (C)	23,613 (C)	ACCELERATE INITIATION:	
						COGNAC REINFORCEMENT DIKES	1,250
						POISSON ACS	1,000
						CONSTRUCTION MANAGEMENT	250
							2,500
LA 1, 2	SOUTHEAST LOUISIANA, LA	(FC)	[1] 374,000	47,066 (C)	100,000 (C)	JEFFERSON PARISH:	
						COMPLETE 17 CONTRACTS	28,448
						CONTINUE 7 CONTRACTS	4,230
						ENGINEERING AND DESIGN	50
						SUPERVISION AND ADMINISTRATION	4,386
						ORLEANS PARISH:	
						COMPLETE 2 CONTRACTS	6,463
						CONTINUE 4 CONTRACTS	8,154
						SUPERVISION AND ADMINISTRATION	1,203
							52,934

LA 1, 2, 3	WEST BANK VICINITY OF NEW ORLEANS, LA	(FC)	192,000	7,000 (C)	15,070 (C)	WESTWEGO TO HARVEY CANAL AREA:	
						ADVANCE INITIATION OF REACH 3 STRUCTURES (MT KENNEDY/AMES/OAK COVE FLOODWALLS) CONTRACT BY 6 MONTHS.	852
						ADVANCE INITIATION OF ESTELLE PUMPING STATION TO LP&L 2ND LIFT CONTRACT BY 7 YEARS.	283
						WEST OF ALGIERS:	
						ADVANCE INITIAION OF ALGIERS LOCK TO BELLE CHASSE HWY (ORLEANS LEVEE #9) BY 8 YEARS.	1,606
						ADVANCE INITIATION OF ALGIERS LOCK TO BELLE CHASSE HWY TO CUTOFF (PLAQ LEVEE #8) BY 8 YEARS.	3,804
						EAST OF ALGIERS:	
						ADVANCE INITIAION OF ALGIERS LOCK TO BELLE CHASSE HWY TO HERO LEVEE (PLAQ LEVEE #11) BY 8 YEARS.	387
						ADVANCE INITIATION OF ALGIERS LOCK TO BELLE CHASSE HWY (ORLEANS LEVEE #12) BY 9 YEARS.	500
						LAKE CATAOUATCHE AREA: ADVANCE ENGINEERING AND DESIGN.	638
							8,070
	MAINE:						
ME 2	ST JOHN RIVER I–C DEMO PROJECT	(FC)	3,432	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
	MARYLAND:						
DC DE MD 4, 5, 8	ANACOSTIA RIVER AND TRIBUTARIES, MD & DC	(E)	12,000	4,031 (C)	4,031 (C)	NO ADDITIONAL REQUIREMENT	.....
MD 1	ASSATEAGUE ISLAND, MD	(BE)	[1] 16,900	(C)	6,200 (C)	INITIATE CONSTRUCTION	.....
MD 1	ATLANTIC COAST OF MARYLAND, MD	(BE)	[1] 270,300	200 (C)	200 (C)	NO ADDITIONAL REQUIREMENT	.....
MD 1, 2, 3, 4 VA 1	BALTIMORE HARBOR AND CHANNELS (BREWERTON CHANNEL), MD.	(N)	44,521	9,578 (C)	9,578 (C)	COMPLETE PROJECT	.....
MD 1 VA 1	CHESAPEAKE BAY ENVIRONMENTAL PROGRAM, MD, VA & PA.	(E)	[1] 10,000	(C)	210 (C)	DESIGN WORK ON SMITH ISLAND WSTWTR TREATMENT PL. & NORFOLK DIST. PROJ.	.....
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
MD 1	CHESAPEAKE BAY OYSTER RECOVERY, MD	(E)	2,500	559 (C)	559 (C)	COMPLETE PROJECT	.....
MD 6 WV 1	CUMBERLAND, MD AND RIDGELEY, WV	(FC)	[1] 27,584	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
VA 11	NEABSCO CREEK, VA		[1] 1,125	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
MD 1	POPLAR ISLAND, MD	(E)	[1] 320,000	9,502 (C)	16,000 (C)	INITIATE FIRST DREDGED MATERIAL PLACEMENT PROJECT	.....

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
	MASSACHUSETTS:						
MA 8, 9, 10	BOSTON HARBOR, MA	(N)	[1] 12,150	1,000 (C)	1,000 (C)	NO ADDITIONAL REQUIREMENT	
MA 10	CAPE COD CANAL RAILROAD BRIDGE, MA (MAJOR REHAB).	(N)	[1] 30,500	5,000 (MR)	5,000 (MR)	NO ADDITIONAL REQUIREMENT	
MA 2	HODGES VILLAGE DAM, MA (MAJOR REHAB)	(FC)	[1] 18,600	3,257 (MR)	3,257 (MR)	NO ADDITIONAL REQUIREMENT	
MA 7	REVERE BEACH, MA	(BE)	6,825	(C)	(C)	PERIODIC NOURISHMENT NOT CURRENTLY REQUIRED	
MA 7	ROUGHANS POINT, REVERE, MA	(FC)	[1] 8,000	(C)	(C)	FULLY FUNDED	
MA 9, 10	TOWN BROOK, QUINCY AND BRAINTREE, MA	(FC)	[1] 30,600	1,500 (C)	1,500 (C)	NO ADDITIONAL REQUIREMENT	
	MICHIGAN:						
MI 1 MN 8 WI 7	GREAT LAKES CONNECTING CHANNELS AND HARBORS, MI, MN, & WI.	(N)	[1] 11,254	(C)	500 (C)	INITIATE CONSTRUCTION UPPER ST MARYS RIVER (VIDAL SHOALS). CHANNEL DEEPENING.	500
	MINNESOTA:						
MN 2	CHASKA, MN	(FC)	[1] 30,397	(C)	(C)	FULLY FUNDED	
MN 1	LOCK AND DAM 3, MISSISSIPPI RIVER, MN (MAJOR REHAB).	(N)	[1] 15,400	3,200 (MR)	5,000 (MR)	ADVANCE PROJECT COMPLETION 6 MONTHS	
MN 2	MARSHALL, MN	(FC)	[1] 7,850	2,275 (C)	3,275 (C)	ADVANCE PROJECT COMPLETION 9 MONTHS	
MN 8	PINE RIVER DAM, CROSS LAKE, MN (DAM SAFETY)	(N)	[1] 9,820	3,390 (DS)	3,390 (DS)	NO ADDITIONAL REQUIREMENT	
MN 1	ROCHESTER, MN	(FC)	[1] 67,210	(C)	(C)	FULLY FUNDED	
MN 6	STILLWATER, MN	(BE)	[1] 8,700	(C)	1,158 (C)	COMPLETE STAGE 2 CONSTRUCTION NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
	MISSISSIPPI:						
LA 1 MS 2, 3, 4, 5	EAST PEARL, WALKIAH BLUFF—BG155	(E)	[1] 4,000	(C)	(C)	FULLY FUNDED	
MS 5	JACKSON COUNTY INDUSTRIAL WATER SUPPLY, MS	(FC)	10,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	
MS 4	NATCHEZ BLUFF, MS	(FC)	[1] 13,039	(C)	500 (C)	CONTINUING CONSTRUCTION OF MADISON STREET TO STATE STREET. NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	500
MS 5	PASCAGOULA HARBOR, MS	(N)	39,041	7,792 (C)	7,792 (C)	NO ADDITIONAL REQUIREMENT	

AL 1, 4, 7 MS 1, 3, 5	TENNESSEE—TOMBIGBEE WATERWAY WILDLIFE MITIGATION, AL & MS.	(N)	91,800	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
MS 5	WOLF AND JORDAN RIVERS MS	(N)	2,943	(C)	1,000 (C)	INITIATE PROJECT	.....
	MISSOURI:						
MO 5	BLUE RIVER CHANNEL, KANSAS CITY, MO	(FC)	[1] 211,000	13,700 (C)	13,700 (C)	NO ADDITIONAL REQUIREMENT	.....
MO 8	CAPE GIRARDEAU, JACKSON, MO	(FC)	[1] 36,293	1,900 (C)	1,900 (C)	NO ADDITIONAL REQUIREMENT	.....
MO 9	LONG BRANCH LAKE, MO	(FC)	20,288	(C)	(C)	FULLY FUNDED EXCEPT FOR UNPROGRAMMED RECREATION FACILITIES.	.....
MO 2	MERAMEC RIVER BASIN, VALLEY PARK LEVEE, MO	(FC)	[1] 28,030	3,500 (C)	3,500 (C)	NO ADDITIONAL REQUIREMENT	.....
IL 12, 20 MO 1, 3, 8	MISS RIVER BTWN THE OHIO AND MO RIVERS (REG WORKS), MO & IL.	(N)	[1]274,000	3,000 (C)	4,650 (C)	ADVANCE INITIATION OF THE CHESTER REACH CONTRACT BY SEVEN MONTHS.	600
						INITIATE AND COMPLETE PLANS AND SPECIFICATIONS FOR DEVILS ISLAND AND ELIZA PT/GREENFIELD (PH 2).	450
						INITIATE PLANS AND SPECIFICATIONS FOR IVORY LANDING	100
						CONTINUE REGIONAL ENGINEERING AND ENVIRONMENTAL GEOSPATIAL INFORMATION SYSTEM (REEGIS).	250
						CONTINUE ESSENTIAL DATA COLLECTION ADVANCE PROJECT COMPLETION BY 6 MONTHS.	250
							1,650
MO 3, 8	STE GENEVIEVE, MO	(FC)	[1] 36,100	7,000 (C)	10,000 (C)	ADVANCE COMPLETION OF PUMP STATION/GRAVITY DRAIN BY 6 MONTHS.	1,000
						ADVANCE COMPLETION OF LEVEE/DITCHING/GRADING CONTRACT BY 12 MONTHS. ADVANCE PROJECT COMPLETION BY 4 MTHS.	2,000
							3,000
AR 3 MO 7	TABLE ROCK LAKE, MO & AR (DAM SAFETY)	(MP)	[1] 60,200	13,000 (DS)	13,000 (DS)	NO ADDITIONAL REQUIREMENT	.....
	MONTANA:						
MT AL	FLATHEAD RIVER, MT	(FC)	90	(C)	(C)	FULLY FUNDED	.....
	NEBRASKA:						
NE 1 SD AL	MISSOURI NATIONAL RECREATIONAL RIVER, NE & SD	(FC)	[1] 21,000	300 (C)	300 (C)	NO ADDITIONAL REQUIREMENT	.....
NE 1, 3	WOOD RIVER, GRAND ISLAND, NE	(FC)	[1] 10,000	100 (C)	100 (C)	NO ADDITIONAL REQUIREMENT.	
	NEVADA:						
NV 1, 2	TROPICANA AND FLAMINGO WASHES, NV	(FC)	[1] 208,500	20,100 (C)	35,000 (C)	COMPLETE CONSTRUCTION OF LOWER FLA–MINGO DIVERSION CHANNEL AND INITIATE AND COMPLETE CONSTRUCTION OF F–1 DEBRIS BASIN ADVANCE PROJECT COMPLETION 12 MONTHS.	14,900

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
NJ 13 NY 13	ARTHUR KILL CHANNEL, HOWLAND HOOK MARINE TERMINAL, NY & NJ.	(N)	216,000	(C)	(C)	PROJECT REQUIRES REAUTHORIZATION	.....
NJ 2, 3	BRIGANTINE TO GREAT EGG (ABSECON)	(FC)	329,000	(C)	7,000 (C)	INITIATE CONSTRUCTION NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED POLICY CONCERNS.	.....
NJ 2	CAPE MAY INLET TO LOWER TOWNSHIP, NJ	(BE)	[1] 87,700	1,700 (C)	1,700 (C)	NO ADDITIONAL REQUIREMENT	.....
DE AL NJ 1, 2, 4, 5, 12, 13 PA 1, 2, 3, 7, 8, 10, 15	DELAWARE RIVER MAIN CHANNEL, NJ, PA & DE	(N)	[1] 214,000	16,500 (C)	16,500 (C)	NO ADDITIONAL REQUIREMENT	.....
NJ 2	GREAT EGG HARBOR INLET AND PECK BEACH, NJ	(BE)	[1] 358,800	419 (C)	419 (C)	NO ADDITIONAL REQUIREMENT	.....
NJ 9	HACKENSACK MEADOWLANDS, NJ	(FC)	12,500	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONERNS.	.....
NJ 5, 8, 10, 11, 13	JOSEPH G MINISH HISTORIC WATERFRONT PARK,NJ	(FC)	33,705	(C)	8,000 (C)	CONTINUE CONSTRUCTION.NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
NJ 10, 13	LIBERTY STATE PARK LEVEE AND SEAWALL, NJ	(FC)	19,150	(C)	(C)	FULLY FUNDED	.....
NJ 5, 8	MOLLY ANN'S BROOK AT HALEDON, PROSPECT PARK AND PATERSON, NJ.	(FC)	[1] 20,600	(C)	(C)	FULLY FUNDED	.....
NJ 13	NEW YORK HARBOR & ADJACENT CHANNELS, PORT JERSEY CHANNEL, NJ.	(N)	72,100	2,000 (C)	2,000 (C)	NO ADDITIONAL REQUIREMENT	.....
NJ 11	PASSAIC RIVER PRESERVATION OF NATURAL STORAGE AREAS, NJ.	(FC)	18,300	1,800 (C)	1,800 (C)	NO ADDITIONAL REQUIREMENT	.....
NJ 5 NY 22	RAMAPO AND MAHWAH RIVERS, MAHWAH, NJ AND SUFFERN, NY.	(FC)	6,530	(C)	(C)	COST SHARING AND FINANCING BY LOCAL INTERESTS ARE UNAVAILABLE.	.....
NJ 5, 8	RAMAPO RIVER AT OAKLAND, NJ	(FC)	[1] 11,240	1,300 (C)	1,300 (C)	NO ADDITIONAL REQUIREMENT	.....
NJ 3, 6	RARITAN BAY AND SANDY HOOK BAY, NJ	(BE)	30,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
NJ 6, 7, 12	RARITAN RIVER BASIN, GREEN BROOK SUB-BASIN, NJ	(FC)	[1] 286,000	1,000 (C)	1,000 (C)	NO ADDITIONAL REQUIREMENT	.....
NJ 3, 6	SANDY HOOK TO BARNEGAT INLET, NJ	(BE)	[1] 979,000	9,000 (C)	9,000 (C)	NO ADDITIONAL REQUIREMENT	.....

	NEW MEXICO:						
NM 3	ABIQUIU DAM EMERGENCY GATES, NM	(FC)	[1] 7,000	(C)	(C)	FULLY FUNDED	.....
NM 1, 2, 3	ACEQUIAS IRRIGATION SYSTEM, NM	(FC)	[1] 66,000	1,500 (C)	1,500 (C)	NO ADDITIONAL REQUIREMENT	.....
NM 2	ALAMOGORDO, NM	(FC)	[1] 41,400	700 (C)	700 (C)	NO ADDITIONAL REQUIREMENT	.....
NM 3	GALISTEO DAM, NM (DAM SAFETY)	(FC)	[1] 3,990	(DS)	(DS)	FULLY FUNDED	.....
NM 2	LAS CRUCES, NM	(FC)	[1] 6,600	2,400 (C)	2,400 (C)	COMPLETE PROJECT	.....
NM 1, 3	MIDDLE RIO GRANDE FLOOD PROTECTION, BERNALILLO TO BELEN, NM.	(FC)	[1] 46,800	600 (C)	600 (C)	NO ADDITIONAL REQUIREMENT	.....
NM 2	RIO GRANDE FLOODWAY, SAN ACACIA TO BOSQUE DEL APACHE, NM.	(FC)	[1] 62,300	600 (C)	600 (C)	NO ADDITIONAL REQUIREMENT	.....
NM 2	TWO RIVERS DAM, NM (DAM SAFETY)	(FC)	[1] 1,932	(DS)	(DS)	FULLY FUNDED	.....
	NEW YORK:						
NY 9, 13	ATLANTIC COAST OF NYC, ROCKAWAY INLET TO NORTON POINT, NY.	(BE)	[1] 91,000	300 (C)	300 (C)	NO ADDITIONAL REQUIREMENT	.....
NY 6, 10, 16	EAST ROCKAWAY INLET TO ROCKAWAY INLET AND JAMAICA BAY, NY.	(BE)	[1] 63,000	3,320 (C)	3,320 (C)	NO ADDITIONAL REQUIREMENT	.....
NY 1, 2	FIRE ISLAND INLET TO JONES INLET, NY	(BE)	[1] 532,000	3,000 (C)	3,000 (C)	NO ADDITIONAL REQUIREMENT	.....
NY 1	FIRE ISLAND INLET TO MONTAUK POINT, NY	(BE)	[1] 571,400	3,250 (C)	3,750 (C)	INITIATE CONSTRUCTION OF WEST OF SHINNECOCK INLET ELEMENT. NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERN'S.	.....
NY 22	HUDSON RIVER, NY (NEW YORK CITY TO WATERFORD–ATHENS CHANNEL).	(N)	12,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
NJ 7, 10 NY 13, 14	KILL VAN KULL AND NEWARK BAY CHANNEL, NY & NJ	(N)	[1] 823,300	60,000 (C)	60,000 (C)	NO ADDITIONAL REQUIREMENT	.....
NY 3, 4, 5	LONG BEACH ISLAND, NY	(BE)	239,500	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
NY 1	MORICHES INLET, NY	(N)	[1] 9,100	(C)	(C)	FULLY FUNDED	.....
NY 8, 18, 23, 26	NEW YORK CITY WATERSHED, NY	(E)	22,500	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND /OR POLICY CONCERNS.	.....
NJ 6, 9, 13 NY 7, 8, 11, 12, 13, 14, 15	NEW YORK HARBOR COLLECTION AND REMOVAL OF DRIFT, NY & NJ.	(N)	[1] 131,661	(C)	(C)	FULLY FUNDED	.....
NY 25	NEW YORK STATE CANAL SYSTEM, NY	(N)	[1] 8,000	(C)	4,200 (C)	REIMBURSE PROJECTS COMPLETED BY NYS BARGE CANAL CORP. NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	4,200
NY 26	NORTH ELLENVILLE, NY (DEF CORR)	(FC)	[1] 3,194	(C)	(C)	FULLY FUNDED	.....

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
NY 25	ONONDAGA LAKE STORM WATER DISCHARGE, NY	(FC)	[1] 4,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	
NY 16, 18	ORCHARD BEACH, NY	(BE)	5,200	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS STUDY HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
NY 1	SHINNECOCK INLET, NY	(N)	[1] 16,900	(C)	(C)	FULLY FUNDED	
NY 17, 18	YONKERS, NY (DEF CORR)	(FC)	[1] 13,529	(C)	(C)	FULLY FUNDED	
	NORTH CAROLINA:						
NC 3	AIWW, REPLACEMENT OF FEDERAL HIGHWAY BRIDGES, NC.	(N)	70,700	7,000 (C)	7,000 (C)	NO ADDITIONAL REQUIREMENT	
NC 4	B EVERETT JORDAN DAM AND LAKE, NC	(FC)	147,557	(C)	(C)	FULLY FUNDED	
NC 7	BRUNSWICK COUNTY BEACHES, NC—OCEAN ISLE BEACH PORTION.	(BE)	73,800	(C)	200 (C)	INITIATE CONSTRUCTION NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
NC 7	CAROLINA BEACH AND VICINITY, NC	(BE)	163,780	(C)	(C)	PERIODIC NOURISHMENT NOT CURRENTLY REQUIRED	
NC 2, 4	FALLS LAKE, NC	(FC)	183,000	(C)	(C)	FULLY FUNDED	
NC 8	HAMLET CITY LAKE, NC	(FC)	3,200	(C)	(C)	FULLY FUNDED	
NC 7	WILMINGTON HARBOR, NC	(N)	247,100	18,300 (C)	18,300 (C)	NO ADDITIONAL REQUIREMENT	
NC 7	WRIGHTSVILLE BEACH, NC	(BE)	25,200	(C)	(C)	PERIODIC NOURISHMENT NOT CURRENTLY REQUIRED	
	NORTH DAKOTA:						
ND AL	BUFORD-TRENTON IRRIGATION DISTRICT LAND ACQUISITION, ND.	(FC)	[1] 40,000	5,000 (C)	10,000 (C)	ACQUIRE ADDITIONAL EASEMENTS FROM WILLING SELLERS.	5,000
ND AL	DEVILS LAKE EMERGENCY OUTLET, ND	(FC)	[1] 29,000	10,000 (C)	10,000 (C)	NO ADDITIONAL REQUIREMENT	
ND AL	FT YATES BRIDGE, ND	(MP)	40,577	(C)	(C)	CURRENT FUNDS ARE ADAQUATE MAJOR ACTIVITIES ON THIS PROJECT HAVE CURTAILED PENDING EXECUTION OF A MOA WITH THE STANDING ROCK SIOUX TRIBE.	
ND AL	GARRISON DAM AND POWER PLANT, ND (MAJOR REHAB)	(MP)	[1] 37,000	6,500 (MR)	6,500 (MR)	NO ADDITIONAL REQUIREMENT	
MN 7 ND AL	GRAND FORKS, ND—EAST GRAND FORKS, MN	(FC)	[1] 175,900	10,000 (C)	10,000 (C)	NO ADDITIONAL REQUIREMENT	
ND AL	HOMME LAKE, ND (DAM SAFETY).	(FC)	[1] 16,000	3,000 (DS)	3,000 (DS)	NO ADDITIONAL REQUIREMENT	
ND AL	LAKE ASHTABULA AND BALDHILL DAM, ND (DAM SAFETY)	(FC)	[1] 14,700	(DS)	(DS)	FULLY FUNDED	
ND AL	LAKE ASHTABULA AND BALDHILL DAM, ND (MAJOR REHAB).	(FC)	[1] 7,800	500 (MR)	1,535 (MR)	ADVANCE PROJECT COMPLETION 12 MONTHS	

ND AL	SHEYENNE RIVER, ND	(FC)	[1] 30,610	(C)	1,700 (C)	INITIATE CONSTRUCTION OF BALDHILL DAM POOL RAISE SEPERABLE ELEMENT.	.....
ND AL	SOURIS RIVER, ND	(FC)	[1] 101,387	(C)	(C)	FULLY FUNDED	.....
	OHIO:						
OH 16, 18	BEACH CITY LAKE, MUSKINGUM RIVER LAKES, OH (DAM SAFETY).	(FC)	[1] 3,500	1,400 (DS)	1,400 (DS)	NO ADDITIONAL REQUIREMENT	.....
OH 3, 6	HOLES CREEK, WEST CARROLLTON, OH	(FC)	[1] 3,896	(C)	(C)	FULLY FUNDED	.....
OH 13, 17, 19	LOWER GIRARD LAKE, OH	(FC)	[1] 1,593	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
PA 4							
OH 9	MAUMEE BAY STATE PARK, OH	(BE)	[1] 8,317	(C)	(C)	PERIODIC NOURISHMENT NOT CURRENTLY REQUIRED	.....
OH 1, 2	METROPOLITAN REGION OF CINCINNATI, DUCK CREEK, OH.	(FC)	[1] 13,035	2,266 (C)	4,000 (C)	ADVANCE PROJECT COMPLETION BY 6 MONTHS	1,734
OH 1, 2	MILL CREEK, OH	(FC)	[1] 163,000	915 (C)	915 (C)	NO ADDITIONAL REQUIREMENT	.....
OH 12,15	WEST COLUMBUS, OH	(FC)	[1] 91,700	8,000 (C)	16,000 (C)	ADVANCE PROJECT COMPLETION BY 12 MONTHS	8,000
	OKLAHOMA:						
OK 1, 2	MINGO CREEK, TULSA, OK	(FC)	75,400	(C)	(C)	FULLY FUNDED	.....
TX 4	RED RIVER EMERGENGY BANK PROTECTION, AR & LA	(N)	[1] 400	(C)	275 (C)	CONTINUE SEDIMENTATION STUDY NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	275
OK 1, 2	SKIATOOK LAKE, OK (DAM SAFETY)	(FC)	[1] 9,800	500 (DS)	500 (DS)	NO ADDITIONAL REQUIREMENT	.....
OK 2	TENKILLER FERRY LAKE, OK (DAM SAFETY)	(MP)	[1] 37,900	6,800 (DS)	6,800 (DS)	NO ADDITIONAL REQUIREMENT	.....
	OREGON:						
ID 1 MT AL OR 1, 2, 3, 5 WA 3, 4, 5, 6	BONNEVILLE NAVIGATION LOCK, OR & WA	(N)	[1] 336,298	(C)	(C)	FULLY FUNDED	.....
OR 2, 3 WA 4	BONNEVILLE POWERHOUSE PHASE I, OR & WA (MAJOR REHAB).	(MP)	[1] 24,267	(MR)	(MR)	FULLY FUNDED	.....
OR 2, 3 WA 4	BONNEVILLE POWERHOUSE PHASE II, OR & WA (MAJOR REHAB).	(MP)	[1] 104,600	10,800 (MR)	16,300 (MR)	ADVANCE PROJECT COMPLETION ONE YEAR (1) FROM SEPTEMBER 2009 TO SEPTEMBER 2008.	5,500
OR 2, 3 WA 4	BONNEVILLE SECOND POWERHOUSE, OR & WA	(MP)	[1] 678,707	(C)	(C)	FULLY FUNDED	.....
OR 2, 3 WA 3, 4	COLUMBIA RIVER TREATY FISHING ACCESS SITES, OR & WA.	(MP)	[1] 73,966	6,368 (C)	6,368 (C)	NO ADDITIONAL REQUIREMENT	.....
OR 1	COLUMBIA RIVER, SEAFARERS MEMORIAL, HAMMOND, OR	(N)	[1] 150	(C)	(C)	FULLY FUNDED	.....
OR 2	ELK CREEK LAKE, OR	(FC)	174,000	500 (C)	7,000 (C)	ACCOMPLISH PASSIVE FISH PASSAGE CORRIDOR IN FISCAL YEAR 2000.	6,500

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
OR 1, 3 WA 3	LOWER COLUMBIA RIVER BASIN BANK PROTECTION, OR & WA.	(FC)	28,000	262 (C)	617 (C)	PREPARE PLANS AND SPECIFICATIONS FOR BARLOW POINT SITE.	90
						PREPARE P&S FOR COLUMBIA SLOUGH SITE	100
						PREPARE DECISION DOCUMENT ON OTHER SITES	165
							355
OR 1, 3, 4, 5	WILLAMETTE RIVER BASIN BANK PROTECTION, OR	(FC)	33,300	(C)	118 (C)	PROVIDE DESIGN, PREPARE PLANS AND SPECIFICATIONS, AND CONSTRUCT THE SHADY DELL SITE.	118
OR 4	WILLAMETTE RIVER TEMPERATURE CONTROL, OR	(FC)	[1] 70,600	1,700 (C)	3,500 (C)	INITIATE DIVERSION WORK	500
						COMPLETE P & S FOR INTAKE TOWER	1,000
						GATE FABRICATION	300
							1,800
	PENNSYLVANIA:						
PA 9	BROAD TOP REGION, PA	(FC)	[1] 5,500	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJEC HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
PA 3	GLEN FOERD, PA	(FC)	[1] 1,110	(C)	(C)	FULLY FUNDED	.....
PA 12	JOHNSTOWN, PA (MAJOR REHAB)	(FC)	[1] 32,664	6,800 (MR)	6,800 (MR)	NO ADDITIONAL REQUIREMENT	.....
PA 10	LACKAWANNA RIVER, OLYPHANT, PA	(FC)	[1] 9,839	(C)	(C)	FULLY FUNDED	.....
PA 10	LACKAWANNA RIVER, SCRANTON, PA	(FC)	[1] 47,575	(C)	(C)	FULLY FUNDED	.....
PA 18, 20	LOCKS AND DAMS 2, 3 AND 4, MONONGAHELA RIVER, PA.	(N)	[1] 705,000	21,600 (C)	53,078 (C)	ADVANCE PROJECT COMPLETION BY 12 MONTHS	31,478
PA 21	PRESQUE ISLE PENINSULA, PA (PERMANENT)	(BE)	[1] 58,085	520 (C)	520 (C)	NO ADDITIONAL REQUIREMENT	.....
PA 14	SAW MILL RUN, PITTSBURGH, PA	(FC)	[1] 10,575	3,500 (C)	3,500 (C)	NO ADDITIONAL REQUIREMENT	.....
	SCHUYLKILL RIVER PARK, PHILADELPHIA, PA	(FC)	2,700	(C)	2,625 (C)	CONTINUE CONSTRUCTION NOTE: THE ADMINISTRATION'S REVIEW PA OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
PA 12	SOUTH CENTRAL PA ENVIRONMENTAL IMPROVEMENT, PA.	(E)	[1] 36,750	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATIONS REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....

PA 9, 10, 12	SOUTH CENTRAL PA ENVIRONMENTAL IMPROVEMENT, PA.	(E)	[1] 44,650	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
PA 3	SOUTHEASTERN ENV. ASSIS. EAST CENTRAL INCINERATOR SITE.	(FC)	25,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
PA 6	SUNBURY, PA	(FC)	[1] 18,063	(C)	(C)	LACK OF LOCAL COOPERATION	.....
PA 11	SUSQUEHANNA RIVER, PA	(E)	[1] 2,000	(C)	(C)	LACK OF LOCAL COOPERATION	.....
PA 12 WV 1	WEST VIRGINIA AND PENNSYLVANIA FLOOD CONTROL, PA & WV.	(FC)	[1] 12,000	(C)	2,000 (C)	CONTINUE DPR FOR WV PROJECTS NOTE: THE ADMINISTRATIONS REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	2,000
PA 10	WILLIAMSPORT, PA	(FC)	[1] 13,190	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
PA 11	WYOMING VALLEY, PA (LEVEE RAISING)	(FC)	[1] 108,300	20,000 (C)	20,000 (C)	NO ADDITIONAL REQUIREMENT	.....
	PUERTO RICO:						
PR DE	ARECIBO RIVER, PR	(FC)	12,500	2,500 (C)	2,500 (C)	NO ADDITIONAL REQUIREMENT	.....
PR DE	PORTUGUES AND BUCANA RIVERS, PR	(FC)	430,300	5,434 (C)	5,434 (C)	NO ADDITIONAL REQUIREMENT	.....
PR DE	RIO DE LA PLATA, PR	(FC)	63,300	1,000 (C)	3,000 (C)	INITIATE CONTRACT FOR FLOOD PROTECTION WORKS FROM RIVER MOUTH TO DORADO ADVANCE PROJECT COMPLETION 6 MONTHS.	.....
PR DE	RIO GRANDE DE LOIZA, PR	(FC)	138,300	(C)	500 (C)	INITIATE PROJECT	.....
PR DE	RIO PUERTO NUEVO, PR	(FC)	321,000	9,566 (C)	9,566 (C)	NO ADDITIONAL REQUIREMENT	.....
PR DE	SAN JUAN HARBOR, PR	(N)	24,100	8,000 (C)	8,000 (C)	NO ADDITIONAL REQUIREMENT	.....
	RHODE ISLAND:						
RI 1	ALLENDALE DAM, RI	(FC)	300	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINSTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
RI 2	NARRAGANSETT TOWN BEACH, NARRAGANSETT, RI	(N)	1,425	(C)	(C)	COST SHARING AND FINANCING BY LOCAL INTERESTS ARE UNAVAILABLE.	.....
RI 2	QUONSET POINT-DAVISVILLE, RI	(FC)	2,400	(C)	(C)	FULLY FUNDED	.....
RI 1, 2	SEEKONK RIVER, PROVIDENCE, RI	(N)	[1] 700	(C)	(C)	FULLY FUNDED	.....
	SOUTH CAROLINA:						
SC 1	CHARLESTON HARBOR, SC (DEEPENING & WIDENING)	(N)	98,444	37,284 (C)	37,284 (C)	NO ADDITIONAL REQUIREMENT	.....
SC 1	FOLLY BEACH, SC	(BE)	98,689	(C)	(C)	PERIODIC NOURISHMENT NOT CURRENTLY REQUIRED	.....
SC 1	MYRTLE BEACH, SC	(BE)	140,535	(C)	(C)	PERIODIC NOURISHMENT NOT CURRENTLY REQUIRED	.....
	SOUTH DAKOTA:						
SD AL	BIG SIOUX RIVER, SIOUX FALLS, SD	(FC)	27,975	(C)	150 (C)	COMPLETE OPTIMIZATION STUDY, CHUTE/STILLING BASIN DESIGN, AND P&S.	150
SD AL	CHEYENNE RIVER SIOUX TRIBE, LOWER BRULE SIOUX, SD.	(E)	108,000	2,000 (C)	3,000 (C)	ACCELERATE REAL ESTATE ACTIVITIES	1,000
SD AL	PIERRE, SD	(MP)	100,000	10,000 (C)	10,000 (C)	NO ADDITIONAL REQUIREMENT	.....

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
	TENNESSEE:						
TN 6	BLACK FOX, MURFREE AND OAKLANDS SPRINGS WETLANDS, TN.	(E)	[1] 6,817	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	
TN 3	EAST RIDGE, HAMILTON CO.,TN	(FC)	[1] 18,750	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	
TN 3	TENNESSEE RIVER, HAMILTON COUNTY, TN	(FC)	[1] 6,669	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	
	TEXAS:						
TX 7, 18, 22, 25	BRAYS BAYOU, HOUSTON, TX	(FC)	[1] 293,010	9,800 (C)	9,800 (C)	NO ADDITIONAL REQUIREMENT	
TX 14	CHANNEL TO VICTORIA, TX	(N)	[1] 26,820	8,700 (C)	8,700 (C)	NO ADDITIONAL REQUIREMENT	
TX 9, 22, 25	CLEAR CREEK, TX	(FC)	[1] 75,830	3,200 (C)	3,200 (C)	NO ADDITIONAL REQUIREMENT	
TX 7, 8	CYPRESS CREEK, HOUSTON, TX	(FC)	[1] 9,848	(C)	4,569 (C)	INITIATE & COMPLETE CONSTRUCTION	4,569
TX 5, 24, 26, 30	DALLAS FLOODWAY EXTENSION, TRINITY RIVER PROJECT, TX.	(FC)	112,150	(C)	(C)	PROJECT REQUIRES ADDITIONAL AUTHORIZATION	
TX 16	EL PASO, TX	(FC)	[1] 116,300	6,200 (C)	6,200 (C)	NO ADDITIONAL REQUIREMENT	
TX 11, 14	GIWW, ARANSAS NATIONAL WILDLIFE REFUGE, TX	(N)	[1] 20,660	9,000 (C)	9,000 (C)	NO ADDITIONAL REQUIREMENT	
TX 8, 9, 18, 25, 29	HOUSTON—GALVESTON NAVIGATION CHANNELS, TX	(N)	[1] 415,543	60,000 (C)	60,000 (C)	NO ADDITIONAL REQUIREMENT	
TX 6, 24, 26	JOE POOL LAKE, TX	(FC)	[1] 227,000	(C)	26,700 (C)	REIMBURSE JUDGEMENT FUND	26,700
TX 13	MCGRATH CREEK, WICHITA FALLS, TX	(FC)	11,050	(C)	(C)	FULLY FUNDED	
TX 2, 9, 11	NECHES RIVER AND TRIBUTARIES SALTWATER BARRIER, TX.	(N)	[1] 41,895	2,000 (C)	2,000 (C)	NO ADDITIONAL REQUIREMENT	
AR 1, 2, 3, 4 LA 4, 5 OK 2, 3, 4, 6 TX 1, 4, 13, 17, 19, 26	RED RIVER BASIN CHLORIDE CONTROL, TX & OK	(FC)	[1] 88,422	(C)	2,100 (C)	CONTINUE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
AR 1, 2 LA 5 OK 3 TX 1, 4	RED RIVER WATERWAY, TX, AR, OK, LA (INDEX AR TO DENISON DAM, TX.	(FC)	[1] 318,600	(C)	5,500 (C)	CONTINUE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	5,500

TX 20, 21, 23, 28	SAN ANTONIO CHANNEL IMPROVEMENT, TX	(FC)	[1] 153,100	610 (C)	610 (C)	NO ADDITIONAL REQUIREMENT	.....
TX 18, 22, 25, 29	SIMS BAYOU, HOUSTON, TX	(FC)	[1] 214,320	18,300 (C)	18,300 (C)	NO ADDITIONAL REQUIREMENT	.....
TX 2, 9	WALLISVILLE LAKE, TX	(N)	[1] 78,000	(C)	4,756 (C)	COMPLETE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	4,756
	UTAH:						
UT 2	LITTLE DELL LAKE, UT	(FC)	[1] 41,215	(C)	(C)	FULLY FUNDED	.....
UT 2	UPPER JORDAN RIVER, UT	(FC)	[1] 9,660	(C)	(C)	FULLY FUNDED	.....
	VIRGINIA:						
VA 4	AIWW, BRIDGE AT GREAT BRIDGE, VA	(N)	[1] 23,100	3,000 (C)	5,000 (C)	ADVANCE PROJECT COMPLETION BY 24 MONTHS	.....
VA 6	JAMES R OLIN FLOOD CONTROL PROJECT, VA	(FC)	[1] 34,800	(C)	(C)	FULLY FUNDED	.....
VA 5	JOHN H KERR DAM AND RESERVOIR, VA & NC (MAJOR REHAB).	(MP)	59,600	1,400 (MR)	1,400 (MR)	NO ADDITIONAL REQUIREMENT	.....
VA 5	LYNCHBURG, VA (COMBINED SEWER OVERFLOW)	(FC)	20,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
VA 1, 2, 4	NORFOLK HARBOR AND CHANNELS (DEEPENING), VA	(N)	[1] 137,496	550 (C)	550 (C)	NO ADDITIONAL REQUIREMENT	.....
VA 3, 7	RICHMOND FILTRATION PLANT, VA	(FC)	8,100	(C)	(C)	FULLY FUNDED	.....
VA 7	RICHMOND LOCAL PROTECTION PROJECT, VA	(FC)	105,153	(C)	(C)	FULLY FUNDED	.....
VA 3, 7	RICHMOND, VA (COMBINED SEWER OVERFLOW)	(FC)	20,000	(C)	10,000 (C)	CONTINUE CONSTRUCTION OF RETENTION TUNNEL NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
VA 6	ROANOKE RIVER UPPER BASIN, HEADWATERS AREA, VA	(FC)	28,800	1,197 (C)	1,197 (C)	NO ADDITIONAL REQUIREMENT	.....
VA 2	VIRGINIA BEACH, VA (HURRICANE PROTECTION)	(BE)	[1] 247,300	(C)	26,600 (C)	CONTINUE CONSTRUCTION NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
VA 2	VIRGINIA BEACH, VA (REIMBURSEMENT)	(BE)	[1] 27,658	(C)	1,400 (C)	CONTINUE PROJECT NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED POLICY CONCERNS.	.....
	WASHINGTON:						
ID 1 OR 2 WA 4, 5	COLUMBIA RIVER FISH MITIGATION, WA, OR & ID	(E)	1,376,330	100,000 (C)	100,000 (C)	NO ADDITIONAL REQUIREMENT	.....
WA 3, 6	GRAYS HARBOR, WA	(N)	18,507	(C)	450 (C)	COMPLETE FINAL CRAB MITIGATION AND CLOSE OUT THE PROJECT.	.....
ID 1, 2 OR 2 WA 4, 5	LOWER SNAKE RIVER FISH & WILDLIFE COMPENSATION, WA, OR & ID.	(E)	232,000	1,300 (C)	1,800 (C)	PROVIDE ADDITIONAL WILDLIFE LAND DEVELOPMENT	500

FISCAL YEAR 2000 FUNDING CAPABILITIES CONSTRUCTION PROJECTS—Continued

(Amounts in Thousands)

Congressional Districts	Project and State	Type	Estimated Fed, IWTF, & HMTF cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
WA 3, 4	MT ST HELENS SEDIMENT CONTROL, WA	(FC)	195,800	540 (C)	540 (C)	NO ADDITIONAL REQUIREMENT	.....
WA 8, 9	MUD MOUNTAIN DAM, WA (DAM SAFETY)	(FC)	68,717	(DS)	(DS)	FULLY FUNDED	.....
OR 2 WA 4	THE DALLES POWERHOUSE (UNITS 1–14, WA & OR (MAJOR REHAB).	(MP)	[1] 94,000	2,300 (MR)	3,300 (MR)	PROCURE WINDINGS	1,000
	WEST VIRGINIA:						
WV 3	BLUESTONE LAKE, WV (DAM SAFETY)	(FC)	[1] 107,300	750 (DS)	4,200 (DS)	ADVANCE PROJECT COMPLETION BY 12 MONTHS	3,450
WV 3	GREENBRIER RIVER BASIN, WV	(FC)	[1] 12,000	(C)	1,000 (C)	CONTINUE DETAILED DESIGN	1,000
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
KY 4, 5 VA 9 WV 3	LEVISA AND TUG FORKS AND UPPER CUMBERLAND RIVER, WV, VA & KY.	(FC)	[1] 1,837,841	5,400 (C)	23,100 (C)	CONTINUE LOWER MINGO CO, WV N/S	1,300
						CONTINUE PIKE CO, KY N/S	1,100
						CONTINUE MARTIN CO, KY, N/S	900
						CONTINUE UPPER MINGO CO, WV N/S	600
						CONTINUE WAYNE CO, WV N/S	300
						CONTINUE MCDOWELL CO, WV N/S	2,200
						CONTINUE BUCHANAN CO, VA DPR	800
						INITIATE PIKE CO, KY TRIB DPR	500
						CONTINUE HARLAN, KY	1,500
						CONTINUE MIDDLESBOROUGH, KY	5,000
						CONTINUE CLOVER FORK, KY N/S	3,000
						INIT PLAN—3QTR—TOWN OF MARTIN,KY	500
						N/S: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
							17,700
WV 2	LONDON LOCKS AND DAM, KANAWHA RIVER, WV (MAJOR REHAB).	(N)	[1] 20,300	600 (MR)	1,400 (MR)	ADVANCE PROJECT COMPLETION BY 12 MONTHS	800
WV 2	MARMET LOCK, KANAWHA RIVER, WV	(N)	[1] 294,000	9,800 (C)	11,350 (C)	ADVANCE PROJECT COMPLETION BY 6 MONTHS	1,550
WV 2	MOOREFIELD, WV	(FC)	[1] 20,494	(C)	(C)	FULLY FUNDED	.....
WV 2	PETERSBURG, WV	(FC)	[1] 19,711	(C)	(C)	FULLY FUNDED	.....
OH 6 WV 2, 3	ROBERT C BYRD LOCKS AND DAM, OHIO RIVER, WV & OH.	(N)	[1] 363,474	7,150 (C)	9,300 (C)	COMPLETE BANK STABILIZATION	2,150

WV 3	SOUTHERN WV ENVIRONMENTAL INFRASTRUCTURE PROGRAM, WV.	(E)	[1] 20,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS	.....
WV 2	STONEWALL JACKSON LAKE, WV	(FC)	[1] 231,000	(C)	(C)	FULLY FUNDED EXCEPT FOR UNPROGRAMMED RECREATION FACILITIES.	.....
WV 1	TYGART LAKE, WV (DAM SAFETY)	(FC)	[1] 7,500	2,900 (DS)	2,900 (DS)	NO ADDITIONAL REQUIREMENT	.....
PA 9	WEST VIRGINIA AND PENNSYLVANIA FLOOD CONTROL, WV & PA.	(FC)	[1] 4,000	(C)	(C)	PROJECT WILL CONTINUE WITH AVAILABLE FUNDS NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
WV 2	WINFIELD LOCKS AND DAM, KANAWHA RIVER, WV	(N)	[1] 227,400	1,400 (C)	3,200 (C)	ADVANCE PROJECT COMPLETION BY 24 MONTHS	1,800
	WISCONSIN:						
WI 3	LAFARGE LAKE & CHANNEL IMPRV, WI 1962 ACT	(FC)	[1] 17,000	(C)	3,000 (C)	CONTINUE ACTIVITIES IN SUPPORT OF PROJECT LAND TRANSFER AND DEAUTHORIZATION. NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	.....
WI 2	PORTAGE, WI	(FC)	[1] 7,666	(C)	(C)	FULLY FUNDED	.....

NOTE: ALTHOUGH PROJECT AND STUDY CAPABILITIES REFLECT THE READINESS OF THE WORK FOR ACCOMPLISHMENT, THEY ARE IN COMPETITION FOR AVAILABLE FUNDS AND MANPOWER ARMY-WIDE IN THIS CONTEXT, THE FISCAL YEAR 2000 CAPABILITY AMOUNTS SHOWN CONSIDER EACH PROJECT OR STUDY BY ITSELF WITHOUT REFERENCE TO THE REST OF THE PROGRAM. HOWEVER, IT IS EMPHASIZED THAT THE TOTAL AMOUNT PROPOSED FOR THE ARMY'S CIVIL WORKS PROGRAM IN THE PRESIDENT'S BUDGET FOR FISCAL YEAR 2000 IS THE APPROPRIATE AMOUNT CONSISTENT WITH THE ADMINISTRATION'S ASSESSMENT OF NATIONAL PRIORITIES FOR FEDERAL INVESTMENTS. IN ADDITION, THE TOTAL AMOUNT PROPOSED FOR THE ARMY'S CIVIL WORKS PROGRAM IN THE PRESIDENT'S BUDGET IS THE MAXIMUM THAT CAN BE EFFICIENTLY AND EFFECTIVELY USED. THEREFORE, WHILE WE COULD UTILIZE ADDITIONAL FUNDS ON INDIVIDUAL PROJECTS AND STUDIES, OFFSETTING REDUCTIONS WOULD BE REQUIRED IN ORDER TO MAINTAIN OUR OVERALL BUDGETARY OBJECTIVES.

[1] COST ESTIMATE INCLUDES AN ALLOWANCE FOR INFLATION THROUGH THE CONSTRUCTION PERIOD.

REIMBURSEMENTS AND CREDITS

Question. General Ballard, what you have done to manage non-Federal sponsor requests to perform work for credit or reimbursement or to advance funds for projects?

Answer. In the past, we have entertained all requests to perform creditable or reimbursable work or advance funds if we had the authority and the request was consistent with the project schedule and other decisions on budget and appropriations. However, because of the growth in interest in these arrangements, we will review the program and will consider establishing criteria to limit the impact of such arrangements on the program. Also, our policy is that before negotiating an agreement involving non-Federal work or advanced funds that could require possible future Federal appropriations we will coordinate the request within the Administration and with the Appropriations' Committees.

GENERAL EXPENSES APPROPRIATION REQUEST

Question. General Ballard or General Fuhrman, the budget request for fiscal year 2000 includes $148 million for executive direction and management functions of the Corps of Engineers. Is this level of funding adequate to manage the Civil Works program?

Answer. The General Expenses funding level has remained at the $148 million level for the last two fiscal years as the headquarters and division offices have undergone several restructuring and downsizing initiatives. These initiatives included a review and realignment of roles and missions to eliminate duplication, remove operating functions, reduce the number of division offices, and reorganize internally. These efforts were taken to make the most efficient use of the reduced workforce while still providing the executive direction and management needed to accomplish the civil works mission and be responsive to our customers.

This reduced workforce has permitted us to maintain an appropriate level of executive direction and management with a constant $148 million budget. However, as we approach our target manpower level, staffing reductions begin to taper off and it no longer is possible to absorb the increased costs of salaries, operations, and inflation. Nonetheless, we continue to look at ways to get our job done in the best manner possible at the lowest cost.

Question. The General Expenses program has been held constant for the past several years. What impact has this had on your program, especially your ability to attract and retain talent needed to manage the program?

Answer. I am very concerned about maintaining the technical and managerial expertise of the workforce, especially in the division offices and the headquarters. The problem is that when we cut staff to fit dollar ceilings not all the reductions are in the right job disciplines. To correct these imbalances, we then have to step up recruitment and, when we fill those positions, our costs of moving people to the jobs goes up. This puts more pressure on the General Expenses account so that we have to cut more staff to stay within our budget. You can see the predicament which is being driven by trying to manage a people-intensive account with a negative-growth budget. I call it a negative-growth budget because, although it's a flat budget in real dollars, the purchasing power is less than the prior year's.

Question. What actions have you taken to streamline or bring about efficiencies required to maintain your Executive Direction and Management at this level?

Answer. The Corps of Engineers has taken significant steps to reduce costs and increase efficiency. In compliance with Congressional direction, we reduced the number of divisions from 11 to 8 in fiscal year 1997. While reducing the number of divisions, we have reduced the number of positions funded by the General Expense account. The total number of positions to be funded from the General Expenses account in fiscal year 2000 is 1,142 which is 35 below the fiscal year 1999 level, and 226 below the number we had with 11 divisions in fiscal year 1996. Of the fiscal year 1996–2000 reduction, 56 percent comes from the division offices while the remaining 44 percent is from the headquarters and support activities.

While we have reduced staff in accordance with the Federal Workforce Restructuring Act of 1994, our General Expenses staffing levels have been reduced by one-third from fiscal year 1990 to fiscal year 1999 and about one-third of this reduction has come in the last 3 fiscal years. We have seen the division office staffing go from 950 in fiscal year 1990 to 584 in fiscal year 1999 while the headquarters has gone from 608 to 453 during this period. These reductions have permitted us to maintain an appropriate level of ED&M with a constant $148 million budget.

Question. Your statement identifies business process improvements you are currently undertaking in an effort to hold down executive direction expenses. Given

these process improvements, will it be possible to further reduce your General Expenses budget?

Answer. We continue to look at ways to get our job done in the best manner possible at the lowest cost. I have undertaken a comprehensive review of the headquarters operating budget this year to assure we are staffed appropriately, and that we only incur expenses for essential goods and services. However, as we approach our target manpower level, staffing reductions begin to taper and it no longer is possible to absorb the increased costs of salaries, operations, and inflation.

The executive direction and management activities performed by the headquarters and division offices plays a key role in providing guidance and oversight to our vital civil works mission. We will continue to work this issue and would greatly appreciate the support of the Appropriations Committees as we guide our Civil Works program into the next millenium.

Question. What is the justification for maintaining extra offices in Chicago and Omaha?

Answer. The regional offices in Chicago and Omaha are the remnants of the two division offices that we have closed and merged with the Great Lakes and Ohio River Division and the Northwestern Division respectively. Since our division office restructuring in fiscal year 1997, we have been steadily reducing the staffs of each of these combined offices, taking into consideration the well-being of our workforce. The Great Lakes and Ohio River Division office and the Northwestern Division office have had their General Expenses staffing levels reduced by a total of 50 full-time equivalents, or FTE, between fiscal year 1997 and fiscal year 1999. We are continuing with our plan to size these two division offices in accordance with our standard sizing of all division offices. This will result in these two division offices being staffed at approximately 75 FTE each, or 150 combined. I intend, however, to continue to maintain a very small presence in Chicago in order to support our international team efforts with Canada through the International Joint Commission (IJC).

REGULATORY PROGRAM—ADMINISTRATIVE APPEALS

Question. The Conference Report on the fiscal year 1998 Energy and Water Appropriations Act stated, "The conferees expect that the increase provided over the amount appropriated in fiscal year 1997 will be used to begin implementation of an administrative appeals process for the Corps of Engineers Regulatory Program." The Energy and Water subcommittees of the House and Senate both stated their concern for implementing this process again in the fiscal year 1999 report. Have you complied with the directions of the Congress? If not, why not?

Answer. We have complied with the Congressional direction in the Committee report language as best as we could, consistent with our commitment to protect aquatic resources as required by law and to provide fair and responsive services to the public. The final regulation for appeals of permit denials and conditions was published in the Federal Register on 9 March 1999, with an effective date of 6 August 1999. The process for the appeals of jurisdiction determinations is more complex and labor intensive. With the levels of funding for the Regulatory Program in recent years and the increase in the number of permit applications, we have not been able to start up this part of the appeals process without compromising our services to the public. We could not implement it within the below-budget appropriations in fiscal year 1998 and fiscal year 1999 without adversely impacting our services to the public. Consequently, the President's Budget again requests an appropriation of $5 million to implement the appeals process for jurisdiction determinations.

Question. Now the expectation was that the Corps would implement both the administrative appeals process and the jurisdiction determination appeals process. What are your plans and timetable for implementing the procedures?

Answer. Based on our budget request, the timetable for the full appeals process would be as follows:

Permit Denials and Conditions

March 9, 1999. Final regulation published in the Federal Register. Permit applicants are being notified that they may submit appeals of district decisions regarding their applications. Division offices are in the process of filling appeals officer positions and conducting training.

August 6, 1999. Effective date for the appeals process to begin. Division appeals officers review the appeals submitted by the public and render decisions.

Jurisdiction Determinations (Fast-track Implementation)

Initiation of Action.—Once funding is provided, the Corps could begin the process of interagency coordination and approval by ASA(CW) quickly.

First 150 days.—This period would be used to complete interagency coordination and approval by ASA(CW) and OMB. The final regulation would be published in Federal once approvals are received. The additional appeals officers required for this part of the appeals process would be hired and trained.

Tenth month after initiation.—Effective date when we would begin reviewing appeals submitted by the public. (If the Corps began interagency coordination in, let's say, September/October 1999, the effective date would be extended by about 3 months to the June/July 2000 time frame).

Question. The Congress specifically earmarked or provided $5 million for the Corps to implement the administrative appeals process in fiscal year 1998 and fiscal year 1999. In light of the fact that you have not implemented the administrative appeals process, how were these funds used? Why didn't you take appropriate actions to initiate and fund the administrative appeals process?

Answer. The Appropriations Committee report language stated the intentions of the Committee to have a full appeals process implemented. However, the appropriations the Corps received in the fiscal years you mention were below the President's budget requests which would have provided for the full appeals process without sacrificing services to the public. At 90,000 permit actions in fiscal year 1998, workload is at an all time high. More citizens depend on our responsiveness to their permit applications than the number that would use the appeals process. Therefore, most of the Regulatory funds in these years was prudently used to continue providing timely, equitable services to the public. In fiscal year 1999, we were able to set aside some funds for the appeals of permit denials and conditions which will become effective on August 6, 1999.

Question. I believe the Corps has indicated that they will implement only a partial administrative appeals process for permits denied. This means that property owners who disagree with the Corps on jurisdiction determinations will still have to spend an extended period of time in the permitting process before having the ability to challenge the decision in court. Please explain your justification for the Corps' decision to focus both its regulatory efforts and increased budget on a program already subjected to direct judicial review, and how do you believe this to be a fair and equitable process?

Answer. A wetland delineation does not restrict an applicant from doing anything. He or she simply has to apply for a permit if the activity is in a wetland. If the permit is disapproved, or approved with certain conditions, then the applicant can challenge the delineation. The Corps performance goal is to process permit actions within 60 days and the most recent analyses of performance data showed that this goal is achieved 95 percent of the time. Everyone agrees that the appeals process is less expensive and less time consuming than litigation. Our experience has been that most applicants within the local Corps district office are satisfied with a fair hearing, even if they do not get the result they want. We want the permit process to be fair and equitable to our citizens and we do not believe that litigation is the best way to resolve differences. While we have supported the implementation of administrative appeals, the problem has been the affordability of a full appeals process and its impacts on the other parts of the Regulatory Program. To have dedicated $5 million from our already austere program for the full process would have meant shortages of regulatory personnel in the districts. This would have meant a noticeable reduction in our responsiveness.

Question. The Conference Report on the fiscal year 1999 bill indicated that implementation of an administrative appeals process for only permit denials is unacceptable. Why has the Corps recently again insisted that it will only implement a program that addresses permit denials and that it needs more money to implement a full program, against the expressed instructions of the Congress?

Answer. The Army's position is to support Committee report language as fully and as best as we can, within the resources provided in appropriation acts. However, the appropriations we received in the fiscal years you mention were well below the President's budget requests. To have dedicated $5 million from our already austere program for the full process would have meant shortages of regulatory personnel in the districts. The public would suffer because, with fewer team members to process permit applications, backlogs would grow and private citizens and businesspersons would have to wait longer to receive a permit. Given the limited funding and the number of people impacted by the permit program vs. the number who would benefit from an appeals program, we believed that a phased implementation would work best for the program and the public.

MISSISSIPPI RIVER AND TRIBUTARIES

Question. General Ballard, I'm informed that the MR&T flood control system cannot pass the project design flood, or even a recurrence of the flood that actually accrued in 1927. Is the budget request for the MR&T project sufficient to make meaningful progress in addressing the flood control needs along the Mississippi River and tributaries, in your judgment?

Answer. While the budget request for the Mississippi River and Tributaries project would allow work to proceed on all projects, albeit not on optimal schedules, the development of the budget required difficult trade-offs. It does not reflect the full level of capability within the Mississippi River and Tributaries project.

Question. Are you concerned that the budget request is not sufficient to address this critical situation?

Answer. Until critical work is completed on the Mississippi River and the Atchafalaya River, the entire lower valley remains at risk from major flood events. Because I am concerned, I have exercised my full authority to assure that the most critical work within the Mississippi River and Tributaries project receives a funding priority.

Question. What risk does not having the ability to pass the project or near project flood pose to the region and the Nation?

Answer. Through the Army Corps of Engineers, the Federal Government has made major investments over the past 70 years to reduce the risk of a recurrence of the level of flood damages experienced during the 1927 Flood. As a result of these Federal investments, the risk of failure has been diminishing with each passing year. However, if the project flood or a near project flood were to occur, because the project is not yet complete and because of the increased development throughout the valley since 1927, we would experience major damage on a large scale. If large areas of the 35,457 square mile alluvial floodplain were flooded, life and property would be threatened; and interruption to highway, rail, and interstate commerce would result. Both agricultural and industrial interests would be adversely affected and would require a significant time to recover.

Question. General Ballard, do you believe that the amount requested for fiscal year 2000 for the MR&T project is adequate to address the flood control, navigation, and environmental problems and opportunities facing the lower Mississippi Valley?

Answer. No, sir. In my opinion, adequate progress in solving these problems and meeting needs within the Lower Mississippi Valley would require a larger program in fiscal year 2000.

Question. General Ballard, what is the Corps' capability for the MR&T project in fiscal year 2000?

Answer. The Corps capability for fiscal year 2000 for the Mississippi River and Tributaries project is $350 million.

Question. How much do you think is needed to make adequate progress toward completion of this extremely important work?

Answer. An appropriation of $350 million would be needed to maintain optimal schedules.

Question. Please provide for the record a list which shows the Corps' capability for studies, construction and operations and maintenance for fiscal year 2000.

Answer. Yes, sir. I will provide for the record the fiscal year 2000 capabilities for the Mississippi River and Tributaries Project.

FISCAL YEAR 2000 FUNDING CAPABILITIES MISSISSIPPI RIVER & TRIBUTARIES

(Amounts in Thousands)

Congressional Districts	Study and State	Type	Estimated Federal cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
	AUTHORIZED STUDIES						
	ARKANSAS:						
	COLLECTION AND STUDY OF BASIC DATA		725	365	365	NO ADDITIONAL REQUIREMENT	.....
AR 4	SOUTHEAST ARKANSAS, AR	(COM)	4,495	.....	1,200	CONTINUE FEASIBILITY STUDY NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	$1,200
	PRECONSTRUCTION ENGINEERING AND DESIGN						
	ARKANSAS:						
AR 1, 2, 4	BAYOU METO BASIN, AR	(FC)	12,000	1,767	5,000	ADVANCE COMPLETION OF PED 24 MONTHS	3,233
AR 1, 2, 4	GRAND PRAIRIE REGION, AR (SEPERABLE ELEMENT)	(FC)	11,584	.....	.....	FULLY FUNDED	.....
	CONSTRUCTION PROJECTS						
	ARKANSAS:						
AR 1	CACHE RIVER BASIN, AR	(FC)	155,000	(C)	(C)	LACK OF LOCAL COOPERATION	.....
AR 1, 2, 4 IL 19 KY 1 LA 1, 2, 3, 4, 5, 6, 7 MO 8, 9 MS 1, 2, 3, 4, 5 TN 7, 8, 9	CHANNEL IMPROVEMENT, AR, IL, KY, LA, MS, MO & TN.	(FC)	3,667,000	37,685 (C)	43,165 (C)	COMPLETE TENN/WILLOW MS LA COMPLETE YUCATAN LA COMPLETE WARFIELD MS COMPLETE VAUCLUSE AR INITIATE WOLF ISLAND BAR KY ADVANCE PROJECT COMPLETION BY 2 MO.	1,100 1,000 1,500 1,000 880
							5,480
AR 1	EIGHT MILE CREEK, AR	(FC)	[1] 9,000	700 (C)	700 (C)	NO ADDITIONAL REQUIREMENT	.....
AR 1, 2, 4	GRAND PRAIRIE REGION, AR	(FC)	[1] 245,350	21,900 (C)	21,900 (C)	NO ADDITIONAL REQUIREMENT	.....
AR 1	HELENA AND VICINITY, AR	(FC)	[1] 8,370	2,190 (C)	2,190 (C)	NO ADDITIONAL REQUIREMENT	.....
AR 1	HELENA HARBOR, PHILLIPS COUNTY, AR	(N)	32,156	(C)	(C)	FULLY FUNDED	.....

AR 1, 2, 4 IL 19 KY 1 LA 1, 2, 3, 4, 5, 6, 7 MO 8, 9 MS 1, 2, 3, 4, 5 TN 7, 8, 9	MISSISSIPPI RIVER LEVEES, AR, IL, KY, LA, MS, MO & TN.	(FC)	1,995,000	23,250 (C)	35,750 (C)	ADVANCE COMMERCE BIRDS PT LEVEE GRADE RAISE MO ... ADVANCE WILSON PT PT LOOKOUT LA ITEM 489 R ..... ADVANCE CAROLINA VALEWOOD MS ITEM 502-L ..... ADVANCE VALEWOOD CARLISLE MS IT 496L ..... ADVANCE STATELINE WILSON PT LA ITEM 503-R ..... ADVANCE WILSON PT PT LOOKOUT LA ITEM 487-R ..... ADVANCE CARVILLE MARCHAND LA ..... ADVANCE ALHAMBRA HOHEN SOLMS LA ..... ADVANCE HOHEN SOLMS MODESTE LA ..... ADVANCE REVEILLE PT PLEASANT LA ..... ADVANCE DRINKWATER MO PUMP STATION ..... INITIATE BLUE LAKE AR ..... INITIATE CAIRO IL ITEM 2 ..... INITIATE ISLAND 8, KY ..... INITIATE ABOVE CAIRO IL ITEM 1 ADVANCE PROJECT COMPLETION 6 MONTHS.	1,000 1,000 1,000 2,200 1,000 300 500 300 700 500 1,000 1,000 500 1,000 500
							12,500
AR 1 MO 8	ST FRANCIS BASIN, AR & MO	(FC)	[1] 387,000	4,350 (C)	4,850 (C)	ADVANCE COMPLETION OF CHANNEL IMPROVEMENTS AT MAIN & DITCH 2, ITEM 2, MO BY 9 MONTHS.	500
AR 4 LA 4, 5, 6	TENSAS BASIN—OVERALL	(FC)	[1] 475,336	8,930 (C)	9,930 (C)	SEE BELOW	.....
	TENSAS BASIN, BOEUF TENSAS LESS TENSAS R	(FC)	(94,280)	(0) (C)	(0) (C)	LACK OF ADEQUATE LOCAL SUPPORT	.....
	TENSAS BASIN, LAKE CHICOT PUMPING PLANT	(FC)	(96,230)	(0) (C)	(0) (C)	PROJECT COMPLETE	.....
	TENSAS COCODRIE PUMPING PLANT	(FC)	(56,466)	(0) (C)	(0) (C)	COMPLETED PROJECT	.....
	TENSAS RIVER	(FC)	(42,600)	(0) (C)	(0) (C)	LACK OF ADEQUATE LOCAL SUPPORT	.....
AR 1	WHITEMAN'S CREEK, AR	(FC)	[1] 3,300	(C)	(C)	FULLY FUNDED	.....
	OPERATION AND MAINTENANCE						
	ARKANSAS:						
	CHANNEL IMPROVEMENT, AR, IL, KY, LA, MS, MO & TN.	(FC)	.....	55,876	66,676	.....	.....
AR 1, 2, 4 KY 1 LA 1, 2, 3, 4, 5, 6, 7 MO 8 MS 1, 2, 3, 4 TN 6, 7, 8	CHANNEL IMPROVEMENT, DREDGING, AR, IL, KY, LA, MS, MO & TN.	(FC)	.....	(17,046)	(20,046)	DREDGE ADDITIONAL 4,000,000 CY ON MISSISSIPPI RIVER BUDGET AMT IS FOR 110 DAYS; 5 YR AVERAGE IS 184 DAYS; CAPABILITY WOULD ALLOW FOR AN ADDITIONAL 70 DREDGING DAYS.	3,000

FISCAL YEAR 2000 FUNDING CAPABILITIES MISSISSIPPI RIVER & TRIBUTARIES—Continued

(Amounts in Thousands)

Congressional Districts	Study and State	Type	Estimated Federal cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
AR 1, 2, 4 KY 1 LA 1, 2, 3, 4, 5, 6, 7 MO 8, 9 MS 1, 2, 3, 4, 5 TN 6, 7, 8	CHANNEL IMPROVEMENT, RVT & DIKES, AR, IL, KY, LA, MS, MO, TN.	(FC)	.....	(38,830)	(46,630)	STABILIZE BANK TO PROTECT SHORELINE ..... STONE REPAIRS TO REVETMENTS AND DIKS	7,400 400
							7,800
AR 1	HELENA HARBOR, PHILLIPS COUNTY, AR	(N)	.....	284	484	DREDGE HARBOR ADDITIONAL 200,000 CY BUDGET AMT IS FOR 9 DAYS; 5 YR AVG IS 12 DAYS; CAPABILITY WOULD ALLOW FOR AN ADDITIONAL 6 DREDGING DAYS.	200
	INSPECTION OF COMPLETED WORKS, AR	(FC)	.....	443	443	.....	.....
AR 4	LOWER ARKANSAS RIVER, NORTH BANK, AR	(FC)	.....	66	66	NO ADDITIONAL REQUIREMENT	.....
AR 4	LOWER ARKANSAS RIVER, SOUTH BANK, AR	(FC)	.....	108	108	NO ADDITIONAL REQUIREMENT	.....
AR 1, 2, 4 IL 19 KY 1 LA 1, 2, 3, 4, 5, 6, 7 MO 8, 9 MS 1, 2, 3, 4, 5 TN 7, 8, 9	MISSISSIPPI RIVER LEVEES, AR, IL, KY, LA, MS, MO & TN.	(FC)	.....	3,736	4,686	REPLACE DOLPHIN, GOOSE POND IL ..... RESTORE SLOPE, WEST MEMPHIS AR ..... RESTORE SLOPE, JOINER AR ..... REPLACE CULVERT NEW MADRID MO	150 500 100 200
							950
AR 1 MO 8	ST FRANCIS BASIN, AR & MO	(FC)	.....	6,300	9,550	CLEANOUT CHANNEL AT HIGHWAY 90, AR & MO ..... CLEANOUT CHANNEL, DITCH 251 UPPER, MO ..... CLEAR CHANNEL, BIG SLOUGH & MAYO DITCHES, AR ..... CLEANOUT CHANNEL, DITCH 9, LAKE CITY, AR ..... AERIAL BRUSH CONTROL ON VARIOUS CHANNELS	2,400 250 300 100 200

							3,250
AR 4 LA 5	TENSAS BASIN, BOEUF AND TENSAS RIVERS, AR & LA ...	(FC)	.....	2,344	2,344	NO ADDITIONAL REQUIREMENT	.....
AR 1, 2	WHITE RIVER BACKWATER, AR	(FC)	.....	964	964	NO ADDITIONAL REQUIREMENT	.....
	AUTHORIZED STUDIES						
	ILLINOIS:						
IL 12 MO 8	MISSISSIPPI RIVER, ALEXANDER COUNTY, IL AND SCOTT COUNTY, MO.	(FDP)	[1] 100	30	30	NO ADDITIONAL REQUIREMENT	.....
	OPERATION AND MAINTENANCE						
	ILLINOIS:						
	INSPECTION OF COMPLETED WORKS, IL	(FC)	.....	45	45	.....	.....
	CONSTRUCTION PROJECTS						
	KENTUCKY:						
KY 1	HICKMAN BLUFF, KY	(FC)	[1] 19,810	(C)	(C)	FULLY FUNDED	.....
	OPERATION AND MAINTENANCE						
	KENTUCKY:						
	INSPECTION OF COMPLETED WORKS, KY	(FC)	.....	25	25	.....	.....
KY 1 TN 8	LAKE NO 9 PUMPING PLANT, KY	(FC)	.....	.....	.....	PERIODIC MAITNENANCE OF PUMPING PLANT NOT CURRENTLY REQUIRED.	.....
	AUTHORIZED STUDIES						
	LOUISIANA:						
LA 3, 5, 6, 7	ALEXANDRIA, LA TO THE GULF OF MEXICO	(FDP)	3,150	700	700	NO ADDITIONAL REQUIREMENT	.....
LA 6	DONALDSONVILLE TO THE GULF, LA	(FDP)	3,500	250	250	NO ADDITIONAL REQUIREMENT	.....
LA 5	SPRING BAYOU, LOUISIANA	(SPE)	100	.....	100	INITIATE RECONNAISSANCE PHASE OF STUDY	.....
LA 6	WEST BATON ROUGE PARISH, LA	(SPE)	2,100	.....	100	INITIATE RECONNAISSANCE PHASE OF STUDY	.....
	PRECONSTRUCTION ENGINEERING AND DESIGN						
	LOUISIANA:						
LA 6	LA STATE PEN LEVEE	(FC)	424	.....	.....	FULLY FUNDED	.....
LA 3, 5, 6, 7	MORGANZA, LA TO THE GULF OF MEXICO	(FC)	2,025	700	700	NO ADDITIONAL REQUIREMENT	.....
	CONSTRUCTION PROJECTS						
	LOUISIANA:						
LA 3, 4, 5, 6, 7	ATCHAFALAYA BASIN, FLOODWAY SYSTEM, LA	(FC)	[1] 185,000	7,500 (C)	8,000 (C)	ADVANCE LAND ACQUISITION ADVANCE PROJECT COMPLETION 9 MONTHS.	500

FISCAL YEAR 2000 FUNDING CAPABILITIES MISSISSIPPI RIVER & TRIBUTARIES—Continued

(Amounts in Thousands)

Congressional Districts	Study and State	Type	Estimated Federal cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
LA 3, 4, 5, 6, 7	ATCHAFALAYA BASIN, LA	(FC)	[1] 1,720,000	19,750 (C)	23,750 (C)	ADVANCE BAYOU YOKELY PUMPING STATION 9 YEARS	2,000
						INITIATE LEVEE ENLARGEMENT CONTRACT, 2ND LIFT—ITEMS W46 & W52.	2,000
							4,000
LA 6	LOUISIANA STATE PENITENTIARY LEVEE, LA	(FC)	19,500	3,000 (C)	9,000 (C)	ADVANCE LEVEE UPSTREAM CAMP C 12 MONTHS—CONTRACT # 1.	2,200
						ADVANCE LEVEE UPSTREAM CAMP C CONT 2 12 MONTHS—CONTRACT # 2.	2,200
						ADVANCE DRAINAGE STRUCTURE CONTRACT 6 MONTHS ADVANCE PROJECT COMPLETION 1 YEAR.	1,600
							6,000
LA 1, 2, 3 MS 5	MISSISSIPPI AND LOUISIANA ESTUARINE AREAS, LA & MS.	(FC)	[1] 66,900	100 (C)	100 (C)	NO ADDITIONAL REQUIREMENT	.....
LA 3	MISSISSIPPI DELTA REGION, LA	(FC)	[1] 99,200	10,400 (C)	11,884 (C)	ADVANCE BURLINGTON NORTHERN RR CONTRACT 6 MONTHS.	706
						ADVANCE DIVERSION STURCTURE CONTRACT 6 MONTHS	778
							1,484
	TENSAS BASIN, RED RIVER BACKWATER, LA	(FC)	(166,900)	(8,930) (C)	(9,930) (C)	ADVANCE AWARD ITEM 1C	469
						ADVANCE AWARD ITEM 1D	375
						PURCHASE LANDS	156
						NO IMPACT ON PROJECT COMPLETION	
							1,000

	OPERATION AND MAINTENANCE						
	LOUISIANA:						
LA 3, 4, 5, 6, 7	ATCHAFALAYA BASIN, FLOODWAY SYSTEM, LA	(FC)		644	1,702	REFOREST FOR HABITAT REQUIREMENTS AND FULLY FUND EXISTING CONTRACT.	143
						REPAIR INTERIOR ROADS AND CONSTRUCT NEW TRAILS	276
						PROCURE SUPPLIES AND EQUIPMENT FOR PEST AND FOREST MANAGEMENT.	354
						CONSTRUCT ACCESS POINTS TO LANDS AND PROVIDE SAFETY & HANDICAPPED FEATURES TO FACILITIES.	285
							1,058
LA 3, 4, 5, 6, 7	ATCHAFALAYA BASIN, LA	(FC)		10,560	14,925	REPLACE GUIDEWALL AT BERWICK LOCK	500
						REPLACE SOUTHWEST GUIDEWALL AT BAYOU BOEUF LOCK	1,750
						REPLACE SOUTHWEST GUIDEWALL AT SORREL LOCK	525
						REPLACE NORTHWEST GUIDEWALL AT BAYOU SORREL LOCK.	1,170
						REPAIR WEST CHAMBER GUIDEWALL AT BAYOU SORREL LOCK.	420
							4,365
LA 4, 5, 6, 7	BATON ROUGE HARBOR, DEVIL SWAMP, LA	(N)		157	157	NO ADDITIONAL REQUIREMENT	
LA 4, 5, 6, 7	BAYOU COCODRIE AND TRIBUTARIES, LA	(FC)		101	101	NO ADDITIONAL REQUIREMENT	
LA 1, 2, 3	BONNET CARRE, LA	(FC)		1,068	1,068	NO ADDITIONAL REQUIREMENT	
	INSPECTION OF COMPLETED WORKS, LA	(FC)		373	373		
LA 4, 5, 6	LOWER RED RIVER, SOUTH BANK LEVEES, LA	(FC)		84	3,034	INITIATE CONSTRUCTION OF BAYOU RAPIDES REPLACEMENT STRUCTURE.	2,950
AR 1, 2, 4 KY 1 LA 1, 2, 3, 4, 5, 6, 7 MO 8, 9 MS 1, 2, 3, 4 TN 7, 8, 9	MAPPING	(FC)		1,117	1,117	NO ADDITIONAL REQUIREMENT	
LA 3	MISSISSIPPI DELTA REGION, LA	(FC)		436	591	OPERATION OF DAVIS POND PUMPING STATION	155

FISCAL YEAR 2000 FUNDING CAPABILITIES MISSISSIPPI RIVER & TRIBUTARIES—Continued

(Amounts in Thousands)

Congressional Districts	Study and State	Type	Estimated Federal cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
LA 3, 5, 6, 7	OLD RIVER, LA	(FC)	.....	4,027	8,110	ACQUIRE EXHIBITS FOR VISITOR CENTER	1,208
						REPLACE ELECTRICAL WIRING AT OLD RIVER LOCK	150
						CONSTRUCT NEW SHOP BUILDING AT THE OLD RIVER COMPLEX.	700
						SAND BLAST AND PAINT GANTRY CRANE	430
						REPLACE CREOSOTE NEEDLES AT THE OVERBANK STRUCTURE.	250
						REPLACE MITER GATES AT OLD RIVER LOCK	1,345
							4,083
AR 4 LA 5	TENSAS BASIN, RED	(FC)	.....	2,927	2,927	NO ADDITIONAL REQUIREMENT RIVER BACKWATER, LA	.....
	CONSTRUCTION PROJECTS						
	MISSISSIPPI:						
MS 1 TN 9	HORN LAKE CREEK & TRIBUTARIES (INCL COW PEN CREEK), MS & TN.	(FC)	[1] 3,120	(C)	(C)	FULLY FUNDED	.....
MS 1, 2	YAZOO BASIN—OVERALL	(FC)	1,740,246	24,279 (C)	40,985 (C)	.....	.....
	YAZOO BASIN,	(FC)	(38,954)	(0) (C)	(0) (C)	FUNDED AS PART OF TRIBUTARIES ASCALMORE-TIPPO-OPOSSUM, MS.	.....
	YAZOO BASIN, BACKWATER—ROCKY INTEREST IS UNAVAILABLE BAYOU AREA, MS.	(FC)	(18,505)	(0) (C)	(0) (C)	COST SHARING AND FINANCING BY LOCAL	.....
	YAZOO BASIN, BACKWATER LESS ROCKY BAYOU, MS	(FC)	(254,491)	(20) (C)	(20) (C)	FUNDED AS PART OF THE YAZOO ACKWATER UNIT	.....
	YAZOO BASIN, BACKWATER PUMP, MS	(FC)	(97,840)	(500) (C)	(1,000) (C)	ADVANCE DESIGN ON YAZOO REFORMULATED PLAN NO IMPACT ON COMPLETION OF UNIT.	500
	YAZOO BASIN, BIG	(FC)	(109,383)	(3,915) (C)	(4,415) (C)	PURCHASE MITIGATION LANDS SUNFLOWER RIVER, MS	500
	YAZOO BASIN, COMPLETED UNITS, MS	(FC)	(161,439)	(0) (C)	(0) (C)	COMPLETED WORK.	

	YAZOO BASIN, DEMONSTRATION EROSION CONTROL, MS.	(FC)	(244,284)	(6,294) (C)	(20,000) (C)	INITIATE & COMPLETE:	
						1—FLOODWATER RETARDING STRUCTURE	1,363
						11—RISER PIPE CONTRACTS	2,777
						3—BANK STAB ITEMS	962
						4—BOX CULVERT CONTRACTS	616
						6—LOW DROP CONTRACTS	1,102
						REAL ESTATE ACQUISITION, MONITORING, E&D AND S&A	6,886
						NOTE: THE ADMINISTRATION'S REVIEW OF THIS PROJECT HAS IDENTIFIED ECONOMIC AND/OR POLICY CONCERNS.	
							13,706
	YAZOO BASIN, F&WL MITIGATION LANDS, MS	(FC)	(7,511)	(0) (C)	(0) (C)	FULLY FUNDED	.....
	YAZOO BASIN, MAIN STEM, MS	(FC)	(194,431)	(20) (C)	(20) (C)	NO ADDITIONAL REQUIREMENT	.....
	YAZOO BASIN, REFORMULATION UNIT, MS	(FC)	(32,408)	(1,570) (C)	(1,570) (C)	NO ADDITIONAL REQUIREMENT	.....
	YAZOO BASIN, TRIBUTARIES, MS	(FC)	(243,000)	(340) (C)	(340) (C)	NO ADDITIONAL REQUIREMENT	.....
	YAZOO BASIN, UPPER YAZOO PROJECTS, MS	(FC)	(338,000)	(11,620) (C)	(13,620) (C)	ACCELERATE CONST CHANNEL ITEM 4	1,000
						PURCHASE MITIGATION LANDS NO IMPACT ON PROJECT COMPLETION.	1,000
							2,000
	OPERATION AND MAINTENANCE						
	MISSISSIPPI:						
MS 2	GREENVILLE HARBOR, MS	(N)	.....	333	333	NO ADDITIONAL REQUIREMENT	.....
	INSPECTION OF COMPLETED WORKS, MS	(FC)	.....	193	193	.....	.....
MS 2	VICKSBURG HARBOR, MS	(N)	.....	199	199	NO ADDITIONAL REQUIREMENT	.....
MS 1	YAZOO BASIN, ARKABUTLA LAKE, MS	(FC)	.....	3,265	4,865	REPAIR INTAKE STRUCTURE & TOE DRAIN SYSTEM	800
						REPLACE UNDERGROUND ELECTRICAL SYSTEMS	800
							1,600
MS 2	YAZOO BASIN, BIG SUNFLOWER RIVER, MS	(FC)	.....	209	4,709	CONTINUE CONSTRUCTION OF BOGUE PHALIA	4,500
MS 1	YAZOO BASIN, ENID LAKE, MS	(FC)	.....	3,214	4,354	REPAIR OUTLET STRUCTURE & EMERGENCY SPILLWAY	500
						REPLACE UNDERGROUND ELECTRICAL SYSTEMS	640
							1,140
MS 2	YAZOO BASIN, GREENWOOD, MS	(FC)	.....	946	946	NO ADDITIONAL REQUIREMENT	.....
MS 1	YAZOO BASIN, GRENADA LAKE, MS	(FC)	.....	4,280	6,580	REPAIR DAM BERM DRAINAGE SYSTEM	800
						REPAIR & RESURFACE ACCESS ROADS	1,500
							2,300

FISCAL YEAR 2000 FUNDING CAPABILITIES MISSISSIPPI RIVER & TRIBUTARIES—Continued

(Amounts in Thousands)

Congressional Districts	Study and State	Type	Estimated Federal cost	Amounts included in President's budget	Study capability	Purpose of additional capability	Amount
MS 1, 2	YAZOO BASIN, MAIN STEM, MS	(FC)	.....	1,059	1,059	NO ADDITIONAL REQUIREMENT	.....
MS 1	YAZOO BASIN, SARDIS LAKE, MS	(FC)	.....	4,334	5,534	REPAIR OUTLET STRUCTURE AND TOE DRAIN SYSTEM	1,200
MS 1, 2	YAZOO BASIN, TRIBUTARIES, MS	(FC)	.....	1,269	1,269	NO ADDITIONAL REQUIREMENT	.....
MS 3, 4	YAZOO BASIN, WILL M WHITTINGTON AUX CHAN, MS	(FC)	.....	493	493	NO ADDITIONAL REQUIREMENT	.....
MS 1, 2, 3	YAZOO BASIN, YAZOO BACKWATER AREA, MS	(FC)	.....	560	560	NO ADDITIONAL REQUIREMENT	.....
MS 3	YAZOO BASIN, YAZOO CITY, MS	(FC)	.....	846	846	NO ADDITIONAL REQUIREMENT	.....
	CONSTRUCTION PROJECTS						
	MISSOURI:						
MO 8	ST JOHNS BAYOU AND NEW MADRID FLOODWAY, MO	(FC)	[1] 58,800	7,800 (C)	9,800 (C)	ADVANCE COMPLETION OF NEW MADRID PUMPING STATION 12 MONTHS.	2,000
	OPERATION AND MAINTENANCE						
	MISSOURI:						
	INSPECTION OF COMPLETED WORKS, MO	(FC)	.....	202	202	.....	.....
MO 8	WAPPAPELLO LAKE, MO	(FC)	.....	3,500	7,705	COMPLETE HIGHWAY D3 RELOCATIONS	880
						INITIATE CONTRACT FOR HIGHWAY D4 RELOCATION	2,975
						OVERLAY ASPHALT GREENVILLE DAY USE AREA	100
						MANTAIN NON–REC ROAD BELOW THE DAM	150
						REPAIR HOLIDAY LANDING ENTRANCE FORSAFETY	100
							4,205
	AUTHORIZED STUDIES						
	TENNESSEE:						
MS 1 TN 7, 8, 9	MEMPHIS METRO AREA, TN & MS	(COM)	2,075	675	675	NO ADDITIONAL REQUIREMENT	.....
	PRECONSTRUCTION ENGINEERING AND DESIGN						
	TENNESSEE:						
KY 1 TN 8	REELFOOT LAKE, TN & KY	(FC)	750	318	318	NO ADDITIONAL REQUIREMENT	.....
TN 7, 8, 9	WOLF RIVER, MEMPHIS, TN	(FC)	579	525	525	NO ADDITIONAL REQUIREMENT	.....

	CONSTRUCTION PROJECTS						
	TENNESSEE:						
TN 9	NONCONNAH CREEK—OVERALL, TN & MS	(FC)	[1] 18,400	2,500 (C)	2,500 (C)		
TN 9	NONCONNAH CREEK, ENVIRONMENTAL ENHANCEMENT, TN & MS.	(FC)	[1] (131)	(0) (C)	(0) (C)	LACK OF RECENT EXPRESSION OF LOCAL INTEREST	
TN 9	NONCONNAH CREEK, FLOOD CONTROL FEATURE, TN & MS.	(FC)	[1] (17,9411)	(2,500) (C)	(2,500) (C)	NO ADDITIONAL REQUIREMENT	
TN 9	NONCONNAH CREEK, RECREATION FACILITIES, TN & MS.	(FC)	[1] (328)	(0) (C)	(0) (C)	LACK OF RECENT EXPRESSION OF LOCAL INTEREST	
TN 7, 8	WEST TENNESSEE TRIBUTARIES, TN	(FC)	[1] 143,000	2,398 (C)	2,398 (C)	NO ADDITIONAL REQUIREMENT	
	OPERATION AND MAINTENANCE						
	TENNESSEE:						
	INSPECTION OF COMPLETED WORKS, TN	(FC)		113	113		
TN 9	MEMPHIS HARBOR, MCKELLAR LAKE, TN	(N)		800	1,400	DREDGE HARBOR ADDITIONAL 800,000 CY BUDGET AMT IS FOR 27 DAYS; 5 YR AVG IS FOR 42 DAYS; CAPABILITY WOULD ALLOW AN ADDITIONAL 20 DREDGING DAYS.	600

NOTE: ALTHOUGH PROJECT AND STUDY CAPABILITIES REFLECT THE READINESS OF THE WORK FOR ACCOMPLISHMENT, THEY ARE IN COMPETITION FOR AVAILABLE FUNDS AND MANPOWER ARMY-WIDE IN THIS CONTEXT, THE FISCAL YEAR 2000 CAPABILITY AMOUNTS SHOWN CONSIDER EACH PROJECT OR STUDY BY ITSELF WITHOUT REFERENCE TO THE REST OF THE PROGRAM. HOWEVER, IT IS EMPHASIZED THAT THE TOTAL AMOUNT PROPOSED FOR THE ARMY'S CIVIL WORKS PROGRAM IN THE PRESIDENT'S BUDGET FOR FISCAL YEAR 2000 IS THE APPROPRIATE AMOUNT CONSISTENT WITH THE ADMINISTRATION'S ASSESSMENT OF NATIONAL PRIORITIES FOR FEDERAL INVESTMENTS. IN ADDITION, THE TOTAL AMOUNT PROPOSED FOR THE ARMY'S CIVIL WORKS PROGRAM IN THE PRESIDENT'S BUDGET IS THE MAXIMUM THAT CAN BE EFFICIENTLY AND EFFECTIVELY USED. THEREFORE, WHILE WE COULD UTILIZE ADDITIONAL FUNDS ON INDIVIDUAL PROJECTS AND STUDIES, OFFSETTING REDUCTIONS WOULD BE REQUIRED IN ORDER TO MAINTAIN OUR OVERALL BUDGETAR OBJECTIVES.

BUDGET AND CAPABILITY AMOUNTS REFLECT FEDERAL FUNDS, EXCEPT FOR PROJECTS WITH COSTS ALLOCATED TO NAVIGATION, FOR WHICH THE AMOUNTS INCLUDE NON-FEDERAL FUNDING FROM THE INLAND WATERWAYS & HARBO MAINTENANCE TRUST FUNDS.

[1] COST ESTIMATE INCLUDES AN ALLOWANCE FOR INFLATION THROUGH THE CONSTRUCTION PERIOD.

OPERATION AND MAINTENANCE BUDGET REQUEST

Question. Does this budget provide the funds necessary to adequately operate and maintain the project and to respond to the Corps' many challenges in this environmentally sensitive area?

Answer. The budget maintains the operations portion at current funding level. We have funded the most critical maintenance in fiscal year 2000. However, repeated reductions in the maintenance program could delay, slow down or defer channel surveys, repair of levee slides, repair of equipment, maintenance of flood control, navigation, and salinity control structures, and maintenance of recreation facilities. Reductions would also cause adverse impacts on commercial navigation and related industries and local, regional, national, and international commerce.

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

Question. Briefly, describe for the Committee the differences in the Department of Energy's proposed accelerated clean up plan for the FUSRAP program. How does the Corps' overall project costs and schedules compare to the DOE accelerated cleanup plan?

Answer. In June 1997, the Department of Energy (DOE) developed a draft accelerated cleanup plan, which showed that FUSRAP could be completed in 2002. To achieve that completion schedule, the accelerated plan limited the scope of the program, principally by proposing that hazardous wastes at the Niagara Falls Storage Site remain on site and by proposing to clean up the St. Louis sites to a restricted use industrial standard rather than industrial use. The draft accelerated cleanup plan also was based on an estimate of the requirement at the Luckey site which, it has since been established, greatly underestimated the quantities requiring remediation. In addition, DOE estimates did not include any requirement for remediating contaminated ground water. Further, DOE's completion date of 2002 for the draft accelerated cleanup plan was premised on an annual funding level of $182 million per year. The Corps received only $140 million in fiscal year 1998 and in fiscal year 1999, and has been allocated a ceiling of $150 million a year, starting in fiscal year 2000, to complete FUSRAP. We estimate that at this funding level, with a remaining requirement of $1.1 billion, it will require until at least 2010 to complete the program. The review of cost estimates, by site, which the Corps completed during the 3rd quarter fiscal year 1998 confirmed that our costs to complete are comparable to DOE's proposed accelerated cleanup plan, when adjustments are made to compensate for the scope differences. The Corps has also built new cost estimates from the bottom up to validate our initial assessment in the Report to Congress. These estimates fall within the range provided in the Report to Congress.

Question. General Ballard, the Congress has directed DOE and the Corps to enter into a Memorandum of Understanding to carry out the program and to eliminate any misunderstandings that may exist between the two agencies as to the roles and responsibilities related to the FUSRAP cleanup program? What is the status of the MOU and when do you expect to have it finalized? What are the remaining sticking points in working out a final MOU?

Answer. The Corps and DOE have entered final negotiations regarding the MOU. I anticipate that the final agreement will be signed shortly. All major issues have been resolved.

Question. Last year you indicated that the execution of the program was not being hampered by your lack of regulatory authority, or the lack of an MOU with DOE. Is this still true? Please explain.

Answer. It is still true that our execution of the program has not been adversely impacted by our lack of regulatory authority under the Atomic Energy Act or the lack of a memorandum of understanding with the Department of Energy. As I testified last year, we believe that the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, provides sufficient authority for the Corps to execute FUSRAP. In addition, language in the Energy and Water Development Appropriations Act, 1999, clarifies Corps cleanup responsibilities under FUSRAP.

Question. The Corps has been in charge of the FUSRAP cleanup effort for about 18 months. Update the Committee on the Corps' progress, particularly in maintaining cost and schedules since the Corps took over the program. What are the most significant issues or problems you now face in maintaining the momentum of the cleanup program? How does your fiscal year 1998 performance compare to that which DOE had planned to execute?

Answer. During fiscal year 1998, the Corps succeeded in maintaining or improving on the schedules which it inherited when responsibility for executing the program was transferred to the Corps. In a few cases, the Corps developed slightly different schedules based on local community involvement and optimizing available re-

sources. We are in the process of adjusting our schedules based upon our current funding limitations.

Question. In your report to Congress last March, you indicated that your assessment of the program would allow the Corps to complete 16 of the sites transferred to you by 2002 with the remaining being completed by 2006. Is that assessment still valid? Can you provide a more definitive schedule and cost to complete the program?

Answer. That report provided technical capability without regard to any fund constraints. We still believe that with funding to support optimal schedules we could complete the remaining sites by 2006. In order to do so, however, we would require an appropriation in fiscal year 2000 of $264,000,000, in fiscal year 2001 of $217,500,000, in fiscal year 2002 of $187,500,000, in fiscal year 2003 of $187,000,000, in fiscal year 2004 of $376,500,000, in fiscal year 2005 of $82,500,000, and in fiscal year 2006 of $22,000,000.

Question. What success is the Corps having in establishing clean up standards at the various sites left to be addressed?

Answer. Each site has a set of circumstances unique to that individual site, and requires considerable coordination with stakeholders and regulators to establish the cleanup criteria. During fiscal year 1998 the Corps completed two Records of Decisions documenting final cleanup standards. We also completed documentation, Engineering Evaluation/Cost Analysis (EE/CA), to carry out interim removal actions at five sites. Interim removal actions also require the determination of an appropriate cleanup criteria. I believe that we have been successful in establishing cleanup criteria which will permit us to complete cleanup within the estimated range provided in the Report to Congress.

Question. Since some sites are being completed, what is the process for transferring those sites off of the government's books? Is this a problem between you and DOE, if so, what is being done to resolve the differences between the two agencies? Who will be responsible for long term monitoring and site control once cleanup has been completed?

Answer. The Corps and DOE are in agreement that the Corps would be responsible for site surveillance and maintenance during the first two years following completion of remedial activities, while DOE will be responsible for site surveillance and maintenance after the first two years and for the long term. DOE will retain accountability for real property during remediation and will be responsible for disposing of government owned sites. Now that the broader issues have been resolved, the Corps and DOE will develop specific procedures for documenting that the cleanup at a site is complete.

Question. Now, just recently, DOE informed the Corps that an additional area, the Dayton sites, is eligible for inclusion in the FUSRAP effort. What can you tell the Committee about the potential cost impact of the Dayton sites on the annual funding level for FUSRAP? How many other additional sites are there that could be eligible for the FUSRAP, and how will this additional cleanup requirement impact future budgets?

Answer. At present I am unable to estimate the potential cost impact of the Dayton sites. I have requested that our Great Lakes and Ohio River Division develop a preliminary cost estimate based on sampling data currently available, including information developed by DOE in the late 1940's and by the Ohio Environmental Protection Agency (OEPA) just last year. We are aware of 18 potential new sites which then Secretary of Energy Frederico Pena referenced in his letter to Secretary of Defense Cohen around the same time when transfer of Program execution to the Corps became effective. We have made no attempt to estimate the potential impact of these sites on future requirements.

PROGRAM EXECUTION

Question. General Ballard, your statement indicates that the Corps' expenditure performance in fiscal year 1998 increased by $400 million. How do you account for this increase?

Answer. Senator, my commanders focused on execution. It is vital that they carry out the work that you and the rest of the Congress have assigned us. In fiscal year 1998 we had the added work of the FUSRAP program and we had a substantial increase in expenditures for the Construction, General program. A number of large projects are well into their construction cycles thereby generating large expenditures.

Question. You also indicate that you expect to have another improvement in performance in fiscal year 1999. How will you accomplish this increase?

Answer. The majority of the increase will come in the construction and maintenance programs. I have made it a top priority of mine to execute the program that

you have assigned us. It is then a top priority of the Division Commanders and they are pressing hard to accomplish the projects. In the operation and maintenance program there is identified work that can and should be accomplished that will require the expenditure of all available funds, about $150 million more than fiscal year 1998.

In the construction program the divisions have laid out schedules that will result in expenditures of almost $300 million more than fiscal year 1998. My Commanders are continuing to seek ways to improve their performance even more. The projects have been funded and we will see that they are implemented to serve their intended purpose.

Question. What is the estimated level of unobligated carryover balances into fiscal year 2000 that you don't expect to utilize, and what is the reason for this level of carryover balance?

Answer. We have an estimated unobligated carryover of $724 million in direct appropriations into fiscal year 2000. The majority of the carryover falls into two appropriations, Construction, General (CG) and Flood Control and Coastal Emergencies (FCCE) appropriations. The estimated unobligated Construction, General carryover is $447 million. Most of this carryover is due to one or more of several reasons. The most significant of these reasons are overly optimistic scheduling, design delays, environmental problems, problems with local sponsor financing, lack of local sponsor, delays in real estate acquisition, insufficient authorization, sponsor requested protracted schedule, fully funded multiyear projects, and contractor delays. Much of the carryover is associated with projects that have had appropriations in statutory language, which cannot be reprogrammed for use on other projects when delays occur. Most of the funds appropriated to the FCCE account are from emergency supplemental appropriations acts. The current balance represents carryover of funds appropriated in the fiscal year 1997 emergency supplemental appropriations act. This balance has been used to fund the emergency preparedness program in fiscal year 1999 and will be used to fund that program in fiscal year 2000.

Army Corps of Engineers (Civil Works) Fiscal Year 1999 Projected Unobligated Carryover

[Dollars in Millions]

DIRECT APPROPRIATIONS	*SCHEDULED CARRYOVER*
General Investigations	37
Construction, General	408
Operation & Maintenance, General	70
FC, Mississippi River & Tributaries	12
Regulatory Program	4
General Expenses	11
Flood Control & Coastal Emergencies	177
FUSRAP	5
TOTAL	724

Question. General Ballard and General Fuhrman, what is the level of deferred critical maintenance work in the civil works program?

Answer. The backlog of deferred maintenance items is currently estimated at $1.6 billion.

Question. Is this of concern to you?

Answer. This is of major concern to me. In addition to our mission as the nation's water resources problem solvers, we are responsible for maintaining a very complex and diversified system of harbors, reservoirs, hydropower facilities, locks and dams. So far, we have managed to keep our aging infrastructure operating safely with minimal down time. When maintenance is put off, it may not be noticed the first year, but deterioration worsens with the continued exposure of project features to the elements and normal usage. Eventually, conditions can no longer be ignored and remedial action is necessary.

Question. Can you give the Committee an example of the type of work which falls into the category of critical deferred maintenance and what impacts would be on project operations or efficiencies if failure occurred?

Answer. Some of our deferred work packages are as follows (a) replacement of deteriorated miter gates at the Port Allen lock—if the old gate sticks or breaks loose, the facility would be shut down; (b) additional rip rap to bolster the Jackson Levees—failure to reinforce weakened areas could result in a breach and extensive flooding; (c) flushing the Los Angeles River subdrain system—a blocked system causes excessive hydrostatic pressure on the concrete structure and possible failure;

(d) repair spillway gates and upgrade overhead crane at Millers Ferry Lock and Dam—inoperable spillway gates threaten the integrity of the entire embankment and the old crane is becoming increasingly difficult and unsafe to operate; and (e) concrete guidewall repairs on Okeechobee Waterway—defective guidewalls can result in navigation traffic congestion and possible damages to transiting vessels which could, in-turn, damage the lock structure, causing a shut down.

Question. Has the Corps evaluated the problem and developed a plan to address the issue?

Answer. I have asked each of the Corps Division Commanders to personally evaluate his backlog situation and present to me a plan for coming to grips with the issue. The backlog of deferred maintenance is very dynamic in nature. As certain previously-deferred items become critical, they are included in the budget or addressed with available funds during the year of execution. By establishing a goal of expending all of available O&M funds during the fiscal year managers at all levels have been put on notice to take advantage of any available funds for the purpose of reducing the backlog. Our fiscal year 2000 budget includes some work that had been previously deferred, but at the same time, new items have been added to the list. Although the backlog has grown, the fiscal year 2000 budget request reflects a more favorable balance between those work items added and those taken off the list.

SOUTH PACIFIC DIVISION

ACEQUIAS IRRIGATION SYSTEM, NEW MEXICO

Question. Last year, the Committee expressed concerns about the progress being made on the Acequias Irrigation system rehabilitation project in my State of New Mexico. In addition, the Committee express the expectation that the Corps would strengthen its communication and coordination efforts with State and local interests. What can you report to the Committee in this regard?

Answer. The Corps has made significant progress in the last year in streamlining our processes and strengthening coordination effort with local stakeholders. First, with approval of the amended Project Cooperation Agreement on March 8, 1999, we will no longer require annual review and approval of this agreement by the Corps and our local sponsor, the New Mexico Interstate Stream Commission. Second, the amended agreement incorporates Section 215 crediting/reimbursement provisions allowing the sponsor to design and build projects and receive credit for this work toward project cost sharing. Third, the amended agreement provides for 100 percent Federal funding of "reconnaissance" level studies of individual Acequia projects. Finally, our environmental procedures are being streamlined through preparation of a programmatic environmental impact statement in the Rio Chama Basin. The Fish and Wildlife Service has prepared a draft Coordination Act Report for the basin as well. We expect these changes to accelerate project construction in the near future.

UPPER RIO GRANDE WATER OPERATIONS MODEL, NEW MEXICO

Question. The Committee requested a report, in consultation with the Bureau of Reclamation, on the Corps' progress and plans to complete the Upper Rio Grande Water Operations Model in New Mexico. What is the status of that report?

Answer. The report has been drafted and forwarded to our Washington level headquarters. It will be forwarded to the Army and, subsequently, to the Committee shortly.

Question. Funding was provided by the Congress for the current year to award a construction contract on the Dushore, Sullivan County Pennsylvania small project. What is the status of and schedule for completing plans and specifications, and awarding the construction contract of the project?

Answer. Following completion of a feasibility study for this project at Loyalsock Creek, Borough of Dushore, Sullivan County, Pennsylvania, in March 2001, the Corps of Engineers is scheduled to initiate plans and specifications and these would be completed in December 2001. A construction contract award is set for March 2002.

TECHNICAL CENTERS OF EXPERTISE

Question. General Ballard, I have some question regarding a recent policy directive you issued, which restructured the project approval process for Technical Center of Expertise (TCX), and its specific effects on the St. Louis TCX, the Center of Photogrammetric Mapping.

I understand, and I believe you are aware, General Ballard, that the St. Louis Center received its TCX designation in 1995 in recognition for the unique special-

ized expertise it had developed in the area of photogrammetry, Geographic Information Systems (GIS), Global Positioning Systems, civil engineering and remote sensing, among others. Due to its expertise, the Center has developed a large non-COE customer base and heavy workload, with a vast majority of these projects short term and in the $50,000 to $150,000 range—which is relatively small. Furthermore, almost 100 percent of the project work is contracted out to the private sector, allowing for a significant amount of firms to grow and prosper around this work.

General Ballard, as you are also aware, recently the Corps restructured the process by which a Technical Center of Expertise can do work for customers outside of its particular District. Is it now necessary for the [St. Louis District Photogrammetric Mapping Technical Center of Expertise] to receive approval from both Corps HQ as well as the district in which the work is to be done, whether or not the work is to be done in support of assigned Corps missions or for non-COE customers? Is all this correct?

Answer. It is not necessary for a Center of Expertise (CX) to obtain Headquarters approval to work for customers outside its particular district. However, the Corps recently introduced a requirement that there be coordination between division offices before an activity, including a CX, in one division performs work outside the geographical boundaries of that division. The Corps established this requirement to ensure that division commanders would have complete responsibility for the flow of work within their geographic area of responsibility. This is central to the Corps regional business center concept which we have established to maximize our organization's effectiveness and efficiency in delivering services to our customers.

Question. Is it true that the nature of most of the projects, which the St. Louis Center undertakes on behalf of non-COE clients, require a high level of technical understanding as well as a rapid response capability?

Answer. Much of the facility engineering and natural resources photogrammetric mapping performed by the St. Louis District requires highly skilled technical expertise; in many case a rapid response is also required.

Question. Is this same level of expertise available elsewhere within the Corps? If so, why was St. Louis designated a TCX in 1995 and labeled the Center for Photogrammetric Mapping?

Answer. The St. Louis District was designated as a Technical Center of Expertise in 1995 because of its superior combination of technical expertise, project management experience, and contracting capability in photogrammetric mapping. Under revised regulatory guidance, which eliminated the Technical Center of Expertise classification, the technical expertise of Photogrammetric Mapping Center has been recognized through its listing on the Directory of Expertise (DX). However, some other districts also have the technical expertise in photogrammetric mapping and contracting experience sufficient to meet many requirements.

Question. Has the restructuring of the approval process had a negative effect on the ability of the Center for Photogrammetric Mapping to respond rapidly, which, in the past, outside clients have come to both expect and depend upon.

Answer. There have been some instances in which the requirement to coordinate with another division in order to do work outside the assigned geographical boundaries has caused delays in initiating aerial mapping photography for customers. They can reasonably be expected to diminish as Corps activities, including the CX, become familiar with the new procedures, and develop and implement measures to streamline the coordination process.

Question. Is it not true that, since implementation of the restructuring, the project load of the St. Louis TCX has dropped off, as clients have sought and found alternative contracting avenues besides the Corps, such as the US Geological Survey and the Tennessee Valley Authority, which are not restricted by a lengthy and unpredictable approval process?

Answer. I am aware that there have been specific instances when other activities have sought and found alternative contracting avenues besides the Corps, such as the US Geological Survey and the Tennessee Valley Authority, as a result of the requirement that the CX coordinate with another division in order to do work outside the geographical boundaries of its division.

Question. Do you believe that, as a result of a possible loss of work, the inflow of funds will substantially decrease, thus restricting the ability of the [St. Louis District] Center for Photogrammetric Mapping to continually build upon its resource base and not even increase, but maintain its technical edge?

Answer. I believe that the Photogrammetric Mapping Center may experience some loss of workload in the short term as a result of our requirement that use of the CX be coordinated across division boundaries. However I am confident that over the long term, as a result of providing superior service and streamlined approval

procedures, the TCX will be able to maintain a workload which will sustain the current level of technical expertise.

Question. Hasn't this restructuring that you have ordered—protracted response process, decreased workload and diminished level of expertise—directly conflicted with the Corps strategic mission of becoming more streamlined and responsive to non-COE clients, also known as the "Support for Others" program?

Answer. While there have been delays in the processing of requests for photogrammetric mapping support by the CX, I believe that the number and length of these delays will decrease as Corps activities, including the CX, become familiar with the new procedures and develop and implement measures to streamline the coordination process. Furthermore, I believe that, on balance, the Corps regional business center concept will maximize our organization's effectiveness and efficiency in delivering services to our customer.

Question. Is it correct that by taking the simple step of reclassifying the St. Louis District Center for Photogrammetric Mapping from a Directory of Expertise to a Mandatory Center of Expertise, the Center would be recognized as possessing unique technical expertise and management skills, and thus be allowed to perform work for others without the restricting additional layers of review?

Answer. The St. Louis District's Photogrammetric Mapping Center has previously been recognized as possessing unique technical expertise and management skills through its listing on the Directory of Expertise (DX). I fully expect this listing to be renewed. However, performing work for others outside the Mississippi Valley Division's geographical area of responsibility, without prior coordination with the division having responsibility for the area where the work is located, would be inconsistent with the regional business center concept.

Question. Is it not true that an internal Corps review of this reclassification of St. Louis District] has indeed already been conducted, with no adverse impact found on either the Corps or the private sector?

Answer. The Corps initial Approval Request Report for a Mandatory Center of Expertise designation for St. Louis District did not identify any adverse impacts on either the Corps or the private sector. What was decisive in this case, however, was the inconsistency of the MCX designation with the concept of regional business process centers.

Question. Is it not also true that the reclassification process was in its final stages as early as last November, receiving all of the required civilian signatures and half of those needed from military personnel?

Answer. There were differing opinions on my staff. That is not uncommon. However, after weighing the pros and cons of the alternatives, as presented by my staff, I decided that the best course was not to designate the St. Louis District as a Mandatory Center of Expertise.

Question. Why did this process come to a complete standstill?

Answer. The process did not come to a complete standstill. However, because of the differing opinions on my staff, the process took longer than might originally have been anticipated.

Question. The inability of the Corps leadership to reclassify the St. Louis Center as a Mandatory Center of Expertise will clearly have an adverse impact upon not only the Center, but all photogrammetric and GIS activities that the Corps undertakes. Efficiency will be reduced, increased personnel will be required and costs will rise—do you believe that the Corps has sufficient resources and manpower available to handle these increased costs and personnel?

Answer. Although there may be some initial impacts on the St. Louis District's photogrammetric mapping program, I do not believe that there will be a long term adverse impact on the St. Louis District nor an adverse impact on the Corps as a whole. On balance, I believe that our regional business center concept will increase our efficiency and effectiveness in serving our customers.

QUESTIONS SUBMITTED BY SENATOR COCHRAN

MISSISSIPPI RIVER AND TRIBUTARIES

Question. The budget request for the Mississippi River and Tributaries program remains at $280 million, the same amount requested for fiscal year 1999. What is the Corps capability for this program?

Answer. The Corps capability for the Mississippi River and Tributaries program is $350 million.

Question. Is there a funding level for this account which will obviate the need for earmarks, while allowing work to continue on priority projects?

Answer. The President's budget for the Mississippi River and Tributaries program in fiscal year 2000 is $280 million. The budget would allow work to proceed on all projects, albeit not on optimal schedules.

MISSISSIPPI RIVER LEVEES

Question. What is the status of the ongoing work to address deficiencies on the mainline Mississippi River levees?

Answer. Construction continues on the Mississippi River Mainline Levee and Berm Enlargement project, to bring the levees up to grade and otherwise assure the capability of the levee system to successfully pass the project flood. A Supplemental Environmental Impact Statement was completed and a Record of Decision was signed on 5 October 1998. Construction of most work items scheduled to commence in fiscal year 1997 and fiscal year 1998 has proceeded during preparation of the Supplemental Environmental Impact Statement and is either complete or nearing completion. The Corps expects to award the next two construction contracts in May and June 1999, for work items located in Missouri and Mississippi. These work items represent levee enlargements for the purpose of eliminating levee grade deficiencies at critical reaches of the levee system. On 4 December 1998, EARTHJUSTICE Legal Defense Fund, Inc., challenged the adequacy of the Supplemental Environmental Impact Statement.

A hearing is tentatively scheduled for late May 1999. The Corps is proceeding with planned fiscal year 1999 work, neither expediting nor delaying work due to the litigation.

NATCHEZ, MISSISSIPPI

Question. What is the status of work to address erosion on the bluffs in and around the city of Natchez, Mississippi?

Answer. A portion of the top priority reach, Area 3, Clifton Avenue, was constructed in 1997 by the Natural Resource Conservation Service under its Emergency Watershed Protection Program. Construction of the remainder of Area 3 is presently underway by the Corps of Engineers and scheduled for completion later this year. A Project Cooperation Agreement was executed in March 1998 and the construction contract awarded in June 1998. Preparation of a Project Cooperation Agreement amendment, supporting documents, and design covering the next priority reach, Area 4, Madison Street to State Street, is currently underway, and every effort is being made to accelerate activities to award a construction contract for Area 4 this fiscal year.

Question. How much funding is needed within the existing authorization?

Answer. Sir, through fiscal year 1999, $12,500,000 has been appropriated. The total additional amount considered necessary to fully fund the remaining authorized work is $7,049,000. This includes funding the remaining work on Area 4, Madison Street to State Street at a cost of $3,769,000; and the remaining two authorized reaches—Area 6, Bluff above Silver Street, $1,110,000 and Area 7, Bluff above Natchez Under-the-Hill, $2,170,000.

Question. What work needs additional authorization?

Answer. Sir, additional authorization would be required for the Corps to construct additional features sought by the local sponsor, which are: bluff stabilization measures in Area 1, Weymouth Hall, Area 2, Between Weymouth Hall; and Park Street; and Area 8, D.A. Biglane Street. Bluff stabilization for Area 5, Silver Street has been accomplished by the city, and no additional work or authorization is required for this area.

Question. What is the estimated cost of this work?

Answer. The estimated cost of construction for Areas 1, 2 and 8 is $13,935,000. This would increase the total first cost of the authorized project from $26,065,000 to $40,000,000. The estimated Federal cost would be approximately $30,000,000 and the estimated non-Federal cost would be approximately $10,000,000.

JACKSON COUNTY, MISSISSIPPI

Question. What is the status of the Jackson County, Mississippi, water supply project?

Answer. Sir, the non-Federal sponsor, Jackson County, Mississippi, is preparing the construction plans and specifications which are scheduled for completion in April 1999. The Project Cooperation Agreement is scheduled to be signed in July 1999. The construction contract is scheduled for award in November 1999, with completion in January 2001.

Question. How much funding is needed within the existing authorization?

Answer. Sir, the existing funding authorization is $10,000,000. We have received $9,200,000 to date through Congressional Adds. Therefore, an additional $800,000 is needed to fulfill the existing authorization.

Question. What work needs additional authorization?

Answer. Sir, the project calls for expansion of the Jackson County industrial water supply system in segments based on funding availability. Jackson County has already constructed a portion of the total project and desires to use Corps funding in the construction of the remaining project.

Question. What is the estimated cost of this work?

Answer. Sir, the estimated cost of this work is $5,000,000.

COASTAL ENVIRONMENTAL IMPACT STUDY, MISSISSIPPI

Question. It is my understanding that the Corps has undertaken a coastal environmental impact study for the Gulf Coast of Mississippi. What is the purpose and scope of this study?

Answer. Sir, The Mississippi Gulf Coast has been developed by the casino industry at a greater rate than was envisioned by either the State of Mississippi or the Federal agencies when Mississippi first allowed gaming on navigable waters. As a result, existing casinos have developed most of the coastline previously used for commercial and industrial facilities. New casino applicants must obtain Department of the Army permits to build in environmentally sensitive areas in Harrison and Hancock Counties, MS. Additionally, other large projects such as malls and subdivisions are also being proposed to locate in these same sensitive areas. We believe it is necessary and timely to undertake a Coastal Environmental Impact Statement (CEIS) to determine the likelihood and number of additional casinos locating on the Mississippi Gulf Coast in the future, estimate the numbers of other large-scale projects, and do a broad study of the environmental consequences of these future casinos and projects. The scope of the CEIS is expected to encompass the coastline of Harrison and Hancock Counties, and extend landward about one mile north of Interstate 10.

Question. What is the estimated cost of this study?

Answer. Sir, The estimated cost of this study is approximately $750,000.

Question. Is the necessary funding included in the President's budget?

Answer. Sir, the Regulatory Program fiscal year 2000 Budget request includes $325,000, which is sufficient to continue this study effort.

Question. What is the schedule of work for this study?

Answer. Sir, the study will be initiated in June 1999, and is scheduled for completion in September 2001.

DEMONSTRATION EROSION CONTROL

Question. Please provide a summary of all ongoing Demonstration Erosion Control (DEC) projects in Mississippi. Please include total estimated cost of each and funding to date.

Answer. The total estimated cost of ongoing work in the Black Creek Watershed is $3,495,000 of which $1,398,000 has been provided for work on 1 riser pipe, 1 floodwater retarding structure and 2 bank stabilization items.

The total estimated cost of ongoing work in the Hurricane-Wolfe Watershed is $375,000, of which $351,000 has been provided for work on 15 riser pipes.

The total estimated cost of ongoing work in the Coldwater River Watershed is $1,879,000, of which $1,094,000 has been provided for work on 2 low drop structures, 3 box culvert, and 1 bank stabilization.

The total estimated cost of ongoing work in the Abiaca Creek Watershed is $2,308,000, of which $441,000 has been provided for work on 1 levee and 1 riser pipe.

The total estimated cost of ongoing work in the Batupan Bogue Watershed is $2,615,000, of which $2,226,000 has been provided for work on 2 low drop structures, and 3 bank stabilizations.

The total estimated cost of ongoing work in the Cane—Mussacuna Watershed is $439,000, of which $189,000 has been provided for work on 1 low drop structure.

The total estimated cost of ongoing work in the Hotophia Creek Watershed is $350,000, of which $325,000 has been provided for work on 1 low drop structure.

The total estimated cost of ongoing work in the Otoucalofa Creek Watershed is $1,876,000, of which $951,000 has been provided for work on 1 channel improvement, 1 riser pipe, 1 low drop structure, and 1 box culvert.

The total estimated cost of ongoing work in the Yalobusha River Watershed is $1,755,000, of which $1,618,000 has been provided for work on 2 riser pipes, 2 low drop structures, and 3 box culvert.

The total estimated cost of ongoing work in the Toby Tubby Creek Watershed is $2,527,000, of which $275,000 has been provided for work on 1 floodwater retarding structure, and 1 bank stabilization.

Additionally, $5,000,000 has been provided for engineering and design, construction management, data collection and monitoring activities, and approximately $850,000 has been provided for lands and relocation activities which will be expended throughout these watersheds.

In summary, work with an estimated total cost of $26,469,000 has been initiated in ten watersheds. Of the total cost, $14,718,000 has been provided through fiscal year 1999 with a balance to complete of $11,751,000. The fiscal year 2000 budget request of $6,294,000 will allow completion of all contracts scheduled for award in fiscal year 1999. The budget does not, however, propose to continue the program and does not include funding for additional contracts in fiscal year 2000 or beyond.

Question. Please also provide a list of all DEC watersheds.

Answer. A list of the authorized watersheds in the Demonstration Erosion Control project include: Black Creek; Hurricane-Wolfe; Coldwater River; Abiaca Creek; Batupan Bogue; Cane-Mussacuna; Hickahala Creek; Hotophia Creek; Long Creek; Otoucalofa Creek; Yalobusha River; Pelucia Creek; Toby Tubby Creek; Burney Branch; Sherman Creek; and Town Creek.

QUESTIONS SUBMITTED BY SENATOR BENNETT

REGULATORY PROGRAM—ADMINISTRATIVE APPEAL

Question. Why hasn't the Corps done as Congress and the President instructed by creating an appeals program that allows for jurisdictional challenges?

Answer. The President's budget for the last two years has included funding requests for the Regulatory Program that provided for the full appeals program. However, the appropriations for these years have been significantly below the requests. The Corps has difficulty maintaining its staffing levels in the districts to cover the basic program services. At the appropriations levels enacted, the Corps could not implement the full appeals program without making significant reductions to the basic services. The Corps has worked hard to improve its regulatory services to the public and does not want those services to be degraded.

Question. What has the Corps done with the monies (both fiscal year 1998 and fiscal year 1999) that were specifically earmarked, at the request of the Corps, for the implementation of the administrative appeals process?

Answer. The Army budgeted for the administrative appeals process in fiscal year 1998 and fiscal year 1999 but did not request that the funds be earmarked. The Appropriations Committee report language stated the intentions of the Committee to have a full appeals process implemented. However, the appropriations we received in the fiscal years you mention were well below the President's budget requests which would have funded the full appeals process without sacrificing services to the public. More citizens depend on our responsiveness to their permit applications than the number that would use the appeals process.

The Regulatory Program is a labor-intensive program and, as such, requires a 2–3 percent increase in funds each year just to maintain staffing levels. Most of the Regulatory funds in these years was prudently used to maintain staffing levels of the districts in order to continue providing timely, equitable services to the public. In fiscal year 1999, we have been able to set aside some funds for the appeals of permit denials and conditions which will become effective on August 6, 1999.

Question. One of the purposes of the 1993 wetlands plan is that the regulatory program must be efficient, fair, flexible and predictable, and must be administered in a manner that avoids unnecessary impacts upon private property and the regulated public. The administrative appeal was designed to "increase fairness in the wetlands permitting process." Yet the Corps has implemented an appeals program that is opposed by the regulated community and only increases the burden on private property owners. Why has the Corps implemented an appeals program that contradicts the Presidents instructions?

Answer. The Corps has heard from members of the regulated community that they are pleased we have an appeals process for permit denials and conditions going into effect this year. Many in the development community wish we had gone further and adopted the appeals process for jurisdictional determinations as well. However, at five times the cost of appeals of denials and conditions, the cost of jurisdictional appeals has not made its implementation feasible.

The President's budget requests have included the funds for a full appeals process and they have been specific as to the costs required to fund it. These requests also

included funds to maintain current staff in order to ensure other services do not decline. In the fiscal year 1998 appropriation, there was a program increase equivalent to the cost of the appeals program, but no funds were provided to cover the labor cost increases needed to maintain the rest of the regulatory program. After three years of level funding at $101 million, the program was unable to maintain its staffing level and even today the districts have many vacancies. We believe that we would have unfairly sacrificed the basic services of the program (e.g., timely decisions and protection of the environment) and reversed the progress made to improve these services if we had set aside $5 million for jurisdictional appeals that would benefit fewer members of the public.

Question. In fiscal year 1997, the Corps acted on 65,138 Section 404 permit applications. Out of those, there were only 28 individual permit denials. As the Corps has most recently indicated that it plans to only implement a partial administrative appeals process for only permit denials, the Corps appears prepared to spend about $180,000 per permit denial. Meanwhile, property owners who disagree with the Corps over their jurisdictional determinations will still have to spend over a year in the permitting process before having ability to challenge the decision in court. Please justify the Corps decision to focus both its regulatory efforts and increased budget on a program already subjected to direct judicial review and how you believe this to be a fair an equitable process.

Answer. While we have supported the implementation of administrative appeals, the problem has been the affordability of a full appeals process and its impacts on the other parts of the Regulatory Program. Our cost estimate for appeals of permit denials and conditions is $1 million per year. The cost to implement a jurisdictional appeals process is estimated to be $5 million. To have dedicated $5 million from an already austere program for the full process would have meant shortages of regulatory personnel in the districts. This would have meant cutting back on other services. The program impacts a sizable segment of the public through its permit and enforcement-resolution programs. While everyone recognizes the advantages of jurisdictional appeals, it does not make sense to cut basic services in order to spend money on an activity which would benefit a much smaller group.

A wetland delineation does not restrict an applicant from using his or her property. He or she has to apply for a permit if the activity is in a wetland. The Corps' performance goal is to evaluate permit actions within 60 days, and the most recent analysis or performance data showed that this goal is achieved 95 percent of the time. If the permit is disapproved, or approved with certain conditions, then the applicant can bring a lawsuit against the Corps to challenge the delineation. In addition to 31 permit denials in fiscal year 1997, there also were 5,000 permits issued that were subject to conditions. These will be subject to the existing appeals process.

Everyone agrees that the appeals process is less expensive and less time consuming than litigation. The Corps' experience has been that most applicants are satisfied with a fair hearing in the local Corps district office, even if they do not get the result they want. We want the permit process to be fair and equitable to our citizens and we do not believe that litigation is the best way to resolve most differences.

Question. As indicated in the 1999 Conference Report, the implementation of an administrative appeals process for only permit denials is unacceptable. Furthermore, the Conference Report language directs the Corps to demonstrate its progress in implementing a full administrative appeal process when it requests its fiscal year 2000 budget. Why has the Corps recently insisted that it will only implement a program that addresses permit denials and stated publicly that it needs more money to implement a full program, against the express instructions of Congress?

Answer. The Army's position is to support Committee report language as fully and as best as we can, within the resources provided in appropriation acts. However, the appropriations we received in recent years were well below the President's budget requests. To have dedicated $5 million from our already austere program for the full process would have meant shortages of regulatory personnel in the districts. The public would suffer because, with fewer team members to evaluate permit applications, backlogs would grow and private citizens and businesspersons would have to wait longer to receive a permit. The permit program serves more citizens than would the appeals program so we decided that a phased implementation would work best for the program and the public. We believe that we would be doing the Nation a disservice by drastically curtailing or eliminating the other program activities in order to implement fully the administrative appeals program.

We have complied with the Congressional direction in the Committee report language as best as we could, consistent with our commitment to provide fair and responsive services to the public. The final regulation for appeals of permit denials and conditions was published in the Federal Register on March 9, 1999, with an

effective date of August 6, 1999. Permit denials and conditions made on or after March 9, 1999 are subject to this appeals process. The August implementation is necessary to recruit and train the appeals staff.

The process for the appeals of jurisdiction determinations is more complex and labor intensive. With the levels of funding for the Regulatory Program in recent years, the Corps has been unable to start up this part of the appeals process without compromising its services to the public. However, the Corps is making progress on drafting a jurisdictional appeals regulation and should be able to implement appeals of jurisdictional determinations in early fiscal year 2000 if the requested funds are appropriated.

QUESTIONS SUBMITTED BY BURNS

REGULATORY PROGRAM

Question. I am concerned about the Army Corps of Engineers new final rule on administrative appeals to Section 404 permits as published in the March 9 Federal Register. As I recall, the President, in his Wetlands Plan of 1993, directed the Army Corps of Engineers to establish an administrative appeals process for Section 404 permits. However, I understand that the final rule on administrative appeals will deal only with appeals of denied Section 404 permits, not appeals of jurisdictional determinations. Lacking this later provision disturbs me especially since Congress rejected this notion last year of not allowing the public to appeal jurisdictional determinations of the Corps. Why do you insist on not allowing such appeals when you stated in your March 10 testimony that you allow these types of appeals with the fiscal year 2000 budget?

Answer. The President's fiscal year 2000 budget request for the Regulatory Program includes funds for implementation of an appeals program for jurisdiction determinations. It would be implemented by a separate regulation published in the Federal Register. In fiscal year 1999, the Corps is implementing a system for appeals of permit denials and conditions within the appropriation of $106 million.

The Corps has worked very hard to improve its services to the public and run a program that is fair to landowners and commercial developers while still protecting wetlands. If the Corps were to go ahead with jurisdiction appeals in fiscal year 1999 at the current funding level, many basic permit evaluation and related services would have to be reduced to cover the costs of jurisdiction appeals. I would not like to see these services degraded. An appeals process for jurisdiction determinations is another step in the right direction, but the Corps needs the resources to implement it without sacrificing the basic services which the public expects and deserves.

Question. You recall Congress's strong language in the fiscal year 1999 appropriations to the Corps that not including appeals for jurisdictional disputes was unacceptable and that the Corps needed to demonstrate its progress to implement a "full administrative appeals process" with its fiscal year 2000 Budget request. You also remember that $5 million was provided in fiscal year 1999 to implement this administrative appeals process. Given this guidance along with the $5 million provided, why should not Congress rescind these funds given your new final rule?

Answer. The Corps is drafting regulations for the jurisdiction appeals which we hope to have completed this year for implementation in fiscal year 2000. As I stated earlier, appeals of permit denials and conditions will begin this year. The fiscal year 1999 appropriation was the same amount as the fiscal year 1998 appropriation and both were well below the requested amounts. The Regulatory Program has been struggling to cover basic services for several years because appropriations have not kept pace with the increasing program demands and costs. The fiscal year 1998 increase of $5 million, the only increase since fiscal year 1995, was used to cover basic labor-related costs such as salaries, training of regulatory personnel, and travel to permit sites. Overall staffing had declined due to three years without a budget increase. The population that will benefit from the appeals program is small compared to the general public who depend upon the Corps for permit evaluations, enforcement and resolution.

Question. If you believe lack of funding is part of the problem to administer an appeals program for jurisdictional disputes, why haven't you raised program fees to generate additional funds? What has been done with the money previously allocated by Congress to begin implementing a jurisdictional appeals process?

Answer. The President's budget includes proposed appropriations language concerning regulatory permit fees. The Corps has not changed its fee structure since 1977. The proposal in the President's budget would authorize the Secretary of the Army to pursue reasonable changes that the Corps would adopt following notice and

comment rulemaking. The objective is to consider changes that would make the fees more equitable and reduce the net Federal costs associated with the Regulatory program. Under the proposal, the revenues would be credited as offsetting collections, not added to the Regulatory Program account.

The fiscal year 1998 appropriation of $106 million was an increase of $5 million over the previous appropriations that had been held to $101 million in fiscal year 1995, 1996, and 1997, all of which were well below the President's requests. Most of the increase was used to cover labor costs, including filling vacancies in the districts. As a result of the level funding during these years, the Corps lost some district staff and basic program services were being affected.

Because of the constrained funding, the Corps was not able to fully satisfy the Appropriations Committee report language regarding administrative appeals. In fiscal year 1998, however, the Corps did begin steps to implement the program for appeals of permit denials and conditions, at an annual cost of $1 million. To have dedicated $5 million for the full appeals process would have had too severe an impact on the basic services.

Question. You are familiar with the recent decision by the U.S. Court of Appeals for the 4th Circuit in U.S. v. Wilson. In that case the court found invalid the Corps/EPA rule which asserts federal jurisdiction over an isolated wetland—a wetland not directly connected or adjacent to interstate waters—on the basis that degradation of the wetland could affect interstate commerce. The court required the existence of an actual effect on interstate commerce before the Corps could claim jurisdiction over the wetland. However, the Corps chose to apply the court's holding only within the five states that comprise the 4th circuit: Maryland, Virginia, West Virginia, North Carolina and South Carolina. The result is a federal regulatory program that is broader in 45 states and narrower in 5 states. How do you justify this uneven federal jurisdiction? Why not apply the court's holding throughout the nation? What is wrong with requiring a finding of an actual connection to interstate commerce before the federal government regulates private land?

Answer. While we agree that all states should be regulated consistently, we do not agree with the court holding in the Wilson case. We are currently considering issuing a regulation to clarify the Clean Water Act jurisdiction for isolated wetlands that would be applicable nationwide. The Fourth Circuit decision is only required to be applied within the Fourth Circuit. In this regard, we have issued interim guidance within the Fourth Circuit to comply with the court's decision while we develop the national regulation. While documenting an actual connection to interstate commerce would be possible in almost all cases, this approach would result in substantial delays and unnecessary work for the Corps and permit applicants.

Question. I understand the Corps has recently proposed to severely restrict the use of streamlined permits for minor projects—so-called nationwide permits—in wetlands near "impaired" waters, in "critical resource" waters and wetlands, and in the 100-year flood plain. This proposal is likely to halt many projects that are minor and routine, but nonetheless important to public and private entities alike. Can you tell me how much of the United States is in the 100-year flood plain?

Answer. The Corps estimates that approximately 8 percent of the land area in the continental United States is within the 100-year flood plain.

Question. How much of the 100-year flood plain is federal jurisdictional wetlands?

Answer. The Corps estimates that approximately 35 percent of the 100-year flood plain consists of wetlands that are subject to Section 404 of the Clean Water Act.

Question. How much of the wetlands within the 100-year flood plain are affected by authorizations under the nationwide permit program?

Answer. Nearly all of the 30 current nationwide permits that authorize Section 404 activities could be used to authorize discharges into wetlands within the 100-year floodplain. While all of the wetlands in the 100-year floodplain could be affected by the NWP program, most wetlands in the 100-year floodplain would not be affected by any specific NWP authorization. During 1997, for example, 21,176 acres of non-tidal wetlands were filled under general permit authorizations, including NWP authorizations. Many of these non-tidal wetlands are outside of the 100-year floodplain. We estimate that there are approximately 55,000,000 acres of wetlands in the 100-year floodplain. Therefore, only a small proportion of the wetlands in the 100-year floodplain are filled as a result of activities authorized by nationwide permits.

Question. What is the effect on flood control of the activities authorized by nationwide permits in wetlands in the 100-year flood plain?

Answer. Activities that result in permanent, above-grade wetland fills in the 100-year flood plain will decrease the flood-holding capacity of that floodplain. Unless that loss of flood-holding capacity is mitigated, that 100-year flood plain will in-

crease in area, resulting in the flooding of a wider area during 100-year storm events

Question. How does this proposal square with Congress' intent expressed in 1977 when it provided authority to allow nationwide permits and that the nationwide permits program was to be an integral part of the Section 404 regulatory program?

Answer. The proposal to prohibit the use of certain NWPs to authorize permanent, above-grade wetland fills in the 100-year flood plain is not contrary to the Congressional intent of 1977, because only certain activities would be subject to this prohibition. Congress also indicated that the NWPs were for activities that have minimal individual and cumulative effects. This proposal will help ensure that this standard is met. Some activities in the 100-year flood plain could be authorized by other NWPs.

It is important to note that NWPs are optional permits. If the landowner cannot comply with all conditions of the NWP, then he or she can apply for authorization through the individual permit process, or request authorization through a regional general permit, if such a permit is available for the proposed activity. We are considering ways to maximize protection of the 100-year flood plain capacity while not unnecessarily restricting use of NWPs.

Question. According to the Corps' own data, in fiscal year 1997 under the nationwide permits program, about 16,000 acres were permitted across the country—about 320 per state. In return, the Corps required the restoration of 28,600 acres as mitigation for the authorized impacts—about 572 per state. As a result, isn't there a net gain of 12,600 acres nationwide under the nationwide permits program—about 252 acres per state?

Answer. The data in your question is cited in the July 1, 1998, Federal Register notice that contains the proposed NWPs to replace NWP 26. The figures, however, are for activities authorized by the Corps through the standard permit process. For general permits, including NWPs and regional general permits issued by Corps district offices, the Corps required approximately 24,800 acres of compensatory mitigation (including the restoration, creation, enhancement, and preservation of aquatic resources) for approximately 21,400 acres of waters of the United States lost due to activities authorized by general permits. The net gain from activities authorized by NWPs and regional general permits during 1997 was 3,400 acres. Since the Corps databases combine impacts and mitigation figures for both NWPs and regional general permits, the Corps cannot separate how much of the wetland losses and gains are due to NWP activities. Also, some of the mitigation was for preservation of existing wetlands.

Question. If there is this kind of gain of wetlands, rather than loss, why are the restrictions proposed by the Administration necessary?

Answer. Each year we spend over $7 billion for flood damages. As a matter of policy we do not believe that we should encourage development of our flood plains. The purpose of the proposed flood plain restriction is to address concerns about public health and safety by reducing the loss of life and property caused by flooding, safeguarding sources of drinking water supplies, and protecting and restoring the natural functions of the Nation's flood plains. It is important to note that, although there is some wetland gain as a result of activities authorized by general permits, wetland gain is not necessarily providing additional flood-holding capacity or reducing flood hazards. For example, wetland restoration, creation, or enhancement activities required for wetland losses in the 100-year flood plain that are authorized by general permits may be conducted off-site and outside the 100-year flood plain.

Question. According to the Corps' own data, mining activities under the new proposed nationwide permit for mining activities will impact 145 acres of wetlands nationally, or 2.90 per state. If this is not a minimal impact, what is? Why is it necessary to further restrict the use of the proposed nationwide permit for mining activities?

Answer. Mining activities affect more than wetlands. These activities can have substantial adverse effects on streams and economically important fish species, such as endangered salmon, that inhabit those streams.

Question. With respect to "impaired waters," which is not defined in the Administration's proposal, how many waters will be designated as "impaired," and thereby off-limits to use of the streamlined nationwide permits under this proposal?

Answer. Based on data in a report published by the Environmental Protection Agency in 1996, approximately 252,000 river miles, 6.55 million acres of lakes, ponds, and reservoirs, 4,730 shoreline miles of the Great Lakes, and 11,155 square miles of estuarine waters in the United States are considered "impaired. " According to this report, few states have developed criteria to determine if the loss of wetlands is the cause of the waters being designated as impaired. As for the NWP restriction, the Corps is considering using the State lists, which are produced in accordance

with Section 303(d) of the Clean Water Act, to determine which waters are impaired. The sources of impairment subject to the NWP restriction include nutrients, organic enrichment resulting in low dissolved oxygen concentration in the water column, sedimentation and siltation, habitat alteration, suspended solids, flow alteration, turbidity, or the loss of wetlands. We are considering allowing the NWPs to authorize activities in impaired bodies of water, provided the authorized activity, plus any required mitigation, results in net improvement of the aquatic ecosystem of the impaired water.

According to this 1996 report, approximately 124,902 river miles are impaired due to siltation, 97,147 river miles are impaired due to nutrients, 69,391 river miles are impaired due to oxygen-depleting substances, 48,573 river miles are impaired due to habitat alterations, and 48,573 river miles are impaired due to suspended solids. For lakes, ponds, and reservoirs, approximately 3.36 million acres are impaired due to nutrients, 1.68 million acres are impaired due to siltation, 1.34 million acres are impaired due to oxygen-depleting substances, and 840,000 acres are impaired due to suspended solids. Approximately 311 shoreline miles of the Great Lakes are impaired due to nutrients and 311 shoreline miles of the Great Lakes are impaired due to oxygen-depleting substances. For estuaries, approximately 6,340 acres are impaired due to nutrients, approximately 3,458 acres are impaired due to oxygen-depleting substances, and 1,729 acres are impaired due to habitat alterations.

Question. Recent reports indicate that the Corps is about to release a final rule establishing an administrative appeals process within which to appeal decisions by the Corps. However, the reports quote John Studt, Chief of the Corps Headquarters Regulatory Branch, as acknowledging that the appeals process will not allow an appeal of the Corps determination that one's land is "wetlands" subject to the Corps jurisdiction. I'm concerned about that because right now I understand that in order to challenge assertion of jurisdiction by the Corps, the Corps requires a landowner to apply for a permit to use his land, and only if the permit is denied can the landowner go to federal court to challenge not only the permit denial, but the original determination by the Corps that the land is a wetland. I'm also concerned that the Corps is ignoring specific directions of the Senate Appropriations Committee. The Committee provided funding for an administrative appeals process for fiscal year 1998. The report accompanying the Energy and Water Appropriations bill for fiscal year 1999, S. Rep. 105–206, states that the committee supports implementation of an administrative appeals process "including appeals related to jurisdictional determinations" (p. 76). My question is, given these specific concerns and directives by the Senate, is the Corps going to issue an appeals process that includes appeal of determinations that a persons land is wetlands? And if not, why not?

Answer. Appeals of permit denials and conditions will begin in fiscal year 1999. The President's fiscal year 2000 budget request includes funding for a full appeals process that includes jurisdiction determinations. The appeals process for jurisdiction determinations will follow, once the necessary funding is available. We want to implement this initiative and urge Congress to provide this funding in fiscal year 2000.

QUESTIONS SUBMITTED BY SENATOR CRAIG

REGULATORY PROGRAM—ADMINISTRATIVE APPEALS

Question. What has the Corps done with the monies (both fiscal year 1998 and fiscal year 1999) that were specifically earmarked, at the request of the Corps, for the implementation of the administrative appeals process?

Answer. The Army budgeted for the administrative appeals process in fiscal year 1998 and fiscal year 1999 but did not request that the funds be earmarked. The Appropriations Committee report language stated the intentions of the Committee to have a full appeals process implemented. However, the appropriations we received in the fiscal years you mention were well below the President's budget requests which would have funded the full appeals process without sacrificing services to the public. More citizens depend on our responsiveness to their permit applications than the number that would use the appeals process.

The Regulatory Program is a labor-intensive program and, as such, requires a 2–3 percent increase in funds each year just to maintain staffing levels. Most of the Regulatory funds in these years was prudently used to maintain staffing levels of the districts in order to continue providing timely, equitable services to the public. In fiscal year 1999, we have been able to set aside some funds for the appeals of permit denials and conditions which will become effective on August 6, 1999.

Question. In fiscal year 1997, the Corps acted on 65,138 Section 404 permit applications. Out of those, there were only 28 individual permit denials. As the Corps has most recently indicated that it plans to only implement a partial administrative appeals process for only permit denials, the Corps appears prepared to spend about $180,000 per permit denial. Meanwhile, property owners who disagree with the Corps over their jurisdiction determinations will still have to spend over a year in the permitting process before having the ability to challenge the decision in court. Please explain your justification for the Corps' decision to focus both its regulatory efforts and increased budget on a program already subjected to direct judicial review, and how do you believe this to be a fair and equitable process?

Answer. While we have supported the implementation of administrative appeals, the problem has been the affordability of a full appeals process and its impacts on the other parts of the Regulatory Program. Our cost estimate for appeals of permit denials and conditions is $1 million per year. The cost to implement a jurisdictional appeals process is estimated to be $5 million. To have dedicated $5 million from an already austere program for the full process would have meant shortages of regulatory personnel in the districts. This would have meant cutting back on other services. The program impacts a sizable segment of the public through its permit and enforcement-resolution programs. While everyone recognizes the advantages of jurisdictional appeals, it does not make sense to cut basic services in order to spend money on an activity which would benefit a much smaller group.

A wetland delineation does not restrict an applicant from using his or her property. He or she simply has to apply for a permit if the activity is in a wetland. The Corps' performance goal is to evaluate permit actions within 60 days, and the most recent analysis or performance data showed that this goal is achieved 95 percent of the time. If the permit is disapproved, or approved with certain conditions, then the applicant can bring a lawsuit against the Corps to challenge the delineation. In addition to 31 permit denials in fiscal year 1997, there also were 5,000 permits issued that were subject to conditions. These will be subject to the existing appeals process.

Everyone agrees that the appeals process is less expensive and less time consuming than litigation. The Corps' experience has been that most applicants are satisfied with a fair hearing in the local Corps district office, even if they do not get the result they want. We want the permit process to be fair and equitable to our citizens and we do not believe that litigation is the best way to resolve most differences.

Question. As indicated in the 1999 Conference Report, the implementation of an administrative appeals process for only permit denials is unacceptable. Furthermore, the Conference Report language directs the Corps to demonstrate its progress in implementing a full administrative appeals process when it requests its fiscal year 2000 budget. Why has the Corps recently again insisted that it will only implement a program that addresses permit denials and that it needs more money to implement a full program, against the expressed instructions of the Congress?

Answer. The Army's position is to support Committee report language as fully and as best as we can, within the resources provided in appropriation acts. However, the appropriations we received in recent years were well below the President's budget requests. To have dedicated $5 million from our already austere program for the full process would have meant shortages of regulatory personnel in the districts. The public would suffer because, with fewer team members to evaluate permit applications, backlogs would grow and private citizens and businesspersons would have to wait longer to receive a permit. The permit program serves more citizens than would the appeals program so we decided that a phased implementation would work best for the program and the public. We believe that we would be doing the Nation a disservice by drastically curtailing or eliminating the other program activities in order to implement fully the administrative appeals program.

We have complied with the Congressional direction in the Committee report language as best as we could, consistent with our commitment to provide fair and responsive services to the public. The final regulation for appeals of permit denials and conditions was published in the Federal Register on March 9, 1999, with an effective date of August 6, 1999. The process for the appeals of jurisdiction determinations is more complex and labor intensive. With the levels of funding for the Regulatory Program in recent years, we have not been able to start up this part of the appeals process without compromising our services to the public.

MILO CREEK

Question. Milo Creek flows under the communities of Kellogg and Wardner, Idaho. During a rain on snow event in May of 1997, the creek jumped its banks and burst

through the city streets and yards. Raw sewage ran down the streets and backed up into one home running through its pipes and flowed out of the roof of the home. The situation is even more complicated because the area lies within the Bunker Hill Superfund site. The water running through the streets contained high levels of heavy metals. The blood lead levels obtained for 1998 showed an increase in children's levels in the direct area of the Milo Creek project. The communities and the State chose Alternative D of the Corps Reconnaissance Report Phase of 1995 for reconstruction and Phase I of the project has been completed and they are going to bid for Phase II. The COE has reviewed and commented on the Phase I and is awaiting bids for Phase II. However, the COE has not financially participated in the project. The communities are currently short of funds and with the high snow pack (150 percent of normal) they are expecting another flooding situation. If the project can't be completed this year, the potential for additional health and environmental related damages is likely to occur.

As the COE has been committed to the Milo Creek project through their studies, can you apply the money that has been held for the Milo Creek project and use the money for the Phase II portion of the project?

Answer. There are no Corps funds being held for the Milo Creek project. Also, the Corps has no authority to apply funds to continue the construction of the State's project. The Corps conducted a reconnaissance level study under its Section 205 authority to determine if a viable solution existed that would solve the flooding problems. While this study was favorable, it was only to recommend more detailed feasibility studies. Following the flooding of 1997, local officials decided not to continue with the more detailed study but focus on addressing the immediate problems. This resulted in implementation of a project by the State of Idaho.

The Corps could continue the project under the Section 205 program if a local sponsor is willing to participate in continuing the planning and design phases of the project, which could lead to the Corps funding the Federal share of construction.

LIBBY DAM, MT

Question. My office has been working with the landowners in Boundary County, Idaho. They have been experiencing ongoing difficulties with the operation of the Libby Dam in Montana. When the dam was built it was to be managed for flood control, power management and recreation. Since that time the government has added management for the Kootenai River sturgeon and salmon. The down river landowners have experienced serious erosion because of water flows coming from the dam.

The levels of the river are kept higher year long allowing for seepage to occur along the river causing additional erosion and crop loss. This comes about from sturgeon requiring a higher flow during the months of June and July, and salmon requiring faster water during August.

As the requirements for Endangered Species affect the management of the river, can you provide relief for the landowners during the rest of the year to allow their land to 'dry out' prior to the onset of these faster flows by adjusting river levels? Can the levels and flows be maintained year round to protect agriculture from damages and erosion?

Answer. We regulate Libby Dam for flood control within our overall operational constraints. The only time the land can 'dry out' is usually the latter part of March and early April. The flood control operation of Libby Dam requires releasing water during the fall and winter to assure that the reservoir has adequate flood storage space at the onset of spring runoff. In years of higher than normal snowpack, like 1996, 1997 and 1999, the Kootenai River is generally high from November until March. Depending upon how large the snow pack is in a given year, April may be the only opportunity to reduce flow in the spring.

Regarding the levels and flows, operation of the Libby project is constrained in large part because of the Corps of Engineers' commitment to implement actions consistent with the Biological Opinions in place under requirements of the Endangered Species Act. Current periods of low flow may be from September through November. In a wet winter, flow will be high from December through March, when April becomes the only opportunity to reduce flow.

QUESTIONS SUBMITTED BY SENATOR REID

CONSTRUCTION, GENERAL—CONTINUING AUTHORITIES

Question. In your statement, Dr. Westphal, you request $1.24 billion for the Construction General Program. Is this funding for new studies under the Continuing Authorities Program or completion of projects already in construction?

Answer. The $1.24 billion request for Construction, General includes $57 million for the Continuing Authorities Program. This amount is sufficient to allow a balanced program of study, design and construction, including both continuation of projects underway and new starts.

Question. You mention only one new "survey". I'm assuming this is a reconnaissance study. I understand that there may be a backlog in the General Investigation Program, has there been a decrease in requests from local agencies and interests for new surveys?

Answer. The fiscal year 2000 budget request includes $100,000 for one new start reconnaissance section 905b analysis. The new start surveys are being constrained to allow the backlog of projects approaching construction to be reduced. The number of requests for new start surveys has not decreased.

HARBOR SERVICES FUND

Question. In your statement, Mr. Secretary, you state that you will be pursuing Harbor Services Fund legislation separately from WRDA 99. When do you propose to send it to Congress?

Answer. I plan to send the legislative proposal to Congress in April.

CHALLENGE 21 PROGRAM

Question. Do you have any projects being considered under the new Challenge 21 program anticipated in Water Resources Development Act of 1999?

Answer. More than 50 potential sponsors of Challenge 21 projects have been identified. However, none has been formally selected yet. Regarding WRDA 99, it is not our intent to budget for specific Challenge 21 projects, but rather to treat this as a program in which projects would be proposed and funded throughout the year.

Question. Do you have a selection criteria established for projects that will be considered under this program?

Answer. Basically, all floodplains are eligible for the Challenge 21 initiative. Candidate projects must show the potential to both reduce flooding and restore riverine ecosystems. Priority will go to projects with strong local support and potential to include other Federal, non-Federal, and non-profit agencies in implementation of the project. More specific selection criteria will be established when funds are appropriated.

Question. You do not mention the Project Cooperation Agreements and reimbursement issue in your statement, but I would like to know whether you see this as a problem with future financing of projects? Without closure in the Congressional committees regarding this issue, should negotiations continue on Project cooperation Agreements with reimbursement as a component with non- Federal entities?

Answer. Yes, reimbursements could become a problem in the future if the amount continues to grow each year. There is a potential that the Corps could become a primarily a grant agency in some districts with large reimbursable type projects. We are concerned about the potential loss of technical expertise within districts as the number of reimbursement type projects increases. We want to work with Congress to resolve this problem, but it is the prerogative of Congress to make the decision on whether or not to continue to undertake such projects. Our current practice is not to begin negotiation of an agreement involving non-Federal work or advanced funds that could require possible future Federal appropriations until we have coordinated the request within the Administration and with the Appropriations Committees.

Question. In your statement, you say that you have fully implemented the Project Management concept and are streamlining the planning process to ensure completion of studies within budget and on schedule. Is your agency prepared to delegate the responsibility and authority to Division/District levels so that steps can be taken to fulfill this commitment?

Answer. We have model feasibility cost sharing agreements, which if signed without deviation, require no review at higher level in the Corps. If the sponsor requests deviations from the model, the agreement does require additional review.

Improving our project delivery process is an ongoing concern of mine. Over the past several years we initiated a number of process improvements to reduce the time required to take a project through the planning, design, and construction proc-

ess. We will continue to improve and refine our process in the future but there is only so much that can be done within the current authorization/appropriation process. A recent review of our process by the National Research Council determined that "* * * the Corps project planning procedures are generally sound and not excessively lengthy when compared to private sector planning studies." There are, however, areas where the Congress can help us further streamline the process. I am prepared to work with you to further expedite and improve our project delivery process.

Question. In your statement, you mention that changes to the Continuing Authorities Program recommended by a process action team will be implemented. Currently, sponsors are not required to provide cash until the construction phases of a project. How will your changes affect small jurisdictions (Nevada) with limited funds for upfront contribution?

Answer. Under the traditional Continuing Authorities Program, after the first $100,000, sponsors currently provide 50 percent of the cost of the feasibility study at the time of the feasibility study. Under the environmental authorities, S.1135 and S.206, the total study cost is Federally funded and then cost-shared at the time of construction. The current proposal would create a single project development process that captures some elements of each existing process. Cost-sharing would be initiated during planning on all projects; however, it would be at the more favorable construction cost-sharing percentage for all authorities. This will create a simpler and more equitable process for all sponsors under all authorities. We believe that local sponsors who have provided 50 percent of the feasibility cost for S.205 small flood control projects in the past would be satisfied with this proposed change.

RESTRUCTURING OF HEADQUARTERS AND DIVISION OFFICES

Question. In your statement, you reference the reorganization of Headquarters and Division offices. You mention a staff reduction of 14 percent from fiscal year 1996 to fiscal year 1999. Why is the General Expenses budget request the same as last year?

Answer. The executive direction and management of the Civil Works program, performed by the headquarters and division offices, plays a key role in providing oversight and direction to our important civil works mission. Staff reductions have permitted us to maintain an appropriate level of executive direction and management with a constant $148 million budget from fiscal year 1998 to fiscal year 2000. Since General Expenses is a labor-intensive account which requires personnel cuts to absorb cost growth, this flat budget requires us to absorb inflation, pay increases, and extraordinary expenses within the operating base. The projected fiscal year 2000 inflation of about 3 percent plus the 4.4 percent in pay increases translates to approximately $5.3 million of cost increases being absorbed.

REGULATORY APPEALS PROCESS

Question. In your statement, you recognize the struggle regarding the Regulatory appeals process. You have requested an increase of $11 million. How will the increase in funding be used to remedy the problems with the appeals process? Will you be adding staff to your Regulatory field offices in order to process applications in a timely manner?

Answer. Of the $11 million increase in the President's budget, $3 million is for labor cost increases and filling vacancies in the district offices, and $5 million is for implementation of the appeals process for jurisdiction determinations. Even without an appeals process, the Corps must maintain staffing levels in the districts to evaluate permit applications in a timely manner. This is the purpose of the additional $3 million.

Additional staff will be needed, however, to process administrative appeals for jurisdictional determinations. For appeals of permit denials and conditions, which is being implemented this year, each division office will have an appeals officer. More appeals officers will be added, perhaps in the districts, to handle the appeals process for jurisdiction determinations. Just as the Corps is committed to evaluating permit applications in a timely manner, it plans to do the same for appeals.

LOWER LAS VEGAS WASH WETLANDS

Question. In Las Vegas there is an area known as the Lower Las Vegas Wash Wetlands. The area feeds directly into Lake Mead and therefore is significant to the ecology of the region. There are significant water quality issues such as erosion and perchlorate contamination in the Wash. Unfortunately, the Corps has budgeted only $100,000 for this key environmental project. Could you give me a status update on this project?

Answer. Our final reconnaissance report was completed in June 1998. We have been working with the non-Federal sponsor, Clark County Department of Parks and Recreation, to develop and finalize the project study plan. The sponsor has been trying to identify a funding source for its cost sharing of the feasibility study for several months and is presently working with the Nevada Water Agency to secure the necessary non-Federal funds. Although we have currently scheduled the feasibility study to begin in August 1999, there remains a high level of uncertainty regarding the source of non-Federal funds.

Question. Since there is a Lake Mead Water Quality Forum that constitutes 21 members of the federal, state and local agencies, the meetings of which are periodically attended by the Bureau of Reclamation and Corps of Engineers, couldn't this project be a model of the National Research Council recommendation regarding watersheds as the basic planning unit?

Answer. Yes, the Lake Mead Water Quality Forum could be a model of the National Research Council recommendation regarding watersheds as the basic planning unit. The Lower Las Vegas Wash feasibility study will focus on habitat restoration opportunities in the watershed. Habitat restoration represents a specific component of the water quality focus of the Lake Mead Water Quality Forum. Since the Clark County Department of Parks and Recreation is a member of the Lake Mead Water Quality Forum, there may be information that would be beneficial to our study and theirs.

Question. The Water Quality Forum is moving toward the finalization of proposals which they will be presenting my staff. Will the Corps be able or willing to coordinate with the Forum as proposals are finalized at the local level?

Answer. Yes, we will review and evaluate the proposals of the Lake Mead Water Quality Forum to determine whether or not any of the proposals could be pursued under existing Corps authorities.

QUESTIONS SUBMITTED BY SENATOR BYRD

Question. Mr. Chairman, the President's fiscal year 2000 budget request for the Corps of Engineers of $3.9 billion in new budget authority is, generally speaking, much better than his budget request for fiscal year 1999, but the request is still below the level enacted for fiscal year 1999. While I am heartened that the Corps is receiving some support from the Administration for its programs and projects, I am concerned about the Corps; ability to carry out its critical mission. These are difficult budget times, despite all of the media hype about the projected budget surpluses, yet the Corps provides crucial services to the nation in the areas of navigation assistance flood mitigation, recreation opportunities, and power generation. I look forward to working with the Chairman and Ranking Member and other members of the Subcommittee to ensure that sufficient funds are made available for the Corps to continue its projects and programs.

In reviewing the specifics of the budget request for the Corps, I note that the request proposes a decrease of 27 million in general investigations and that this decrease will result in (1) less funds for navigation, flood damage prevention and shoreline protection studies, (2) reduced support for preconstruction engineering and design, (3) lower levels of flood plain management, and (4) a decrease in research and development.

Will these proposed program decreases for general investigations have a negative impact on the long-term health of our economy, our ability to protect communities from the ravages of floodwaters, or on our quality of life?

Answer. No. I do not believe that the proposed program decreases will have a negative impact on the long term health of our economy. We will continue to address the flood damage reduction needs of the nation's communities. Let me assure you that the Army Civil Works mission continues to very much be in the business of addressing, evaluating and solving the nation's water resource infrastructure problems. We are simply proposing a pause in the new study start program for the Corps this year in order to catch our breath and at least put a sizeable dent in the number of projects currently in the construction pipeline. I hope, if all goes well with the Corps program in 2000 as well as with the economy and the budget in general, that we can resume a higher new start program in the outyears.

I also note some major decreases are proposed in the construction account for locks and dams, for local protection projects, for beach erosion control projects, and for dam safety assurance projects.

Question. Will these program decreases proposed for construction projects have a negative impact in the short term on our economy and on flood protection?

Answer. The proposed fiscal year 2000 construction program generally does not fund flood protection projects at their optimum schedules and these projects would not be completed as expeditiously as possible. In this context, there could be a negative impact on the economy of an affected locality if flood protection were not in place when a flood occurred.

Question. Won't the proposed construction decreases have the effect of postponing the completion of many projects, delaying the benefits that will be realized from their completion?

Answer. About 66 projects included in the President's budget would be affected by the funding levels proposed for the fiscal year 2000 construction program. These projects would be delayed an average of 5 months from their optimum schedules. It is not possible to conduct a definitive analysis of the delayed benefits because so many assumptions about the future are required, and many of these decisions have not yet been made. Let it suffice to say there are costs associated with forgone benefits.

Question. Does the Corps of Engineers have construction capabilities above the level proposed in the President's budget request? What level of construction funding did the Corps include in its request to the Office of Management and Budget?

Answer. Yes, the Corps has construction capabilities that individually total about $2 billion. However, these capabilities consider each project by itself without reference to the rest of the program. The Army initially recommended a fiscal year 2000 program to OMB that totaled $1.815 billion. This amount was later reduced to $1.725 after enactment of appropriations for fiscal year 1999.

ENVIRONMENTAL PROJECTS AND AQUATIC ECOSYSTEMS

Question. While most activities of the construction account are proposed for decreases relative to the fiscal year 1999 funding level, two areas would receive modest increases: environmental projects and work involving aquatic ecosystems. While these increases are quite small, it seems noteworthy that while most construction activities are slated for decreases, these two are proposed for increases. What work is slated to be accomplished by the new funds recommended for environmental projects and aquatic ecosystems?

Answer. Although the request for fiscal year 2000 for the Section 1135 and Section 206 programs is $5.7 million greater than the request for fiscal year 1999, it is actually $7.2 million less than was appropriated for fiscal year 1999. The fiscal year 2000 request of $13 million is just $1.2 million more than we expended last year in fiscal year 1998. The $13 million will allow us to pursue a balanced program of work, including continuation of over 300 projects underway, coordination with local sponsors seeking new projects and initiation of new projects.

Question. Does the President's budget request propose to increase funding for environmental activities at the expense of navigation, flood mitigation and control, and dam safety?

Answer. For the fiscal year 2000 budget, 28 port development projects and activities are funded to meet optimum completion schedules in accordance with the proposed Harbor Services User Fee which will cover all construction costs. Amounts for 165 flood damage reduction, inland waterways, and shore protection projects and activities which rely on general tax revenues to finance their construction costs are constrained to a level that is about two-thirds of what is needed to maintain optimum completion schedules. The completion schedules for these projects is similar to the completion schedules prepared for the fiscal year 1999 budget. In addition, 9 high priority projects for mitigation, ecosystem restoration, and other purposes are funded to meet optimum completion schedules.

O&M INCREASE

Question. What types of needs and costs will be covered by the five percent increase for operation and maintenance.

Answer. While providing for the operation and maintenance of the Corps projects at justifiable levels of service in all of the five O&M business processes, (navigation, flood damage reduction, hydropower, recreation, and environmental stewardship) it better enables us to extend the useful life of our aging infrastructure.

Question. Does the proposed increase cover all of your anticipated increases for operations and maintenance?

Answer. As I mentioned, we can continue to safely operate and maintain our projects, however over the years budgetary limitations have resulted in a buildup of unfunded maintenance work items. Since that buildup has grown to be over $1.6 billion, we cannot conceivably cover all of that work in one year. The increase has

helped us to address some items which had been previously deferred while minimizing the number of new items to be added to the backlog.

IMPACT OF 2000 FUNDING LEVEL

Question. What types of needs and costs will be covered by the ten percent increase for the Regulatory Program?

Answer. The President's budget requests $117 million which is $11 million more than the fiscal year 1999 appropriation. The funds would be used as follows:

Administrative Appeals Process.—Allows applicants to contest regulatory decisions without going to court. In fiscal year 1999, the Corps will be implementing appeals of permit denials and conditions. The appeals process for jurisdiction determinations would be implemented with $5 million in the fiscal year 2000 budget request.

Maintaining Program Performance.—About $3 million is required to cover ordinary manpower cost increases and inflation. This is essential to allow filling of vacancies so program performance does not decline. At 90,000 permit actions in fiscal year 1998, workload is at an all-time high. The fact that there was no funding increase from fiscal year 1998 to fiscal year 1999 has meant staff vacancies in the districts cannot be filled this year.

Watershed Management Efforts and related area studies.—About $2.5 million in new funding would allow additional special studies of sensitive areas with intensive developmental pressures. Study products help predict permit impacts in a more comprehensive manner than is possible on a permit-by-permit basis. Individual future projects can then be evaluated much more efficiently and expeditiously, and some management plans can result in shared regulatory responsibilities with state and local governments, reducing duplication and delays.

Wetland Delineator Certification Program.—The Corps is developing a national program for the training and certification of non-federal individuals as certified wetlands delineators. Final implementation has not occurred because of funding constraints; Start-up costs for full implementation in all districts is approximately $500,000.

Question. Why is this increase needed for the for the Regulatory Program?

Answer. Because the Regulatory Program is a people-intensive program, the requested funds will continue the Corps commitment to serve the public in a fair and reasonable manner while ensuring the protection of the aquatic environment required by laws and regulations. In fiscal year 1998, the Corps authorized 90,000 activities in writing. With the number of permit activities increasing by at least 5,000 each year, the President's budget request will ensure that this level of service is maintained.

The Corps also will continue to pursue important initiatives. Regional and nationwide general permits increase cooperation with state and local governments and help streamline the regulatory process. The Corps will establish an administrative appeals process for jurisdiction determinations which, in addition to the appeals of permit denials and conditions to be implemented this year, will allow the public to challenge regulatory decisions without costly, time-consuming litigation.

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Answer. Because the Regulatory Program is a people-intensive program, the requested funds will continue the Corps commitment to serve the public in a fair and reasonable manner while ensuring the protection of the aquatic environment required by laws and regulations. In fiscal year 1998, the Corps authorized 90,000 activities in writing. With the number of permit activities increasing by at least 5,000 each year, the President's budget request will ensure that this level of service is maintained. The Corps also will continue to pursue important initiatives. Regional and nationwide general permits increase cooperation with state and local governments and help streamline the regulatory process. The Corps will establish an administrative appeals process for jurisdiction determinations which, in addition to the appeals of permit denials and conditions to be implemented this year, will allow the public to challenge regulatory decisions without costly, time-consuming litigation.

MARMET LOCKS AND DAM

Question. Congress provided $6,500,000 last year for land acquisition, detailed engineering, and design work associated with a major lock replacement program at Marmet Lock and Dam along the Kanawha River. The President's fiscal year 2000 budget request for the project is $9,800,000. The Marmet Lock and Dam is a major navigational structure, responsible for moving millions of tons of cargo to and from West Virginia every year. This major lock replacement project will help maintain and increase the efficient flow of commerce.

Last year the Corps estimated that is would need to buy about 250 properties for this project. How many have been purchased to date, and how many do you anticipate having purchased by the close of fiscal year 2000?

Answer. We have purchased approximately 35 properties so far, and we will have purchased approximately 110 properties by the end of fiscal year 2000.

Question. When do you anticipate that the land acquisition for the project will be complete? When do you anticipate that the land acquisition will be sufficiently far enough along that you can begin construction?

Answer. The land acquisition will take through fiscal year 2002 to complete. We will have completed sufficient land acquisition and design by the end of fiscal year 2001 to initiate construction of the lock in fiscal year 2002.

Question. How much money will be needed beyond fiscal year 2000 to complete the project? What work will remain to be done?

Answer. An additional $264,200,000 is needed beyond fiscal year 2000 for continued engineering and design of the lock and appurtenant features, acquisition of the 140 remaining properties, and construction of the lock.

Question. Are there additional Corps capabilities at Marmet for fiscal year 2000 above those identified in the President's budget?

Answer. The Corps has the capability, subject to the qualifying language, to use an additional $1,550,000 to advance engineering and design and land acquisition. This would accelerate project completion by approximately six months.

Senator BYRD. Gentlemen, I am encouraged that the President's budget for fiscal year 2000 includes support for this project for the inland navigation system. Marmet has a strong benefit/cost ratio because of the substantial value of the coal, chemicals, and other products shipped along the Kanawha River and the Ohio system. While the budget request indicates an increased level of support by the Administration for this project, I would remind the Corps that many people are affected by this project—not just those whose lives and homes are being disrupted by the construction, but also all of the people whose work depends upon the locks, the shipping, and the products that go through Marmet. Therefore, it is incumbent upon all of us to help move this project forward as efficiently as we can to avoid any unnecessary delays.

GREENBRIER BASIN FLOOD PROTECTION

Question. The Greenbrier Basin of eastern West Virginia is one of the prettiest parts of the State and one prone to extensive flooding. The Water Resources Development Act of 1996 authorized the Corps to implement local protection plans to help mitigate damage from future flooding. The fiscal year 1997 Energy and Water Development Appropriations Act provided $500,000 for the design and implementation of a flood warning system in the Greenbrier basin.

Has the Corps reached an agreement with the City of Marlinton on a local protection plan? Have the details of the plan been worked out and agreed to among the participants?

Answer. The Corps has been working with the City of Marlinton, and has generally come to an agreement for a plan of protection. The local protection plan includes a levee down the front side of Marlinton that borders the Greenbrier River and a secondary levee along the Riverside area of town. For the remaining flood protection, two alternatives are presently under consideration. One involves the extension of the levee upstream along Knapps Creek, the other would be for construction of the Knapps Creek diversion channel.

Question. Has a local sponsor been identified for the non-Federal part of the local protection plan? What is the non-Federal cost? What is the total cost?

Answer. The City of Marlinton has expressed an interest in being the local sponsor. The total project cost is estimated to be approximately $54,700,000. The city qualifies for a reduction in its cost share to 14 percent based on ability-to-pay provisions. The non-Federal share would be approximately $7,700,000; however, the city may need other assistance to provide this amount. The Federal share would be approximately $47,000,000; however, in accordance with Section 574 of the Water Resources Development Act of 1996, the amount authorized to be appropriated for the Greenbrier River Basin project is limited to $12,000,000.

Question. What activities are currently being conducted on the Marlinton local protection plan?

Answer. The Corps is finalizing the design, conducting field investigations, and evaluating the feasibility of the two alternatives in the Knapp Creek area.

Question. What capabilities does the Corps anticipate for fiscal year 2000 for the Marlinton local protection plan?

Answer. The Corps capability for the Marlinton local protection project, an element of the Greenbrier River Basin project, is $1,000,000, subject to the qualifying language. If provided, these funds would be used for continuing the Marlinton detailed project report.

Question. What is the status of the flood warning system for the Greenbrier basin?

Answer. The system was installed in 1997 and 1998, within the 18 months specified in the 1997 Energy and Water Development Appropriations Act. The system is operational. The Project Cooperation Agreement was modified so that an additional stream gage could be installed this spring at Renick, West Virginia.

Question. How much will it cost to maintain the flood warning system once it is fully operational?

Answer. It will cost approximately $32,400 per year to operate the rain gages, including the Renick gage. The State of West Virginia is the project sponsor.

Question. What future construction and operational needs are required for the flood warning system?

Answer. Installation of the gage at Renick will complete the flood warning system.

Question. How many stream gages and how many rain gages are included in the flood warning system?

Answer. The system includes 6 stream gages, including the gage at Renick, and a number of rain gages operated by the National Weather Service.

Question. What is the relationship between the Corps and the National Weather Service with regards to the warning system?

Answer. The National Weather Service assisted in the installation of the computer work stations at the stream gages and operates the rain gages. The U.S. Geological Survey also has assisted with installing the housing for the stream gages.

WEST VIRGINIA TUG FORK FLOOD PROTECTION PROJECTS

Question. For fiscal year 1999 Congress provided $11.35 million to continue work on flood protection projects in southern West Virginia along the Tug Fork and its tributaries as part of the multi-state Section 202 project. While the President's request includes $5.4 million for Levisa and Tug Fork projects for fiscal year 2000, all of these funds are slated for other States.

In fiscal year 1999 for the Section 202 Levisa and Tug Fork project area in West Virginia, $4,500,000 was appropriated to initiate the McDowell County project and $1,475,000 for the Upper Mingo County project that specifically included the Mingo County tributary areas. I understand that both project reports have been completed, yet as of today, the Corps has yet to execute project agreements for either area. What accounts for this substantial delay?

Answer. For McDowell County there was an unresolved issue over the level of design detail in the report necessary for proposed ring levees. Subsequent to submittal of the report, there has been consideration given to a plan involving Federal participation in the consolidation of local schools in lieu of constructing ring levees for the schools. This assessment of plan details and examination of authorities also has contributed to delays in completion of the report review and execution of an agreement. The report is expected to be approved in April 1999, and execution of the PCA within 90 days after report approval. For the Upper Mingo County tributaries area, it took five months to resolve project issues and obtain approval of the supplemental report. The supplemental report was approved on March 1, 1999, and the supplement to the Project Cooperation Agreement is under review.

Question. What activities will remain to be done beyond fiscal year 1999 in lower Mingo County and what is the cost of the remaining effort? Does the Corps have capabilities in lower Mingo County in fiscal year 2000?

Answer. Non-structural flood damage reduction, including measures such as elevating structures, demolishing and replacing structures, and structure-specific ringwalls, would continue beyond fiscal year 1999 if funds were provided. The remaining cost is $7,000,000. The Corps capability, subject to the qualifying language, for fiscal year 2000 is $1,300,000.

Question. What activities will remain to be completed beyond fiscal year 1999 in upper Mingo County along the Tug Fork and its tributaries and what is the cost of the remaining effort? Does the Corps have capabilities in upper Mingo County in fiscal year 2000?

Answer. Non-structural flood damage reduction measures would continue beyond fiscal year 1999 if funds were provided. The remaining cost is $18,200,000. The Corps capability, subject to the qualifying language, for fiscal year 2000 is $600,000.

Question. What activities will remain to be done beyond fiscal year 1999 in McDowell County, West Virginia and what is the cost of the remaining effort? Does the Corps have capabilities in McDowell County in fiscal year 2000?

Answer. Non-structural flood damage reduction measures would continue beyond fiscal year 1999 if funds were provided. The remaining cost is $148,800,000. The Corps capability, subject to the qualifying language, for fiscal year 2000 is $2,200,000.

Question. What activities will remain to be completed beyond fiscal year 1999 in Wayne County and what is the cost of the remaining effort? Does the Corps have capabilities in Wayne County in fiscal year 2000?

Answer. Non-structural flood damage reduction measures would continue beyond fiscal year 1999 if funds were provided. The remaining cost is $6,000,000. The Corps capability, subject to the qualifying language, for fiscal year 2000 is $300,000.

Floods have repeatedly devastated many counties in West Virginia, including those that are part of the Tug Fork basin. The Section 202 project provides important protection to communities and livelihoods. Each of these project areas has local sponsors to fund the non-Federal portion of the project. I look forward to working with the subcommittee to make further progress on providing flood protection for the West Virginia parts of Section 202.

WHEELING RIVERFRONT

Question. Wheeling, West Virginia, is in the midst of a major preservation and rehabilitation project to protect and enhance its cultural and commercial resources in its central business district. I understand that the Corps has had discussions in the past with the Wheeling National Heritage Area about how joint efforts along the Wheeling Riverfront could be arranged and about what capabilities the Corps might have in participating in this project. This is an important project and I believe the Corps might have some expertise that would be useful in this effort.

What would be the first step toward involving the Corps more closely with the revitalization efforts, underway in Wheeling?

Answer. Since the Wheeling waterfront project is recreational in nature, and since recreation projects have historically been assigned a low budgetary priority, Corps involvement would not occur unless Congress added funds for the project. If Congress did so, the Corps could conduct a reconnaissance study to determine what role the Corps could play in the future development of the Wheeling Riverfront project.

Question. What resources would be needed by the Corps in order for it to actively participate in the Wheeling Riverfront project?

Answer. The normal cost of a reconnaissance study is $100,000.

Question. What legislation, if any, would be required to authorize the Corps' participation?

Answer. A Committee study resolution provides the authority for the Corps to study opportunities for urban waterfront development along the Ohio River. This authority extends to design. The project is on the pool of Hannibal Lock and Dam, West Virginia and Ohio. Section 4 of the 1944 Flood Control Act, as amended, provides the authority for the Corps of Engineers to participate in the addition of recreation facilities on Corps lands at Corps projects. However, additional authorization in law would be required for the Corps to participate in recreation development on non-Corps lands.

Question. What unit of the Corps would have the lead in this participation?

Answer. Wheeling is within the geographic boundaries of the Pittsburgh District, which would be the lead District. If necessary, resources from other Corps offices could be made available to assist in this project.

Question. What would be the cost-share requirements for the project?

Answer. A reconnaissance study to determine the Federal interest in future Corps involvement would be 100 percent Federally financed. The feasibility phase, if applicable, would be cost shared 50 percent Federal and 50 percent non-Federal under a Feasibility Cost Sharing Agreement. Design would be financed 75 percent Federal and 25 percent non-Federal under a Design Agreement. Project construction costs would be cost shared 50 percent Federal and 50 percent non-Federal. Design costs would be folded into project construction costs, and the non-Federal sponsor would contribute the other 25 percent of design costs in the first year of construction. The non-Federal sponsor for the feasibility, design, and construction phases must be a unit of government. Funds provided by another Federal agency may be used for the non-Federal share if such use is authorized in law.

Question. What types of capabilities might the Corps be able to bring into the Wheeling Riverfront project (including the Ohio River front area and the mouth of Wheeling Creek where it enters the Ohio River)?

Answer. The Corps has extensive capabilities in recreation master planning, environmental assessment, facilities engineering and design, and construction management that could be used in development of this project.

WEST VIRGINIA STATEWIDE FLOOD PROTECTION PLAN

Question. In 1998, the Corps signed an agreement with the West Virginia Soil Conservation Agency to conduct a comprehensive study of the chronic flood problems that devastate West Virginia, to be conducted on a 50/50 cost share basis.

How long will the study take to complete?

Answer. The cost sharing agreement for the second and last phase of the study is scheduled for execution in May 1999 and the study is scheduled for completion in July 2001.

Question. What will the study do?

Answer. The study will develop a comprehensive strategy for addressing flooding problems throughout West Virginia, concentrating on unmet flood control needs, especially in high-priority areas of the state where chronic flooding occurs.

Question. What will the study provide?

Answer. The study will provide a statewide flood damage assessment, identification of existing flood control shortfalls, assessment of existing Federal and state flood protection programs, formulation of flood protection and floodplain management program improvements, assessment of non-Federal financing capability, identification of financing needs for investment in flood protection, development of a long-term investment strategy for the state, and a detailed report on a statewide flood warning system.

Question. What has been appropriated by the Federal Government to date for this project?

Answer. Appropriations for the West Virginia Statewide Plan total $950,000 through fiscal year 1999.

Question. What additional Federal resources are needed for this project?

Answer. No additional funds are required to complete the study.

Question. What level of support (funding and in-kind services) has been provided by the non-Federal cooperator?

Answer. $50,000 was used for a reconnaissance-level investigation at Federal expense. The feasibility study cost is $1,800,000 and will be cost shared 50 percent Federal and 50 percent non-Federal in two phases. For Phase I, the West Virginia Soil Conservation Agency, which is the study sponsor, provided $213,600 in cash and $62,000 in in-kind services. The cost sharing agreement for Phase II is scheduled for execution in May 1999. Details of cash contributions and in-kind services for Phase II are being identified by the study sponsor at this time.

Question. What is the current status of the project?

Answer. Several work tasks identified in the project study plan currently are underway. The Corps and the National Resources Conservation Service are updating statewide flood damage data and information on flood control projects in the state that are either completed, under construction, or in various planning stages. The Corps and the West Virginia Soil Conservation Agency are arranging the initial meeting of the Flood Mitigation Task Force, which is a part of the Statewide Plan process, and are developing the schedule for a series of workshop meetings to be held across the state to solicit citizen and local government input into the planning process. The workshop meetings are likely to begin in early May.

ROBERT C. BYRD LOCKS AND DAM

Question. A major project was authorized in 1986 at Gallipolis, West Virginia, to improve the lock system of the Robert C. Byrd Locks and Dam. This project is making great progress, but I understand that several years worth of work remain. The President's budget request for fiscal year 2000 includes $7.15 million for this project.

What is the total cost of the project and how much funding is needed beyond fiscal year 1999?

Answer. The total project cost is $373,000,000. The project's balance to complete after fiscal year 1999 is $16,278,000.

Question. What is the status of the on-site mitigation work?

Answer. The on-site mitigation construction contract, which was awarded in September 1997, is 35 percent complete, with completion scheduled for December 2001. This effort consists of construction of a 50-acre wetland area and fish rearing ponds.

Question. What plans are there for providing fishing access to the Ohio River at the Locks and Dam?

Answer. Fishing access on the West Virginia bank of the Ohio River is complete. A fishing access site at the abutment on the Ohio side of the river will be constructed in 2001.

Question. What has been your relationship with the West Virginia Division of Natural Resources on this project?

Answer. The Corps has established a very good working relationship with the West Virginia Division of Natural Resources (WVDNR). They have actively participated in the design of the mitigation features for this project and they participate in all partnering sessions for the mitigation work. The on-site mitigation contract includes a system of fish rearing ponds. Upon completion of this contract, the WVDNR will assume operation and maintenance of this area as its primary fish hatchery in West Virginia.

Question. What additional capabilities does the Corps have for fiscal year 2000 beyond those identified in the President's budget request for work on this project? If funding is provided, how much will the project completion be accelerated by these additional capabilities?

Answer. In addition to the fiscal year 2000 budget request of $7,150,000, the Corps has additional capability, subject to the qualifying language, of $2,150,000, which would advance project completion by one year.

WINFIELD LOCK & DAM

Question. The Winfield Lock Replacement project has completed all of phase I and most of phase II-A. The new lock chamber at Winfield is capable of handling 11 jumbo barges at one time and can speed barge traffic through the lock in less than 45 minutes. While much of the construction has been completed, work remains on site protection and clean-up, onsite environmental mitigation, and post-project efforts involving the National Guard. The President's fiscal year 2000 budget request includes $1.4 million for this project.

What is the status of the transfer of two buildings to the National Guard?

Answer. A License Agreement was sent in March 1999 to the West Virginia National Guard for signature. This agreement will permit the Guard to use the buildings until the final transfer is accomplished next year.

Question. What is the status of the bank erosion work?

Answer. Bank erosion corrective actions were initiated in January 1999 and are scheduled to be completed by mid-summer 1999.

Question. What additional capabilities does the Corps have in fiscal year 2000 for the project above those already identified in the President's budget request? By what length of time would these additional capabilities accelerate the completion of the project?

Answer. In addition to the fiscal year 2000 budget request of $1,400,000, the Corps has additional capability, subject to the qualifying language, of $1,800,000 that would advance completion by two years.

BLUESTONE DRIFT AND DEBRIS

Question. Drift and debris periodically accumulate behind Bluestone dam. This accumulation of drift and debris has been identified as a significant problem. Following a study authorized in the Water Resources Development Act of 1992, the Corps identified a preferred plan for managing the drift and debris. For fiscal year 1999, $420,000 was appropriated to finalize the construction design for handling the drift and debris and for continued development of a public awareness program.

What benefits will be derived from the completion of the drift and debris project?

Answer. Completion of construction of the multi-level intake structure would prevent accumulation of drift and debris during periods of high inflow to the project and reduce the accumulation of drift and debris pileups on the National Park Service property at Sandstone Falls.

Question. What operational changes will occur as a result of the completion of the drift and debris project?

Answer. Completion of the multi-level intake structure would not require any operational changes to the project.

Question. What group is covering the non-Federal costs of the project?

Answer. The current and prospective drift and debris management program associated with the project has four components, namely construction of the multi-level intake structure at the project, acquisition of debris removal equipment, the public awareness program, and cleanup of debris downstream on National Park Service lands. The Corps could construct the multi-level intake structure and acquire equipment as part of project operation and maintenance at full Federal expense. The Corps, the National Park Service, the West Virginia Division of Environmental Pro-

tection, and other non-Federal interests are participating in the public awareness program. The Corps participation is part of project operation and maintenance. The downstream cleanup currently is financed by the National Park Service and the West Virginia Division of Environmental Protection. If non-Federal cost sharing in the construction of the intake structure or Corps cost sharing in the downstream cleanup were authorized, the West Virginia Division of Environmental Protection would be the cost sharing sponsor.

Question. What additional Congressional legislation will be required to implement the preferred plan?

Answer. No authority is required for the Corps to construct the multi-level intake structure, acquire equipment, or continue to participate in public awareness efforts. Legislation would be required for the Corps to participate in the downstream cleanup.

BLUESTONE DAM SAFETY PROJECT

Question. What risks are currently posed by the Bluestone Dam to the communities and environments below the dam?

Answer. Under current design criteria, the probable maximum flood is estimated to overtop the existing dam by 13 feet. Dam failure would cause catastrophic flooding along the Greenbrier, New, Gauley, Kanawha, and Elk Rivers, including the metropolitan area and heavily industrialized capital city of Charleston, West Virginia. This would place more than 115,000 persons at risk, with property damages in excess of $6,500,000,000.

Question. What level of flooding would cause the dam to fail catastrophically? How likely that such a level of flooding might occur? How likely is it that the dam will catastrophically fail in the next 50 years? In the next 100 years?

Answer. The dam would be in danger of failing if pool levels approaching the top of the existing dam were to occur. This flood level, known as the 500 year flood event, has a 0.2 percent chance of occurring in any year, a 10 percent chance of occurring at least once in the next 50 years, and an 18 percent chance of occurring at least once in the next 100 years.

Question. What operational changes would take place as a result of the completion of the dam safety project?

Answer. Daily operations of the project would not change. For catastrophic floods approaching a probable maximum flood level, the six hydropower penstocks would be used to provide additional discharge capacity. Once activated, the penstocks would remain open until pool levels return to normal and the penstock bulkheads could be restored. Use of the penstocks does not increase downstream damage; however, the time required for pool levels to return to normal could delay the start of cleanup efforts by several days.

Question. What are the benefits that might be associated with combining the dam safety project and the drift and debris project?

Answer. The main benefit attributed to a combined effort would be that a single structure could be built for the resident engineer's office that would serve both construction efforts. It is possible that the two efforts could be constructed under a single contract.

Question. Could the drift and debris project precede the dam safety project? What additional costs and risks might this impose?

Answer. The drift and debris project could precede the dam safety project. However, there are increased risks to life and property associated with any delay in initiating the dam safety project.

ISLAND CREEK AT LOGAN

Question. The Water Resources Development Act of 1986 authorized a non-structural (local protection plan) project combined with some channel improvements for Island Creek at Logan. This area experienced major flooding in 1957, 1963, 1974, and 1977. The Corps completed studies in 1993 and recommended a plan of action that would provide significant flooding reductions and have a positive benefit-cost ratio of 1.34. $1.5 million in Federal funds have been spent on the project, but activity stopped in fiscal year 1994 because the Logan County Commission, the local sponsor, was unable to provide the non-Federal share of the project implementation costs. Last year, the State of West Virginia agreed to provide funds to assist the Logan County Commission in sponsoring the project.

Have any Federal construction funds been spent on this project?

Answer. No Federal construction funds have been spent to date.

Question. With the local sponsor now able to provide the non-Federal cost share, are more general investigation funds needed for completing studies or are only construction funds needed to implement the plan of action?

Answer. $25,000 in General Investigation funds have been reprogrammed to review plan formulation and conduct an economic update of the project benefits. In fiscal year 2000, the Corps has a capability, subject to the qualifying language, of $500,000 in General Investigations funding to develop a project management plan and complete a General Reevaluation Report. The Corps could complete preconstruction engineering and design in fiscal year 2001.

Question. What can the Corps do to re-initiate this project?

Answer. The Corps recently reprogrammed $25,000 to review plan formulation and conduct an economic update of the project benefits to reaffirm the Federal interest in further study and project implementation.

LONDON LOCK AND DAM

Question. The fiscal year 2000 budget request includes $600,000 to initiate construction of the London Lock and Dam rehabilitation project. This project would replace the upper guard wall and extend the lock chamber. The rehabilitation project is needed to avoid any future lockage delays on the Kanawha River at London, where traffic exceeded 8 million tons in 1995.

What is the total cost of the project?

Answer. The total cost of the project is $20,300,000.

Question. When is it scheduled to be completed?

Answer. The project is scheduled for completion in September 2004, subject to receipt of funding to initiate the project construction in fiscal year 2000.

Question. Is any Congressional action other than appropriations required for the project?

Answer. No additional Congressional action is necessary to proceed with the project.

Question. Does the Corps have additional capabilities for fiscal year 2000 that would accelerate the completion of this project were funds available?

Answer. In addition to the fiscal year 2000 budget request of $600,000, the Corps has additional capability, subject to the qualifying language, of $800,000, which would advance completion by one year.

LOWER MUD RIVER

Question. The Lower Mud River project, authorized by Section 580 of the 1996 Water Resources Development Act, was originally a Department of Agriculture project. Its purpose is to mitigate the repeated flooding events that have caused extensive damage to the city of Milton, West Virginia.

What is the status of the limited reevaluation report being conducted by the Corps on the earlier Department of Agriculture study?

Answer. The Corps is preparing to enter into a design agreement with the West Virginia Soil Conservation Agency to cost share work on the Limited Reevaluation Report. It is anticipated that the agreement will be signed in May 1999 and the report will be completed in December 1999.

Question. What group is the non-Federal sponsor for the reevaluation and what funds have they provided for the reevaluation?

Answer. The West Virginia Soil Conservation Agency will serve as the non-Federal sponsor for the reevaluation report. It will provide required cost shared funds at the time of execution of the design agreement.

Question. What capabilities does the Corps have for fiscal year 2000 to move forward with the Lower Mud River project? What funding would be required?

Answer. In fiscal year 2000, the Corps has the capability, subject to the qualifying language, of $1,000,000 to continue preconstruction engineering and design under the General Investigations appropriation.

COOPERATIVE AGREEMENTS

Question. I understand that the Corps has developed model cooperation agreements with "cookie cutter" language intended to expedite the review and approval process, yet review and approval still takes many months. This type of delay costs valuable time, may negatively impact the economy, and could increase risks for communities and businesses from flooding and transportation uncertainties. At what level within the Corps are project cooperation agreements approved?

Answer. Project cooperation agreements are approved at the Washington level unless there is an approved model agreement for that particular type of project. If there is an approved model and the district does not deviate from the model, then

approval is delegated to the division or district commander. Except for the Continuing Authorities Program, my office approves all agreements not in accordance with an approved model.

Question. Is it the intention of the Corps to eventually delegate approval for all project cooperation agreements to the district level or lower?

Answer. While delegation of approval of Project Cooperation Agreements was considered, it is not the intention of the Army to delegate the approval of these important agreements, except where model agreements are in place and followed. The Army considers these agreements to be important policy documents laying out the respective responsibilities and commitments of both the project sponsor and the Federal Government. Moreover, once signed, such agreements bind the Government just as they bind the non-Federal sponsor. We intend to work with the Corps to identify and put into practice changes in the requirements and review process to improve the efficiency with which agreements can be reviewed and approved.

Question. What is the status of the implementation of the project cooperation agreement "cookie cutter" language?

Answer. I strongly encourage the efforts of the Corps to develop as many model agreements as possible. The approval of more types of model agreements, along with options appropriate to specific situations, will help to expedite the negotiation process with the sponsor and minimize the number of agreements that must come to the Washington level because they are not in accordance with law or Army policy. The Corps has developed, and I have approved, the use of over 35 model agreements. The Corps is currently working an additional five potential models and is in the process of identifying what other models are needed to support further delegation of project cooperation agreements to the division or district commanders. In addition to the development of additional model agreements, opportunities are being investigated to simplify and expedite the Washington level approval process.

QUESTIONS SUBMITTED BY SENATOR MURRAY

COLUMBIA RIVER FISH MITIGATION PROJECT

Question. In the Conference Report to the Energy and Water Development Appropriations Act for fiscal year 1998 (H. Rept. 105–271), the conferees requested the Northwest Power Planning Council, with the assistance from the Independent Scientific Advisory Board (ISAB), to review the Corps' major fish mitigation capital construction activities in the Columbia River Basin. The Power Planning Council divided the review into three phases. The first two reports were submitted to the Committees in July 1998 and January 1999. The final report is due next month.

Answer. One area reviewed by the ISAB was the Corps' work to develop surface bypass/collection facilities at Lower Granite Dam and other mainstem projects. The Power Planning Council concurred with the ISAB's findings that surface collection continues to show promise and should continue to be pursued by the Corps.

Question. How much of your fiscal year 2000 request is allocated to developing and testing surface bypass and surface spill technologies? Also please identify which projects are involved in this work, and what level of funding is proposed for each.

Answer. Approximately $35 million is requested for surface bypass development and related spill effectiveness and survival evaluations. In addition, $5.9 million is requested to continue the 'fast track' gas abatement efforts which may improve spill conditions for juvenile passage. Surface bypass work will be carried out at Lower Granite for $8.26 million, at John Day for $5.31 million, at The Dalles for $5.64 million and at Bonneville for $15.3 million.

Question. In its first report, the ISAB recommended that the Corps pursue surface bypass technologies at John Day Dam instead of extended length screens. Please explain how the Corps is implementing this recommendation.

Answer. The Corps is investigating surface bypass at the powerhouse through use of existing skeleton bays and funding in fiscal year 2000 would be used to initiate plans and specifications for construction of the surface bypass prototype facility. At the spillway, fiscal year 2000 work would include testing an overflow weir and initiating a Feature Design Memorandum for a raised spillway bays crest, subject to preliminary analysis in fiscal year 1999.

The ISAB has concluded that the subject of adult passage at Columbia and Snake River dams has not been adequately dealt with. The scientists believe that the Corps' planned activities relating to adults are supportable, but probably not sufficient to ensure that adult spawning migrations are unimpeded and completed with minimal mortality induced passage.

Question. It is my understanding that only about 9 percent of the Corps' fiscal year 2000 budget request is proposed for adult passage activities. Do you intend to reexamine this allocation in light of the ISAB's findings that more needs to be done for adults?

Answer. Yes. The ISAB report on adult measures did not identify specific passage measures in addition to those underway. However, the Corps is presently coordinating with regional interests to determine what additional passage improvements should be pursued. Results of this coordination may lead to redirection of funds within the budget request.

Question. What additional measures to assist adults will you consider?

Answer. We are looking at both facility improvements and additional studies to better understand the critical areas of uncertainty, for improved adult fish passage at Corps of Engineers dams. The facility improvements include additional backup auxiliary water supply systems, automated fishway control systems, replacement/upgrade of diffuser gratings and valves, refurbishing/upgrade of fishway entrances and weirs, upgrade of fishway staff gauges, and rebuilding fishwater pumps. Additional study areas, developed in coordination with regional salmon managers, include: relation of adult fallback at dams to specific project operations and impacts on fish survival and reproductive success; causes of delay in fishways; identification of factors causing unaccountable losses of adults; quantification of straying and the impact on survival; effects of water quality on migration and survival; evaluation of kelt (spawned-out steelhead) passage and survival, and improvement of dam count accuracy.

The ISAB's review has provided useful recommendations on a variety of activities including extended length screens, gas abatement activities, surface bypass systems, adult passage, and other items.

Question. How will the Corps ensure that these recommendations are given full consideration in the development of future budgets for the program?

Answer. The Corps intends to seek regional recommendations regarding how the findings of the ISAB and the Northwest Power Planning Council can be implemented in the Columbia River Fish Mitigation Project. This is consistent with language in House Report 105–271 which states 'Upon completion of the review, the Corps of Engineers shall seek regional recommendations, as provided by the Bonneville Power Administration Fish and Wildlife Budget Memorandum of Agreement dated September 16, 1996, on implementing the recommendations contained in the review.' The Corps intends to seek the recommendations primarily through coordination in existing forums such as the regional System Configuration Team. Results of this coordination will be reflected in future budget requests for the Columbia River Fish Mitigation Project.

BONNEVILLE AND THE DALLES POWERHOUSE PROJECTS REPLACE GENERATING UNITS

Question. Two construction projects in the Corps' fiscal year 2000 justification are the rehabilitation of generating units at the Bonneville Powerhouse and The Dalles Powerhouse. The original completion date, at least for the Bonneville Powerhouse project, was 2002. It seems unlikely that under the current funding levels that the completion date can be met, and the date will more likely be around 2008 or 2009.

Is the request of $10,800,000 for fiscal year 2000 for the Bonneville Powerhouse enough to maintain the original schedule for completion?

Answer. No, it is not.

Question. What level of appropriations would be required over the next three fiscal years in order to meet the original schedule?

Answer. For Bonneville, at this point, the original schedule cannot be met. Due to requirements of the project biological opinion, units can only be completed one at a time, with short duration overlaps. Funding at the following levels would advance project completion by 1 to 2 years: fiscal year 2000 $16.3 million, fiscal year 2001 $11.4 million, and fiscal year 2002 $10.1 million. For The Dalles, it is unlikely the original programmed schedule for completion in fiscal year 2005 can be regained at this point. Funding levels estimated at $12 to $15 million per year beginning in fiscal year 2001 would advance project completion by 1 to 2 years.

Question. If you had greater funding for these projects, what work would you prioritize?

Answer. Work is already prioritized within each project according to greatest need and to maximize work efficiency. Greater funding for these projects would allow earlier completion of the project by accelerating the work.

Question. What are the implications of not maintaining the original schedule in terms of the overall costs of the project, risk of failure of the units, and lost efficiency?

Answer. At Bonneville, not maintaining the original schedule will increase somewhat the project cost and risk of failure of the generating units, and will delay the expected increase in unit efficiency of four to six percent.

At The Dalles, the original rehabilitation program (Units 1–14) included only 9 generator rewinds, since 5 had already been repaired under the O&M program. Since initial funding commenced in 1997, two additional generators have been rewound, both due to failure. Delays, for any reason, increase the risk that additional generating units will fail, thus increasing costs for repair, lost power revenues due to unscheduled unit outage and reduced plant availability. Loss of an estimated 4 percent increase in unit efficiency also results from delay of turbine blade replacement. In addition, total project costs increase due to out-year inflation as project completion is stretched out.

Question. What are the impacts in relation to the survival of fish during passage?

Answer. For both Bonneville and The Dalles, past studies indicate that the survival of juvenile fish increases with increased turbine efficiency. In addition, the shape of the new turbine hub, blades and discharge ring have been redesigned at Bonneville to reduce potential injury to migrating juveniles that travel through the turbines. If we can complete installation earlier, increased juvenile fish survival rates should be realized.

QUESTIONS SUBMITTED BY SENATOR DORGAN

DEVILS LAKE DIKES

Question. The Corps is currently completing the third phase of levee protection for the City of Devils Lake, North Dakota. What is the status of the current project to raise the Devils Lake levee (to TOL 1457 feet)?

Answer. Sir, the earth work and the riprap to top of levee 1452 are substantially complete and the levee protection for the city to top of levee 1457 will be complete by September 1999. Three of the five pumping stations associated with the levee are complete and operational. The remaining two are under construction and will be operational this summer.

Question. I am pleased to learn that the major construction work on the dike is complete even though the more costly aspects of the project, installing pumps and rockwork, remains to be completed.

Congress has approved a three-phase increase in the dikes in recent years. If the Corps had not proceeded with the diking on an emergency basis, can you tell the Subcommittee what the consequences would have been?

Answer. Without the levee protecting the City of Devils Lake, approximately one-third of the city, including much of the airport, would be in the lake. Wave action from the lake would have destroyed additional homes and businesses. Portions of Highways 19, 20, and 2 running through the city would be under water as well. The rest of the city would have remained vulnerable to future lake level rises. We are also continuing to take emergency actions, when necessary, for other communities and Tribal structures threatened by the rising lake levels. Even with these efforts, Devils Lake continues to cause about $25,000,000 in damages for every additional foot of rise.

Question. Indeed, we would have had a full-fledged disaster on our hands. As it is, we still face enormous problems and that is why we need to proceed with a comprehensive flood fighting strategy that includes an outlet for Devils Lake.

Pursuant to the direction of Congress, the Corps is developing a report to Congress on the Devils Lake outlet. What is the schedule for completing the draft interim report to Congress on the Devils Lake outlet?

Answer. The draft interim report will be completed by the end of April 1999. The report will detail various alternatives to manage the rising lake.

Question. May I note for the benefit of the Chairman and my colleagues that this report will be made soon and should give us ample time for review before we proceed with the mark-up of next year's appropriations bill.

This outlet plan has been a challenging undertaking since it involves a chronic flood that has come and stayed for over five years. Can the Corps please describe to the Subcommittee some of the promising aspects of the plan which may help to solve this perplexing problem of chronic flooding?

Answer. The Corps is looking into alternatives that would bring fresh water to the outlet. The fresh water would be captured prior to its entering Devils Lake and mixing with the more saline water currently in the lake. The fresh water reduces or eliminates impacts to downstream water quality. By eliminating the water quality problem, the full capacity of the pump station could be used much of the time,

thereby increasing the effectiveness of the outlet at reducing the lake level and avoiding damages. Pumping would still be restricted to stay within the capacity of the Sheyenne River. The Corps is also looking at staging construction and using trigger elevations to determine when to build portions of the outlet plan. This would cause portions of the outlet to be built only when they are needed, improving the cost effectiveness of the plan.

Question. Some have suggested that we could use nearby lakes to syphon off some water from Devils Lake on an interim basis. Is there a plan which would provide some relatively quick means of containing rising water?

Answer. A controlled gravity channel to the Stump Lakes could be effective as an interim emergency measure to slow the rise of Devils Lake. The Stump Lake plan could be designed and constructed much quicker than the outlet to the Sheyenne River. It also helps manage the water within the basin, reducing any outside concerns; although there are concerns that would have to be addressed, including impacts to a Federal wildlife refuge.

Senator BYRD. I want to thank the Corps for its cooperation with the State of North Dakota and the Devils Lake Region and to encourage continued efforts to find workable interim and long-term solutions for this critical problem.

GRAND FORKS DIKES

Question. I understand that there may have been some slippage in the construction timetable for completing the Grand Forks dikes—from 2005 to 2007. What is the current schedule for completion of the Grand Forks Flood Protection Project?

Answer. The scheduled completion for the Grand Forks—East Grand Forks project has slipped from fiscal year 2006 to fiscal year 2007 due to constrained budget ceilings assigned to our overall construction program. The completion date based on the constrained budget ceilings is December 2006, a twelve month delay. However, note that this project was funded at the full capability in the Budget year, fiscal year 2000.

Question. What is causing the delays in this critical project?

Answer. The scheduled completion for the Grand Forks—East Grand Forks project has slipped from fiscal year 2006 to fiscal year 2007 due to constrained budget ceilings in the outyears. Nationwide, many worthy water resource projects compete for a limited amount of annual budget ceiling. In order to fund as many projects as possible, most projects are funded at a less than optimal level, causing schedules to be stretched out; this was the case for the Grand Forks—East Grand Forks project.

Question. Do I understand that the capability of the Corps would be to complete the project in 2005?

Answer. If sufficient funding resources are made available, we could complete construction of the Grand Forks—East Grand Forks project by December 2005, which is fiscal year 2006.

Question. I understand that the Corps submitted a reprogramming request of $1.1 million for Grand Forks flood control for fiscal year 1999. Can you tell the Subcommittee the status of this request?

Answer. Yes sir, the additional $1.1 million requested for the Grand Forks, North Dakota—East Grand Forks, Minnesota project was received on 16 March 1999.

SUBCOMMITTEE RECESS

Senator DOMENICI. We will be back in session 9:30, Thursday for a hearing with the Department of Energy.

[Whereupon, at 12 noon, Tuesday, March 9, the subcommittee was recessed, to reconvene at 9:30 a.m., Thursday, March 11.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2000

THURSDAY, MARCH 11, 1999

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:39 a.m., in room SD–124, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Cochran, Craig, Reid, and Dorgan.

DEPARTMENT OF ENERGY

ATOMIC ENERGY DEFENSE AND NONPROLIFERATION PROGRAMS

STATEMENT OF DR. VICTOR H. REIS, ASSISTANT SECRETARY, OFFICE OF DEFENSE PROGRAMS

ACCOMPANIED BY:

ROSE E. GOTTEMOELLER, DIRECTOR, OFFICE OF NONPROLIFERATION AND NATIONAL SECURITY

LAURA S.H. HOLGATE, DIRECTOR, OFFICE OF FISSILE MATERIALS DISPOSITION

OPENING STATEMENT

Senator DOMENICI. First let me, without elaborating, just apologize for being late. It was unavoidable on my part, and I am sorry. Senator Reid, you had to waste time waiting for me.

Senator REID. I had a chance to read my newspaper. I am doing fine.

Senator DOMENICI. Thank you for coming. This morning, the subcommittee will consider the fiscal year 2000 budget request for the Department of Energy's defense, nonproliferation, and materials disposition programs. Combined, these programs account for $5.5 billion of the $18.3 billion requested for the Department and are the core of DOE's national security function.

That is a very slight decrease from the current level, because of the $200 million provided in 1999 to implement a plutonium disposition accord with Russia.

These programs together are the backbone of our strategic nuclear deterrent. On the one hand, we do see the threat to our Nation posed by others' weapons of mass destruction, and on the other hand maintaining our deterrence against the threat that remains. We are considering the programs together because they are interrelated. If, for example, in the coming decade when we make rapid progress with disposition of plutonium and uranium in Russia and

our ability to verify our potential adversary's stockpile levels we may be able to reduce our nuclear stockpile substantially. Conversely, a lack of progress in these areas would prevent us from pursuing stockpile reductions.

We will begin today with Dr. Reis to review the request for the Defense Programs, then go to Ms. Gottemoeller, who is currently the Director of the Office of Nonproliferation—and we are very proud to have you there. She has been nominated to this position, and I hope she will be there soon in an official capacity—and then we will finish with Ms. Holgate, Director of the Office of Fissile Materials Disposition, and we are glad to have you also.

Let me first place a few accolades in the record with reference to you, Dr. Reis. Frankly, it has been something very solid and beneficial to our nuclear deterrent that you head this part of the Department of Energy. I commend and congratulate you for the diligent efforts that you have made with reference to stockpile stewardship, a new kind of stewardship in an era of transition, and it looks like from the science standpoint it is working quite well. There is a great enthusiasm in the nuclear laboratories for this kind of science, which is taking place, since underground nuclear tests have been banned in the United States.

Senator Reid.

STATEMENT OF SENATOR HARRY REID

Senator REID. Senator Domenici, I appreciate you mentioning Dr. Reis. I was going to say a few words about him. I think that the American public does not know what public servants do. The work that is done by these three individuals, of which Dr. Reis is the one that I know certainly the best, having worked with him for these many years, makes our civilization such as it is.

The difference between our having a safe, reliable nuclear stockpile or not having one is work that we do on this subcommittee, and we rely on you for results. I personally appreciate all the time and effort and I am glad that you have chosen, with your great academic background and your experience in the private sector, to stay in public service, because as I said, the American public does not realize the importance of your job, but Senator Domenici and I do, our staffs, and we can say no more than that.

Mr. Chairman, the stockpile stewardship and management program is being adopted by a policy which the nuclear arsenal would be maintained. There were numerous discussions by many in the administration and here in Congress regarding the minimum amount needed, and I am pleased to see the budget request is at that level which we have talked about for a number of years, $4.5 billion.

Now there have been questions about what the needs of the program are. We are going to talk about that today, the National Ignition Facility, Dual Access Radiographic Hydrodynamic Test Facility, and others that are essential to the verification, and safety and reliability of the nuclear arsenal.

But as I see it, there are two convincing arguments applying to the rationale for these investments and others. Science must be comprehensive to keep the verification credible. The laboratories

consisting of experts to coordinate with the Department have to come together on these projects.

Now, the question is, what is the future of both the science and the credibility and the verification and reliability? At this point, from our perspective the question for the future rests on whether the labs and the tests at the Nevada Test Site will be functioning as active partners in the validation of the science of the Stockpile Stewardship program.

What we saw in the President's budget did not make me happy, but I have recently been given information that indicates a serious effort to better integrate the Nevada Test Site into the stockpile stewardship and management program, and so that is one of the things that we will be watching.

I note the Chiles Commission has reported that of all the centers necessary to maintain confidence without testing, the Nevada Test Site has the highest average age of personnel. Consequently, either by retirement or death, expertise is leaving the Nevada Test Site at an extremely rapid rate.

So Dr. Reis, I recommend that you repeat the success at the National Labs at the Test Site with the implementation of a similar program that will attract and maintain highly motivated and skilled personnel who could effectively turn their energies to the resumption of testing or whatever else is necessary to maintain the safety and reliability of our arsenal.

The magnet that attracts an enduring workforce, without which the test ban treaty becomes somewhat meaningless as far as I am concerned, is a new technically challenging program that has a front line role in the safety and reliability of the arsenal.

So I look forward, as I indicated, to working with you and this subcommittee will look forward to getting our bill to the floor as rapidly as possible.

Thank you, Mr. Chairman.

STATEMENT OF DR. VICTOR H. REIS

Senator DOMENICI. Thank you, Senator Reid.

Dr. Reis, you may proceed.

Dr. REIS. Thank you, and thank you, Senator Domenici and Senator Reid for your kind remarks about my service. One of the gratifying parts of that, of course, is working with people like yourselves and your staffs, and that makes it all worthwhile.

Senator DOMENICI. Thank you.

Dr. REIS. I have a relatively short oral statement, and with your permission I will submit my full statement for the record.

Senator DOMENICI. It will be incorporated.

MEETING THE STOCKPILE STEWARDSHIP CHALLENGE

Dr. REIS. Mr. Chairman, Senator Reid, the challenge of stockpile stewardship is to maintain the safety, reliability, and performance of the current U.S. nuclear weapons indefinitely without underground nuclear explosive tests. This is indeed a major challenge.

We are asked to maintain forever an incredibly complex device no larger than a desk filled with exotic radioactive materials that must create, albeit it briefly, temperatures and pressures only seen in nature at the center of stars, do it without integrating nuclear

tests and without any reduction in extraordinarily high standards of safety and reliability and, while we are at it, downsize the industrial complex that supports this enterprise by a factor of two, and start up critical new manufacturing processes.

We must do this with an industrial system that was structured to turn over new designs every 15 years and for which nuclear explosive testing was the major tool for demonstrating success. We must meet this challenge, restructure the complex, and do most of it within the next 5 to 10 years, while the current weapons are still within the design life and the designers, production and test folks are still active.

Mr. Chairman, it has been over 10 years since new weapons production stopped and over 6 years since the last underground nuclear test, and I would claim we are meeting the challenge. We have certified the stockpile as safe and reliable 3 years running. The major elements of the program are in place, and the budgets are projected to be stable in the outyears. While there is still much to do, it is fair to say that the road ahead is reasonably well-mapped and what remains is to but integrate the pieces and to stay the course.

In short, I believe that all of the many external reviews have concurred that Stockpile Stewardship is a successful program. Why do I say that? First of all, there is a compelling national mission. Despite the end of the Cold War, nuclear weapons play a leading role in the Nation's policy of strategic deterrence.

Strategic deterrence is the bedrock of all of our national security efforts. At the same time, the maintenance of a safe, secure, and reliable nuclear force underpins our arms control efforts. It is as described in the Presidential Commission for Ratification of the Comprehensive Test Ban Treaty of "supreme national interest." That goal acts as the one and only beacon for the Defense Programs and the weapons complex.

LAB MISSIONS FLOW FROM STEWARDSHIP

Stewardship provides an enormous technical and scientific challenge to the DOE's nuclear weapons laboratories, Los Alamos, Livermore, Sandia National Laboratories, which are designed to respond to big national technical challenges. They work best in such an environment as, indeed, do the folks at the Nevada Test Site.

In a few short years, Stockpile Stewardship has become what is probably the world's largest single-purpose scientific program. Our industrial partners have built by far the world's largest computers and those computers are solving real problems throughout the complex.

Subcritical experiments, hydro testing, laser pulse power, and a variety of other experimental facilities are helping to validate codes and bring the necessary understanding to provide confidence in the stockpile now and in the future. I think it is fair to say that the labs are working together with the other parts of the nuclear weapons complex, industry, and academia better than ever. Other lab missions flow from stewardship, not compete with it.

PRODUCTION COMPLEX RESPONSE TO STEWARDSHIP

Stockpile stewardship has likewise changed the rest of the complex. With the end of the Cold War, there is no new requirement for nuclear weapons production, though there remains a requirement to return to production, if so ordered.

The most obvious part of this change has been the downsizing of the physical plant, the ending of production at Rocky Flats, Pinellas, and Mound, and the shifting of responsibilities, equipment, and people to other parts of the complex.

As the stewardship requirements have become better understood, the production complex—Oak Ridge Y–12, Kansas City, Pantex and Savannah River have—has fully responsive to the stewardship mission.

This new production activity is driven by recognizing that if the stockpile is to remain viable forever, and that is the mission, then every part of every weapon must sooner or later be replaced and certified. This means that every part must be thought of as a limited life component, and there is a premium for knowing when a part must be replaced, and there is a premium for developing and certifying new, efficient, safe, and environmentally friendly production processes.

All of this is embedded in the Stockpile Life Extension Program, SLEP. The first W87 life extension unit will be delivered to the Air Force this May. SLEP will drive production in the complex no less than certification, but it must be part of an integrated whole. That integrated whole must fit within a relatively fixed budget. That is why we are continuing to look hard at consolidating the production plant management into a single contract.

TRITIUM PRODUCTION

The last programmatic element I will mention is tritium, the ultimate limited life component. When I came to DOE some 5 years ago, the new source for tritium was a headline item. What would the new source be and where would it be located?

Last December, Secretary Richardson announced that we will buy irradiation services from the Tennessee Valley Authority [TVA], and the accelerator production of tritium will be a back-up. Negotiations with TVA based on the Economy Act are essentially complete.

Mr. Chairman, this is the fifth defense program's budget that has revolved around Stockpile Stewardship. We have a clear goal. We have the people and elements of the program in place. We have demonstrated success across a wide variety of stewardship tasks. We have a budgetary commitment. The task is now to complete the integration of the Defense Program complex and to stay the course.

PREPARED STATEMENT

With your continued support, we will continue to meet the challenge of maintaining the nuclear weapons stockpile, a supreme national interest.

Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF VICTOR H. REIS

Mr. Chairman and distinguished members of the Committee, thank you for the opportunity to testify on the Department of Energy's fiscal year 2000 Defense Programs budget request of approximately $4.5 billion for the Stockpile Stewardship Program. This budget continues support for critical initiatives begun during the past five years that are creating and using the new tools and technologies needed for science based stewardship. These tools and technologies are necessary as we seek to maintain a high level of confidence in the safety and reliability of the U.S. nuclear weapons stockpile without nuclear testing.

It has been nearly 10 years since we have manufactured a new nuclear weapon and over six years since the last underground nuclear test. Our confidence in the safety and reliability of the current stockpile remains high. The third annual certification of the nuclear weapons stockpile was transmitted to the President by the Secretaries of Energy and Defense on December 22, 1998. It states that the stockpile is safe and reliable and that there is no need to conduct an underground nuclear test at this time.

The Stockpile Stewardship Program faces formidable challenges: continue to maintain an aging stockpile; restructure and modernize the weapons complex; and, retain the capability to resume nuclear testing and meet production requirements appropriate to future national security needs. The Department is meeting these challenges and is confident of its abilities to maintain the stockpile without testing.

We have laid out a plan—weapon by weapon, part by part, that addresses the tasks required to maintain the stockpile over the next ten years, and beyond. We have support on this program from the Department of Defense, and the Administration has committed to funding this program and all its parts. And, we have a back up. The President, as one of the safeguards under which this nation would enter into the Comprehensive Test Ban Treaty (CTBT) requires us to maintain the Nevada Test Site in a state of readiness should there ever be circumstances in which we would return to testing. The successful subcritical and other experiments conducted there bear evidence that the Nevada Test Site remains a "can do" operation. There is a joint DOD/DOE review of the entire test readiness program for the 2001 budget process.

Another Presidential safeguard under the CTBT requires us to maintain the vitality of the nuclear weapons laboratories—Los Alamos (LANL), Lawrence Livermore (LLNL) and Sandia. History tells us that great laboratories need great missions like the Manhattan and Apollo projects. The enthusiasm and vigor with which our laboratories are embracing the Stockpile Stewardship Program bear witness that it too is a great mission. The program is attracting the kinds of people drawn to the challenge of solving tough issues of national importance.

Although we continue to plan and refine the Stockpile Stewardship Program, it is already working. We have modified the B61 bomb and have seen it enter the stockpile to replace the aged B53 bomb. We are constructing new experimental facilities and tools—the National Ignition Facility (NIF), the Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT), and Atlas—and our computation program has developed the world's fastest supercomputers. By using stewardship tools, we have solved some problems that in the past would have most likely required nuclear testing. We have done literally hundreds of experiments with existing facilities that increase our understanding of nuclear weapons. We have safely dismantled over eleven thousand nuclear weapons since 1991, and have produced numerous parts, on time, while continuing to downsize the production complex.

STOCKPILE STEWARDSHIP INTERAGENCY COORDINATION

A key element of the Stockpile Stewardship Program's continued success is an effective corporate level strategic planning process. I am pleased to advise you that we are on schedule to transmit the fiscal year 2000 Stockpile Stewardship Plan (SSP), also called "The Green Book" to the Congress by mid-March. In the development of the SSP, we rely heavily on the Department of Defense, the National Security Council staff, the Office of Science and Technology Policy, the OMB, and other senior policy officials in the "nuclear community" to help ensure that we are on the right track. The feedback we have received on this year's Plan is very favorable. In fact, I was recently informed in a letter from the Commander in Chief of the U.S. Strategic Command, Admiral Richard Mies, that this Plan reflects a strong commitment by DOE to solicit and address the concerns of the nuclear weapons community.

During 1998, the Nuclear Weapons Council (NWC) formed joint DOE/DOD teams to review four major areas of the Stockpile Stewardship Program: tritium, the Accelerated Strategic Computing Initiative (ASCI), the National Ignition Facility (NIF),

and pit production. The Nuclear Weapons Council concluded that these joint DOE/DOD team efforts were worthwhile, generating alternative options and validating DOD requirements and DOE plans. The NWC found that tritium, NIF and ASCI programs were on-track. The NIF program integration was identified as a potential concern by the NWC which we are addressing now. The NWC further examined the management and oversight cost controls of ASCI software development in more detail and found that the proper project cost and schedule controls are in place. After reviewing the DOE pit production plan and alternatives for larger and smaller production capacities developed by the joint DOE/DOD team, the NWC decided that the current DOE plan is a prudent approach. The NWC approved DOE's pit manufacturing strategy and will monitor the development of long-term plans. This strategy for pit manufacturing will be detailed in our response to the fiscal year 1999 National Defense Authorization Act and submitted to Congress shortly.

To better retain U.S. nuclear capabilities, we have been working closely with the Commission on Maintaining U.S. Nuclear Weapons Expertise, better known as the Chiles Commission. As you know, Congress tasked the Commission with developing a plan for recruiting and retaining scientific, engineering, and technical personnel that the Commission deems are needed, across the nuclear weapons complex over the long term, to maintain a safe and reliable nuclear weapons stockpile without nuclear testing.

HOW STOCKPILE STEWARDSHIP IS WORKING

For the benefit of new Committee members, I will briefly summarize the Stockpile Stewardship process and the challenges it now faces before I go into a more detailed discussion of program elements. Each year representative samples of each type of weapon are returned to Pantex from the active forces and are disassembled, examined, tested, and analyzed for defects, much as you would go for an annual physical or take your car into your local automobile mechanic. If any defects are found, their effect on reliability and safety is assessed. If that effect is deemed significant, the defective part is remanufactured and replacedand a nuclear weapon has about as many parts as a modern automobile. Like the battery or spark plugs in your car, some parts, for example, neutron generators and gas reservoirs, require replacement at regular intervals. Other parts of a nuclear weapon are made from radioactive materials which decay such as plutonium, enriched uranium and tritium; and as they decay, may change both their own properties and the properties of other materials within the weapon.

Remanufacturing replacement parts sounds simple, but subsequent to the time that many of the current weapons in the stockpile were originally manufactured, some of our production plants have been closed and manufacturing processes, techniques and standards have changed. General Motors does not build cars the same way it did 40 years ago. Everyone is more health and safety conscious and more concerned about waste. Today, replacement parts require even tighter production controls than the extraordinarily rigid standards under which the original parts were designed and manufactured. A nuclear weapon, less than the size of a small desk, has enough explosive power to completely destroy a modern city, and yet it must be able to survive extraordinary accidents with less than a one-in-a-million chance of exploding. New industrial materials and new manufacturing processes make it hard to get exact replacement parts for an old car or appliance. Yet, we must produce replacements with modern material and processes that will still maintain weapons safety and reliability.

As our stockpile weapons age we expect more parts to become defective—just as with our automobiles. Because new warheads have not been produced since 1989, we cannot replace old weapons with new ones. In addition, our weapons designers with nuclear testing experience are also aging. In about ten years, most of them will have retired. This means that as our newest system, the W88, reaches the end of its original design life in 2014, and we may no longer have anyone with the necessary job experience to perform underground testing of nuclear weapons. Similarly, the engineers and technicians who originally produced even this newest weapon may also be gone. It is this time factor that is critical to the success of the Stockpile Stewardship Program.

Since we cannot do a complete underground test of a nuclear explosion, we can divide the explosion sequence into each of its parts, then test and analyze each of these separately, much as you would test the ignition system, the cooling system, and the brakes on your car. We plan to put all the data together into a computer and develop simulations to see if the resulting performance is within specification. Each part of the simulation must predict the results of each of the separate tests,

and where they exist, the results must be consistent with data from previous underground nuclear tests. We have already begun this process.

STOCKPILE LIFE EXTENSION AND SURVEILLANCE

We are working closely with the DOD to finalize detailed plans to extend the lifetime of each weapon system in the stockpile. The Stockpile Life Extension Program (SLEP) is DOE's planning framework for a proactive management of system maintenance activities. Under SLEP, options are developed to address potential refurbishment actions. These options address correcting known problems, preventing foreseeable problems, and improving safety and use control. These life extension options allow the Department and DOD to anticipate and plan for future resource requirements such as workforce, skill mix, equipment, and facilities.

These requirements provide the framework for stockpile refurbishment workload and stockpile research and development activities at our laboratories and provide guidance for our production plants in the design and certification of replacement components, validation of new materials, and development and certification of new manufacturing processes. The cycle is continuous and is closely integrated. Data and information from our surveillance programs and from the hundreds of experiments and simulations being performed to help identify which parts of a weapon are aging gracefully and which parts present current and potential future problems.

Stockpile surveillance has been a major element of the U.S. nuclear weapons program ever since the first weapons were put into service. Approximately 100 stockpile weapons are thoroughly examined each year. The results provide data not only for assessing the current safety and reliability of the stockpile, but also for developing predictive models and age-focused diagnostics required to anticipate weapons refurbishment requirements.

The technologies and methods, as well as a fundamental understanding of materials properties and weapons science, to significantly improve detection and predictive capabilities are being developed in the Enhanced Surveillance Program (ESP). An aging mechanism in a stockpile high explosive was identified through the ESP, ultimately concluding that the changes actually improved the stability of the explosive. This assessment is permitting the reuse of the high explosive during the W87 life extension program, thus avoiding significant costs. We have also embarked on a novel strategy to accelerate the aging process in plutonium. The capability to predict the lifetime of components made from plutonium will permit us to more accurately identify when pit replacements are needed and when facility investments must be made in order to support pit replacement.

Dual revalidation is designed to provide a baseline assessment of the condition of weapons in our aging stockpile. Two teams, one from the laboratory that originally designed and developed a weapon and the second from the other weapons laboratory, are performing in-depth evaluations of the weapon's ability to meet revalidated military requirements. The W76 is the first weapon to be reviewed. Each team has performed at least one system hydrotest on the W76, and they have collaborated on a Shipboard Vibration Test. The review of the W76 will be completed in December 1999. The dual revalidation peer review program not only baselines the weapon system, but also provides an excellent opportunity for experienced designers to pass their skills on to the next generation of scientists and engineers.

MANUFACTURING CAPABILITIES

Manufacturing continues to play a critical role in the Stockpile Stewardship Program. During fiscal year 1998, almost 1,000 Limited Life Components (LLCs) were produced. Plans call for the production of over 1,300 LLCs in fiscal year 1999. These product deliveries signal the successful transfer of production activities from plants which have been closed. The weapons complex is also performing major refurbishment actions on several weapon types, including the B83, B61, and the W87. In December 1998, the Y–12 plant at Oak Ridge completed and shipped to Pantex the first refurbished component for the life extension program of the W87 under our Stockpile Life Extension Program. Earlier this month, the first deliveries of electronic and mechanical parts for the W87 life extension were shipped to Pantex from the Kansas City plant. The first W87 life extension unit will be assembled at Pantex by the end of this month with the first group of units due for delivery to the Air Force in May. This is considered a major milestone in meeting a DOE commitment made to the Air Force.

The Advanced Manufacturing Design and Production Technologies Initiative (ADAPT) is providing the manufacturing complex with advanced capabilities for: designing, developing, and certifying components and systems; and for producing, assembling, and delivering the components and systems products. ADAPT is radically

changing how DOE supports the nuclear weapons stockpile by infusing new product and process technologies, and by adopting state-of-the-art business and engineering practices. Our production complex must take advantage of modern manufacturing techniques. As an example, a secure communications and data network was established among the production plants and laboratories which is facilitating rapid interchange of design and manufacturing information related to the W87 life extension program. In the future, this will serve as the backbone of a modern simulation product realization environment. The network is already reducing the time needed to produce classified parts, in some instances up to 90 percent.

We remain committed to maintaining a robust and world-class microelectronics capability at Sandia National Laboratories. This effort will allow us to both develop and exploit emerging technologies that show great promise for miniaturizing weapon components and improving their reliability and for maintaining a critical capability in radiation- hardened electronics needed to address the threat environments of the future.

Toward that end, in December 1998, the Department of Energy and Intel Corp. announced that Intel Corp. will provide a no-fee license for its Pentium processor design to Sandia National Laboratories for the development of custom-made radiation-hardened microprocessors for use in United States satellite, space vehicles, and defense systems. The agreement will save U.S. taxpayers hundreds of millions of dollars in microprocessor design costs and provide the federal government with a ten-fold increase in processing power over the highest performing existing technology. Radiation hardening "immunizes" systems and applications from ionizing radiation, such as cosmic rays, which affect the reliability of conventional electronics. Prototypes of the custom chips will be fabricated and tested at Sandia's Microelectronics Development Laboratory. While our production workload is certainly far smaller than in the past, the demands on our manufacturing processes have actually increased. Let me explain what I mean. We now know how critical baseline data is to stockpile certification in the absence of underground testing. Understanding how parts change over time involves comparing old and new parts. In the past, our production facilities built components with a primary focus on staying within design and process specifications. However, we have learned that seemingly insignificant variations in products or processes at the time of manufacture can often be the key to component lifetime and hence to weapon performance.

Thus, we have significantly expanded the amount and type of baseline data, critical to modeling, collected during production. We now record much more than just the product specifications. We collect information on the physical and chemical properties of individual parts as well as the constituent raw materials. New parts receive significant analysis using new technologies and characterization tools covering the full scale from the microscopic to macroscopic level. Processes are also being reinstrumented to capture key parameters during production. All information is collected in readily accessible databases. The future of certification relies, in part, on our ability to accurately record the condition of parts as they were built. These investments in baselining tools and technologies will continue across the complex with future life extension activities.

We are continuing to right-size and modernize our production complex for the 21st Century. The Stockpile Management Restructuring Initiative (SMRI) is the first step and includes the tritium facilities at the Savannah River Site; uranium machining, recycling and storage facilities at the Oak Ridge Y–12 Plant; assembly and high explosive fabrication facilities at the Pantex Plant; and non-nuclear production facilities for electronic, electro-optical devices, plastic and machined parts at the Kansas City Plant.

A pit production capability is being reestablished at the Los Alamos National Laboratory, a capability the DOE has not had since the closure of the Rocky Flats Plant in 1989. A W88 first development unit pit was successfully produced last year and by 2001, the first pit for stockpile use will be produced. By 2007, LANL will have a limited capability to manufacture replacement pits for the units destroyed during surveillance activities.

The final phase of a five year process to resume enriched uranium operations at the Oak Ridge Y–12 Plant will be completed in fiscal year 1999. The Kansas City Plant has now been qualified for the production of tritium gas reservoirs for the W76, W78 and W80 warheads and Sandia National Laboratories will soon have a new production facility on-line for neutron generators and will deliver almost 300 units in fiscal year 2000.

In November 1998, the Heartland supercomputer, one of the largest and most powerful computer systems operating in a North American manufacturing facility was installed at the Kansas City Plant. This system is quickly becoming a key asset in solving production problems by simulating production processes with some of the

same software that is used in engineering and physics simulation on weapon systems and which would previously have required very expensive prototypes. For example, the Heartland supercomputer has been used to evaluate new forge weld designs on such products as the W87 reservoir transfer tube, to determine process parameters for filling electronic systems with foam for structural integrity, and to evaluate soldering techniques in the radar systems for the B83 and B61.

In addition, over 1,000 nuclear warheads were safely dismantled at the Pantex Plant in fiscal year 1998, approximately 275 dismantlements will be completed in fiscal year 1999, and 375 dismantlements are planned for fiscal year 2000. The decrease in quantity after fiscal year 1998 does not reflect a decrease in workload because the systems remaining to be dismantled involve more complicated procedures and therefore, require additional time and resources. Dismantlements resulting from the nation's response to START I, however, will essentially be completed by fiscal year 2001.

In December 1998, Secretary Richardson announced that a review of the management structure throughout the DOE would be conducted. Until this review is completed, no decision will be made on the Department's proposal to consolidate contracts at our defense weapon production facilities. Under this concept, the management and operating contract for the Kansas City Plant in Kansas City, Missouri, the Y–12 Plant in Oak Ridge, Tennessee, and the Pantex Plant in Amarillo, Texas, would be consolidated into a single contract to improve programmatic performance and integration.

TRITIUM

Current policy requires the Department to develop a new tritium production source by about fiscal year 2005 to support a START I nuclear stockpile with a five-year reserve, and to maintain the ability to "hedge" to a START I level even if the START II Treaty enters into force. Tritium, which decays fairly rapidly, has not been produced in the U.S. since 1988 and defense requirements have been met by the recycling of tritium from dismantled weapons. Secretary Richardson announced on December 22, 1998, a decision to use existing light water reactors as the primary source of tritium production. He designated the Tennessee Valley Authority's Watts Bar and Sequoyah reactors as the preferred facilities. Consistent with the Department's dual track strategy, the Secretary designated the linear accelerator as the back up technology for tritium production. As such, the Department will complete engineering development and preliminary design for the Accelerator Production of Tritium (APT). The Secretary stated that the use of existing TVA reactors was preferred because this alternative uses proven technology, offers the best deal for taxpayers, has the most flexibility to meet present and future tritium requirements, and is most consistent with U.S. arms reduction goals. An interagency agreement with TVA under the Economy Act on an as-needed, pay-as-you-go, cost basis is nearing completion and will result in operating costs being as low as possible for the production of tritium.

The Secretary of Defense publicly endorsed the Secretary's tritium production decision, and the Chairman of Nuclear Regulatory Commission (NRC) has made a commitment that the NRC will expeditiously review requests for regulatory approvals associated with the use of tritium-producing fuel rods in NRC-licensed reactors. The production of tritium at TVA facilities is expected to begin in 2003. The tritium gas will be extracted from the rods at the Tritium Extraction Facility (TEF) at the Savannah River Site. Construction of the TEF will begin in fiscal year 2000 and will be completed in time to support stockpile tritium requirements.

During the three years since the Record of Decision on the Environmental Impact Statement for Tritium Supply and Recycling, the projects for both dual-track options were subjected to numerous reviews by independent groups of experts. Regulatory oversight was provided by the Defense Nuclear Facilities Safety Board and the U.S. Nuclear Regulatory Commission (NRC) in appropriate areas. A review of nonproliferation aspects was provided by an interagency review group.

EXPERIMENTAL PROGRAMS

It is at the DOE's Los Alamos, Sandia, and Lawrence Livermore National Laboratories and at the Nevada Test Site that the science base of the Stockpile Stewardship Program is developed. Experimentation is how, in the absence of nuclear testing, we divide the physics of the explosive sequence into each of its parts, and analyze each separately. Information that we have from the production and surveillance activities described previously, helps us to focus our experimental work. Information that we have from over 1,000 U.S. nuclear tests also tell us what we don't know

and where we need to fill in gaps in our knowledge through experiment and observation.

Hundreds of experiments, large and small, are performed each year in support of Stockpile Stewardship. Subcritical experiments performed at the Nevada Test Site have received considerable publicity. The sixth subcritical experiment, Clarinet, took place on February 9, 1999. This experiment was the second of three planned for fiscal year 1999. Two subcritical experiments are planned for fiscal year 2000 and additional subcritical experiments are being considered.

Subcritical experiments provide empirical data on the high pressure behavior of plutonium; realistically benchmarking data on the dynamic, non-nuclear behavior of components in today's stockpile; analyzing the effects of remanufacturing techniques; understanding the effects of aging materials; and addressing other technical issues. Information from these experiments will be key to qualifying the pit production capability at Los Alamos National Laboratory (LANL), as well as certifying the performance of weapons which will contain the replacement pits. These experiments also contribute significantly to the maintenance of the critical infrastructure and educational base of skilled personnel at the Nevada Test Site. In addition to helping us understand the effects of aging on plutonium, these experiments are key to our test readiness program. Subcritical experiments are consistent with the safeguards under which the President has recommended ratification of the Comprehensive Test Ban Treaty (CTBT).

We do a good job of investigating the first part of the nuclear explosion; that is, the implosion of the plutonium pit by high explosive, with non-nuclear experiments. We can measure a number of important features by taking x-ray pictures during critical parts of the experiment. We can then compare these pictures with calculations and with previous data from the more than 1,000 underground nuclear tests and 14,000 surveillance tests. During fiscal year 1998, we conducted some 50 non-nuclear hydrotests at the Pulsed High Energy Radiographic Machine Emitting X-rays (PHERMEX) and the Flash X-Ray (FXR) machine facilities at LANL and Lawrence Livermore National Laboratory (LLNL). We will do approximately the same number in fiscal year 1999 and in fiscal year 2000. In addition, we plan to conduct approximately 150 less complex experiments per year aimed at understanding and answering questions about high-explosives behavior and explosive effects on materials.

Experiments using the Los Alamos Neutron Science Center (LANSCE) are investigating proton radiography, a new technique in which proton beams from a linear accelerator are used directly in a novel approach to hydrodynamics-radiography that, if successful, could provide additional information to our process of certifying pits. This technique is one of the candidate technologies being considered to make detailed, three-dimensional "motion pictures" of the implosion process. Smaller-scale dynamic proton radiography experiments have already been performed at LANSCE to address important certification issues (e.g., cold high-explosives performance), paving the way for validation of advanced explosives simulation models.

This year we will be conducting a series of measurements at the Brookhaven National Laboratory as a next step in evaluating protons for weapon radiography. Such technology could be used in an advanced hydrotest facility. Accelerator experiments are also being used to probe basic properties of weapons materials that have a direct bearing on the functional lifetime, hydrodynamic behavior, nuclear performance, aging and corrosion of weapons materials and components. Based on these experiments, data can be extracted on equation of state, strength, microstructure, and aging properties of weapons materials.

In the area of inertial confinement fusion (ICF), the Department is conducting an aggressive research program to support the stockpile. In order to transfer resources to the National Ignition Facility project, the Nova laser at LLNL is scheduled for shutdown in 1999. Program emphasis will shift to the Omega laser at the University of Rochester. About 1,300 shots are planned for Omega in fiscal year 2000. A major activity at Omega in fiscal year 1999–2000 will be installation and operation of a cryogenic target handling system in preparation for deuterium-tritium cryogenic fuel implosion experiments.

In 1998, the Z-pulsed power facility at Sandia National Laboratories achieved a record x-ray energy and temperature levels. In 1999 and 2000, we plan to conduct about 160 shots in Z in the areas of weapons effects, weapons physics and NIF ignition. The major activity in Z over the next two years will be the installation of the Beamlet laser from Lawrence Livermore National Laboratory which will be used as a diagnostic on Z. This diagnostic will enhance investigations in all areas. The ICF program is implementing a detailed multi-laboratory national ignition plan to achieve ignition and to address other stewardship issues during NIF operations.

These, and other experimental facilities that are on line or under construction, are expected to give us a set of tools sufficient to investigate and understand anticipated problems in the stockpile. Whenever feasible, the goal is to obtain data experimentally by more than one method in order to improve our confidence in the associated physics models being used in the advanced Accelerated Strategic Computing Initiative (ASCI) simulation codes.

PROGRESS ON MAJOR EXPERIMENTAL FACILITIES

Construction is well underway for three major facilities that are essential to the long-term success of the Stockpile Stewardship Program—the National Ignition Facility (NIF), the Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT), and Atlas. NIF, the world's largest laser, will enable our scientists to generate conditions of temperature and pressure approaching those that occur in nuclear weapons. Demonstrations of how aged or changed materials could behave under these unique conditions will provide data essential to test the validity of computer based predictions. The NIF building is about 47 percent completed. The siding and roofing were completed in November 1998. A major event this summer will be the installation of the target chamber. The first NIF experiments are planned to begin in October 2001 using eight of 192 laser beams. The NIF is expected to be completed on schedule in October 2003, and on budget at $1.2 billion.

We continue making good progress in completing the DARHT facility. This facility will examine the shape and size of an imploding pit model from two different directions with greatly improved radiographic resolution. DARHT will also demonstrate a capability of multi-pulsing to obtain pictures at more than one point in the implosion process. Construction of the facility to house the x-ray machines was completed and the first arm of the facility, using a single pulse accelerator, will be operational with experiments scheduled to begin this summer. Design and prototyping of the second arm is well underway and this multi-pulse machine is scheduled for completion in fiscal year 2002.

The Atlas pulsed power facility is under construction at LANL. The design of Atlas is complete, the large and long-lead procurements have been placed, and the assembly of the first segment of the machine is underway. The Atlas facility is scheduled to be completed and commence operations in 2000. Atlas will provide an improved capability to conduct hydrodynamic experiments for assessment of secondary assemblies in nuclear weapons.

SIMULATION AND COMPUTATION

The Accelerated Strategic Computing Initiative (ASCI) is developing the high-performance computational modeling and numerical simulation capabilities necessary to integrate theory, existing data, and new experimental data to predict results that can be verified and validated. The ASCI program, a collaborative effort between the Government and U.S. industry, is developing the world's fastest, most powerful computational and advanced simulation and modeling capabilities. These advanced supercomputers are needed to complete the shift from nuclear test-based methods to science-based methods and to assess and certify the safety, security, and reliability of the stockpile without underground nuclear testing.

Advanced computational capabilities that include application codes, computing platforms, and various tools and techniques, are being developed under ASCI and incorporated into ongoing stockpile computational activities. This technology is being developed at about twice the rate of commercial computing speed and power advances. ASCI has been highly successful in meeting its milestones and providing effective new tools to support stockpile stewardship. Information developed from other elements of the Stockpile Stewardship Program, such as NIF and our subcritical experiments, will provide the basic physics models and data for ASCI simulations.

At the end of fiscal year 1998, ASCI unveiled its second generation of computing systems. Two major systems capable of running in excess of three trillion operations per second (3 teraops) peak speed were delivered ahead of schedule and within budget. Blue Pacific, developed by IBM, is located at LLNL, and Blue Mountain, developed by Silicon Graphics, Inc., is located at LANL. These systems are each 15,000 times faster and have roughly 80,000 times the memory of the average personal desktop computer. On February 12, 1998, the Department announced the selection of IBM to partner with ASCI on the Option White 10 teraops supercomputer to be located at LLNL. Building upon the experience and knowledge gained with the 3 teraops Blue Mountain system, LANL will conduct a procurement for a computational system that will achieve a peak performance level of 30 teraops by mid-year 2001. And the Department's first generation, Option Red Intel computer system, in-

stalled at Sandia National Laboratories in 1996, with a peak speed of 1.8 trillion operations per second is now operating in production mode.

The unprecedented computational power of ASCI is also being made available to selected groups in the university community through the Academic Strategic Alliances Program. In 1997, the Department awarded contracts to five major U.S. universities—Stanford University, California Institute of Technology, the University of Chicago, the University of Utah and the University of Illinois. The work of the university teams will be of similar difficulty and complexity to that needed for Stockpile Stewardship and provide another benchmark by which we can assess the accuracy of our own work. These projects are expected to lead to major advances in computer simulation technologies as well as to discoveries in basic and applied science; areas important to ASCI, the broader Stockpile Stewardship Program, and other application areas. Applications being developed and run by the university teams are unclassified and deal with significant non-defense scientific, economic and social priorities.

We are already utilizing the capabilities of the newly installed ASCI platforms to support assessment of the stockpile. Specifically, we have run the highest resolution safety simulation of a stockpile weapon, and we have run a 3-dimensional simulation that will help explain a "mystery" from the nuclear test archives, that is relevant to our current program. We have run simulations to support the certifications of the B61 modification and the W76 neutron generator. These simulations would not have been possible without the capability provided by the ASCI platforms performing at the teraops level. However, in order to simulate a 3-dimensional full-system weapon and its performance as defined by nuclear weapons designers, scientists, and engineers at DOE national laboratories, we must scale the current capability to the 100 teraops level by 2004.

The fiscal year 2000 request for the ASCI and Computations program operating budget, which totals $543 million, is about 12 percent higher than the fiscal year 1999 request. In addition, $114 million for simulation activities that previously were part of the ASCI program plan and $36 million for construction projects to house ASCI computers is requested. The fiscal year 2000 request is in line with planned increases resulting from advances in code development work and with simulations that necessitate additional memory, storage, and networking capability. It continues the momentum in both hardware development and acquisition to obtain computers capable of sustained operations of 100 teraops level by 2004. It also permits building 3-D computer codes, which in conjunction with the other experimental programs such as inertial confinement fusion, are aimed at providing the required levels of fidelity in weapons simulations.

Two new computational initiatives begun in fiscal year 1999 will continue in fiscal year 2000. The Distributed Computing at a Distance (DisCom2) project develops key computing and communications technologies that will enable DP laboratories and plants to apply high-end computing across thousands of miles, to meet the urgent design, analysis, and engineering needs of Stockpile Stewardship. The Numerical Environment for Weapons Simulations (NEWS) will create data exploration super corridors at the weapons laboratories to support large-scale data analysis for researchers and weapons assessment teams.

NUCLEAR EMERGENCY RESPONSE AND TECHNOLOGY PARTNERSHIPS PROGRAMS

There are two other elements that exist across the weapons complex that play a role in maintaining the leading edge expertise of our people and program. Defense Programs funds DOE's nuclear emergency response programs which primarily consist of engineers, scientists, and other technical personnel from the three weapons laboratories, production facilities, and other DOE management and operating contractors. This program provides a technical response capability for any type of radiological or nuclear accident or incident including radiological releases, U.S. nuclear weapons accidents, or a malevolent event involving a nuclear device or radiological dispersal device. A robust exercise schedule provides challenging scenarios for all radiological emergency response assets in order to maintain and verify departmental readiness to meet our mandated responsibilities in conjunction with a wide range of interagency programs (e.g. Defense Threat Reduction Agency, Federal Emergency Management Agency, FBI, etc.). These scenarios include overseas nuclear weapons accident exercises, field training exercises, multi-agency resolution of nuclear terrorism crises, response to transportation accidents and commercial nuclear reactor accidents.

The DP Technology Partnership Program, which has been restructured to directly support Stockpile Stewardship, represents an important investment in the future. The private sector has technical leadership in many areas critical to weapons activi-

ties and the Technology Partnership Program initiates effective collaborations between the laboratories and industry that strengthen all Stockpile Stewardship Program components. It is a difficult task, but we already have success. For example, Sandia and a world class commercial electronics supplier of radio frequency (RF) products are partnering to develop a replacement arming, fusing and firing system for the W76/Mk4. This project will develop the capability for procuring war reserve RF components from a state-of-the-art, tailored, low-cost, low-volume, high- reliability manufacturing process. In addition, LANL is working with a provider of highly advanced, ultra-short pulse laser technology to develop sophisticated devices that will give LANL an entirely new capability to non-destructively inspect and measure the interior of a pit with extremely high resolution.

PROGRAM INTEGRATION

You have heard about how, over the last several years the Stewardship program has successfully set in motion a series of initiatives to ensure high confidence in the safety and reliability of the nuclear weapons stockpile without nuclear testing or traditional new weapon development. Core technical capabilities have been fostered and facility milestones have been established to strengthen a strong science-based foundation for Stewardship. Construction of facilities like DARHT, NIF, and Atlas is now underway to provide state-of-the-art experimental facilities for pursuing fundamental weapons physics understanding. The subcritical experiments at NTS return extremely valuable data on the dynamic materials behavior of explosively driven plutonium. The ASCI program has successfully delivered world-class computational power and has focused and paced the development of simulation-based predictive capability that is required to integrate the scientific knowledge derived through ongoing experimental and theoretical program efforts. A Stockpile Life Extension (SLEP) program has formalized a disciplined process for introducing needed changes to the enduring nuclear weapons stockpile to address age-related risk. The time has now come to direct attention on a focused approach toward integrating and synchronizing the various "tools" of the Stewardship "toolkit" to more effectively achieve strategic program objectives; namely, by methodically applying science in a timely way to confidently manage life extension in the nuclear weapon stockpile.

In the fall of 1998, I chartered a Program Integration Task Force comprised of senior managers of the nuclear weapons laboratories and production plants, as well as the appropriate headquarters personnel with stewardship management responsibilities. The Task Force provided recommendations for: (a) taking the next steps toward more effective integration of science with stockpile deliverables; (b) providing more overall coherence among all program elements; and (c) identifying a basis for system-wide planning of program and budget.

The Task Force reported back to me in late November 1998. One of its main recommendations was to eliminate the organizational interface between the core stewardship R&D program, and the ASCI and stockpile computing program. This imperative was driven by the urgent need to accelerate integration of experimental data with the major three-dimensional weapons computer applications codes under development. In validating these codes, an improved predictive capability, derived from enhanced physics understanding of weapon performance and safety issues, could be more confidently applied in meeting critical certification milestones associated with stockpile life-extension modifications. As a result of this consolidation, the weapons science activities of the new organization could be more coherently managed at the interface with stockpile manufacturing and production activities.

The Task Force also emphasized the imperative for Headquarters to vigilantly manage the program balance at the science/production interface. Its suggestion was to apply a risk management approach in making programmatic tradeoffs between resources and deliverable schedules. The principle is fairly simple: weapons science activities not well integrated with stockpile deliverables would, in time, lose focus and drift away from relevancy and strategic objectives linked to the continued certification of weapon performance, safety, and reliability. On the other hand, any weapons production without the active integration of science through rigorous certification would eventually result in the inevitable loss of confidence without nuclear testing, thus losing nuclear deterrence for the Nation. Balancing these two major efforts under the stewardship "umbrella" will demand a more keen attention to enterprise-wide planning and budgeting, always governed by the principle that budget requirements should reflect an integrated set of program objectives.

In December of 1998, I took action on these Task Force recommendations by integrating the Stewardship science program under a new organization, the Office of Research, Development, and Simulation. This office is now actively pursuing program integration by working with the nuclear weapons laboratories and Nevada

Test Site to jointly identify and begin planning a set of "weapons technology campaigns". A "campaign" is defined as a major technical effort that focuses resources on developing a critical enabling technology to support confident certification.

A compelling weapons science or technology issue that demands a measurable enhancement in predictive capability will drive each campaign. Thus, each campaign will be designed to integrate experiments, simulation, and weapon-system assessments. Campaigns will be focused on achievable goals and identifiable end states for the 2004 time frame. The three laboratories and NTS will join in a common, complementary effort to define appropriate technology milestones. Technical efforts will be designed to exploit the current experimental and computational infrastructure to the maximum extent feasible, while integrating new capabilities as they become available. Collectively, the campaigns will be aimed at enhancing certification in the 2004 time frame, when about half of our nuclear-test-experienced weapon designers will have retired. By aggressively pursuing these integrating campaigns, we expect to successfully meet the challenges of the next decade.

Campaigns will result in a clearer set of program expectations tied to needs and priorities. This in turn will result in our ability to articulate our deliverables and budget requirements far more precisely and far more measurably than has been done in the past. Ultimately, I believe, this will result in a better understanding of what the public is buying for the funds provided. I am convinced that it will also provide, in the future, a clearer and more demonstrable model for addressing what can not be provided at a given level of resources.

CONCLUSION

These are but a selection of the broad range of on-going planned Stockpile Stewardship Program activities. Let me reemphasize that the current stockpile is well tested and well understood. The designers and engineers who built our existing weapons are still available and are still active. Indeed they are the ones who are creating the Stockpile Stewardship Program. They are the ones who are working on the stockpile now, and are helping to train their successors. We are mindful, however, that the clock is ticking on both the design life spans of the weapons, and the career spans of test-experienced designers, engineers, and production experts. We have an unprecedented, but time sensitive, challenge to put in place both the tools and the people that will carry us beyond test-based expertise to science-based expertise for the future.

If supported appropriately, I believe the Stockpile Stewardship Program can indefinitely maintain a safe and reliable stockpile without the need to conduct nuclear testing. I know of no other national security issue that is more important for our Nation today and for the next millennium.

STATEMENT OF ROSE E. GOTTEMOELLER

Senator DOMENICI. Thank you.

Ms. Gottemoeller, would you proceed with your testimony? Your written remarks will be made a part of the record. If you would abbreviate your oral remarks, and we will wait on the questions till all three witnesses have testified, then we will proceed.

Ms. GOTTEMOELLER. Yes, Mr. Chairman. I would like to have my remarks entered into the record. Thank you for the opportunity to appear before this committee and discuss our fiscal year 2000 budget request.

In my oral remarks, I would really like to hit a few of my office's planned activities as highlights for fiscal year 2000. The President has identified weapons of mass destruction proliferation as a national emergency, and I am proud of the role that DOE and my office play in responding to that emergency.

MATERIAL PROTECTION, CONTROL AND ACCOUNTING [MPC&A]

Our total request for fiscal year 2000 is $747.3 million, representing an 11 percent increase over our fiscal year 1999 appropriation. This increase reflects the growing threat to U.S. security in both international and domestic arenas. Russia is at the top of

our priority list. Through our Material Protection, Control and Accounting, or MPC&A program, we are helping Russia secure its nuclear weapons nuclear materials and reduce the risk that these materials will be diverted to the weapons in rogue regimes or terrorist organizations.

This has been a highly successful effort which has expanded to include 55 facilities throughout the former Soviet Union. To date, we have completed upgrades on 30 metric tons of material and have improved the security of some 400 tons, metric tons, in total. We are working now at virtually every site we know of that contains weapons—usable nuclear materials in the former Soviet Union, including the major sites in the Russian defense complex.

We still have much work to do, since we know that the Russians have at least 650 tons of nuclear material not in weapons and in need of upgraded protection, but we have developed the goodwill and the structure needed to efficiently pursue the security of the remaining stocks of nuclear materials.

Senator DOMENICI. Might I ask, why do you say 650 tons? Do you accumulate all kinds, rather than telling us what each one is?

Ms. GOTTEMOELLER. Yes, sir. That is an accumulation of plutonium as well as highly enriched uranium. It is the planning number that we use, although we know from our interactions with our Russian colleagues that the number may be larger than that.

Senator DOMENICI. Okay. Go ahead.

Ms. GOTTEMOELLER. We are requesting $145 million for this effort in fiscal year 2000. Our efforts in the area of Russian military security are made possible in large part because DOE's role and my office's role is important in setting the international standard for the production of nuclear materials and facilities here in the United States.

INITIATIVES FOR PROLIFERATION PREVENTION AND NUCLEAR CITIES INITIATIVE

I would now like to turn to the other side of the Russian proliferation problem, the brain drain. Our Initiatives for Proliferation Prevention programs and our newly launched Nuclear Cities Initiative are working to address the complex issues in this arena. I know much has been said and written recently on these efforts, but I would like to say this. We have through the initiatives for proliferation prevention successfully kept thousands, at last count over 5,900, former Soviet weapons experts at home and out of weapons work in rogue States, terrorist groups, and criminal organizations.

As the General Accounting Office recommended, we need to do a better job of ensuring more money gets to Russia. We also need to redouble our efforts to achieve commercial success with these projects. However, the overall goal, as GAO actually acknowledged, of keeping these experts at home is succeeding.

INTERNATIONAL NUCLEAR SAFETY

Elsewhere in our Russia-related activities, I am pleased to report that my office has successfully completed integrating the Department's Office of International Nuclear Safety into our structure. There is a natural synergy between the nuclear safety work and my office's more traditional missions. We are making excellent

progress in improving the safety of Soviet reactors, including improving Soviet safety diagnosis and response training, pursuing the installation of safety equipment, and establishing regional nuclear safety training centers.

Moreover, our efforts to aid the closing of the Chernobyl complex continue and, indeed, are intensifying in fiscal year 2000. While we work to counter threats abroad to our national security, we are stepping up our security efforts here at home. The threats to domestic safety and security are more diverse than ever and, at the direction of President Clinton and Secretary Richardson, we are moving smartly to address these concerns.

CHEMICAL AND BIOLOGICAL WEAPONS

The Department, through my office, is rapidly pursuing the President's call to improve our chemical and biological detection and identification capabilities. For our chem-bio initiative we are requesting a 70-percent increase from $19 to $32 million in fiscal year 2000.

The prime goal of these efforts is to provide first responders with portable, fast, and accurate tools to detect and ID chemical and biological agents. With one anthrax hoax in the United States every day, the ability to detect hoaxes and, in the worst case, confirm the use of chemical or biological agents is vital to reducing the effect of such events. Our investment in this area is leveraging the already strong expertise residing in the national laboratory system, especially those in the fields of chemistry and biology.

In addition to our CBW detection work, other important technical advances are being pursued in our arms control research and development area. The tools being developed through this office will improve our ability to detect proliferant activities in other countries and increase our confidence in the verifiability of international agreements such as the comprehensive test ban treaty.

DOMESTIC SECURITY

Now, sir, I would like to turn to our domestic security missions, which are equally important and challenging. Our Office of Security Affairs continues its vital role in protecting classified information and the security of the DOE complex overall. This has been another frequently discussed topic in recent months, but I would like to say this. Our mission requires us to remain accountable to the American public. To do this, we must effectively balance two equally essential missions, protecting classified information to prevent others from using it to harm U.S. interests, and keeping secret only that information which needs to be protected.

To meet these goals, the Department is working aggressively to review materials before they're released to ensure the absence of restricted or formerly restricted data as Congress has required. At the same time, we are working to comply with President Clinton's executive order to declassify documents that no longer require protection.

EMERGENCY MANAGEMENT

The last program I would like to mention is one that gets few headlines but allows me and my colleagues in the DOE leadership to get to sleep at night, from time to time anyway. This is the Office of Emergency Management, which is also operated out of my office 24 hours a day, 7 days a week, 365 days a year. Our staff is ready to respond to any of a wide variety of possible events that would affect our national security and safety, and the overall performance of the DOE complex.

PREPARED STATEMENT

There are many additional programs in our office, and time does not allow for as complete a listing as I would like to do, but I will be happy to answer any of your questions.

Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF ROSE E. GOTTEMOELLER

INTRODUCTION

Thank you, Mr. Chairman and members of this Committee, for the opportunity to appear before you today to present this statement for the record on the Department of Energy's fiscal year 2000 budget request for the Office of Nonproliferation and National Security (NN). The Department of Energy generally, and the Office I head specifically, have received extremely strong support from this committee. I'd like to thank you for that support and say that I look forward to working with you in the future as we work to address some of our nation's most important and critical challenges.

It has been stated many times, but it bears repeating: The world we face today is vastly changed from the one we lived in during the cold war. The challenges we face are more varied and less predictable. None of the threats we face is more serious than the proliferation of weapons of mass destruction to rogue states and, even more worrisome, terrorist organizations. The President has declared the threat of weapons of mass destruction (WMD) proliferation to constitute a "national emergency" and I am proud of the role the Department of Energy, and my Office in particular, is playing in responding to that emergency.

Within the Department, the Office of Nonproliferation and National Security is unique in the range of our contributions to national security. The Office is responsible for national security missions in both domestic and international settings. In Russia, DOE employees and laboratory experts are on the ground and actively working to improve the security of hundreds of tons of plutonium and highly enriched uranium at dozens of facilities. We are also working with thousands of former Soviet Union weapons scientists to provide them with non-weapons jobs and prevent them from straying into work with countries of proliferation concern. Here at home, we are accelerating our efforts to harness the skills of the national laboratories to meet the growing threats of chemical and biological weapons and the very serious risk that such weapons will be used on U.S. territory. In addition, my staff is ensuring the protection of U.S. nuclear materials and of DOE sites. At the same time, we must balance the critical job of protecting this nation's nuclear secrets, with meeting our obligation to declassify appropriate documents to ensure our accountability to the American people.

FISCAL YEAR 2000 BUDGET REQUEST

The Office's fiscal year 2000 budget request is $747.3 million, representing an 11 percent increase over our fiscal year 1999 appropriation. This increase reflects the ever growing challenges our nation faces in the international, as well as domestic arenas. While I won't, in my prepared remarks, go into detail on all of our programs, I would like to highlight for you some of our main projects and some areas of proposed expansion in 2000.

MATERIAL PROTECTION, CONTROL AND ACCOUNTING

First, I will turn to the situation in Russia. The members of this committee are keenly aware of the importance Russia plays in our overall nonproliferation strategy. For several years, we have been building up a legacy of trust and personal relationships that has allowed us to cooperatively pursue security upgrades throughout the Russian nuclear complex. The importance of this work, carried out under our Material Protection, Control and Accounting (MPC&A) program, cannot be overstated. Our programs have been key to international efforts to prevent the acquisition of nuclear weapons by terrorists or would-be nuclear states. In this goal, we have made considerable progress, but we have recognized that the task before us is much greater than we understood when this program began in 1994. Russia's economic collapse in August has forced us to re-evaluate our methods and priorities and brought, from the Russians themselves, a renewed sense of urgency to our cooperation. This now includes an increased awareness of the "insider threat" of nuclear materials diversion and an understanding that the size, and geographic scope of the nuclear enterprise is larger than had been appreciated in 1994.

With this background, over half of our proposed budget increase would be dedicated to our Office of Arms Control and Nonproliferation, which implements our Russian nuclear security efforts. The Russian MPC&A program would receive $145 million, which represents a $5 million increase over last year but an almost $40 million increase over our original baseline. This effort includes a long-range plan that will continue beyond our original completion date of 2002. Our extended deadline reflects one simple fact—the job of securing nuclear materials is a much harder and a larger endeavor than anyone—including Russia—understood when our program began. While we will have completed upgrades on the number of sites originally included in our program plan, designed in 1994, we have secured Russian agreement to cooperate on more than two dozen facilities that we didn't even know existed when the program began. In addition, in order to limit the program's overall requirements, we are venturing for the first time into the long-overdue area of "materials consolidation." The Russians themselves have finally realized the risks associated with maintaining such a far flung nuclear complex. Our cooperative consolidation efforts will help reduce the number of facilities housing nuclear materials, thereby reducing the strain on the Russian system and the long-term MPC&A requirements—including our own.

A word, if I may, about the absolutely incredible men and women who have been working on this problem night and day for the past several years. The image of the civil servant and government bureaucrat has been impugned for years in our society. I know that the members of this committee are well aware that the average civil servant is motivated and hardworking, but I have been struck since I became director of NN by the absolute dedication of our MPC&A task force and the almost superhuman level of their efforts. Their travel includes some of the most remote and least hospitable locations in the world, spending weeks away from family and basic comforts and making repeated trips to such locations in order to facilitate and complete their assignments. The work load for the average MPC&A Task Force member is extreme, as we had sought to limit the task force size to one appropriate for a limited duration project. This is an issue that we are examining extremely closely at the present time, in the expectation that the team will become larger and longer range in its organizational outlook.

Our ability to address Russian nuclear security concerns comes in large part from NN's responsibilities at home for the protection of nuclear materials. These include directing a rigorous safeguards and security program for the entire Department of Energy complex to ensure the demonstrated security of our own nuclear materials. Our work in Russia has benefitted greatly from our direct expertise in the protection of materials and facilities here at home, and from the knowledge that our efforts and accomplishments set the international standard for the protection of nuclear materials.

While we still have considerable work in ahead of us to upgrade security around Russian nuclear materials, we are also striving to address other sources of proliferation risk and concern in the former Soviet Union. We consider our work at nuclear sites to be the first line of defense against the proliferation of nuclear weapons. The second line of defense is the internal borders of Russia, and helping to ensure that any stolen or misappropriated materials cannot leave the country. Our Second Line of Defense program has already installed nuclear material detectors at the main international airport in Moscow and at the Caspian seaport of Astrakhan. We have identified 22 additional border crossings that for tactical or strategic reasons warrant the installation of similar equipment. This is yet another example of how a rel-

atively small investment can help protect ourselves and our friends against the greatest of threats.

INITIATIVES FOR PROLIFERATION PREVENTION/NUCLEAR CITIES INITIATIVE

Another critical component of our nonproliferation efforts in the former Soviet Union is our effort to engage and orchestrate alternative employment for underemployed and unemployed ex-Soviet weapons scientists. Through our Initiatives for Proliferation Prevention program, we have worked with over 170 institutes and sponsored collaborative scientific efforts with over 4000 ex-Soviet nuclear, chemical and biological weapons experts. This work has helped keep these experts in Russia and the Newly Independent States, as opposed to selling their know how to rogue regimes, criminal groups or terrorist organizations.

We are embarking on a much more comprehensive enterprise which also seeks to develop alternative, non-weapons jobs for weapons scientists, this time as part of our Nuclear Cities Initiative. The ten closed nuclear cities in Russia are the jewels in the Russian nuclear crown. We are pleased that Russia is finally taking steps to reassess and restructure their nuclear complex and has approached us about helping to develop new jobs for weapons scientists who will lose their defense work as weapons facilities close. We are approaching this endeavor with a mixture of commitment and pragmatism, realizing that such efforts will take time. But the goals of keeping the Russian weapons scientists at home, and helping to reduce the size of the Russian nuclear infrastructure, contribute directly to U.S. security.

The Department of Energy, and my Office in particular, has taken note of the concerns expressed in the General Accounting Office's recent report on our Initiatives for Proliferation Prevention program. We are working aggressively to implement their recommendations and believe that adoption of their comments will greatly improve what is already a successful enterprise. These include a strengthened review process to further ensure non IPP projects have dual-use benefits for Russian military programs and an increased effort to provide a greater percentage of resources to Russian and NIS scientists.

INTERNATIONAL NUCLEAR SAFETY AND COOPERATION

Elsewhere in the former Soviet nuclear complex, NN is now actively engaged in the area of international nuclear safety. The transfer of the Department's international nuclear safety activities into NN is now complete and has gone extremely well. There is a very strong natural connection between various Russian and NIS activities within NN's already existing projects and the nuclear safety initiatives. We continue to make excellent progress in improving the safety to Soviet-designed nuclear reactors and establishing self-sustaining nuclear safety infrastructures. We are addressing the most serious risks at these reactors by improving the plants' physical operating conditions, installing safety equipment, developing improved safety procedures, establishing regional centers for training reactor personnel, and conducting in-depth safety assessments of the operating plants.

NATIONAL SECURITY CHALLENGES

Our work in Russia, as important as it is, must not and does not distract our attention from our critical and considerable domestic activities. The changed situation abroad is matched by a changing picture at home. The President highlighted his concerns about new domestic threats in January at a National Academy of Sciences event in which he stated that "The enemies of peace realize they cannot defeat us with traditional military means. So they are working on two new forms of assault: cyber attacks on our critical computer systems, and attacks with weapons of mass destruction—chemical, biological, potentially even nuclear weapons. We must be ready—ready if our adversaries try to use computers to disable power grids, banking, communications and transportation networks, police, fire and health services—or military assets."

President Clinton, and his entire national security team, are increasingly concerned about these threats. We are, at the President's direction, making concerted and coordinated efforts to meet these growing challenges. Let me explain what DOE and NN are doing in this area.

CHEMICAL AND BIOLOGICAL THREATS

Among the Secretary's top priorities is responding to the growing threat of chemical and biological (CBW) attacks inside the United States. The Department of Energy, drawing upon the diverse and extensive expertise of the national laboratories, has extraordinary assets in the fields of biology and chemistry, pursued for both the

pure and applied scientific value. With relatively modest sums of money, the Department is seeking to leverage these skills and experience to improve our ability to detect and identify biological and chemical agents.

To pursue this work, we are requesting a total of $32 million, which is a $13 million or 70 percent increase over our 1999 appropriations. The focus of these efforts is to better equip first responders with the tools to identify and categorize chemical and biological agents. The tools we seek to develop must be portable, fast, accurate and simple, so that they can be put to immediate use in the field, serving to protect the American public from hoaxes or, worse, actual attacks.

Again, Mr. Chairman, defining the challenge is as simple as answering it is complex. There is, on average, one anthrax threat in the United States every day. In January, the shortcomings of our current capabilities were made glaringly clear, when an anthrax threat was directed at the 7th floor of the Department of State. While this, fortunately, turned out to be a hoax, we need to do better in fielding smart systems capable of detecting potential WMD agents. Today, there are no simple, portable and reliable detection and identification tools for biological agents available to those officials who are assigned the role of getting to the scene of a CBW attack first. Delays in assessing the credibility and severity of specific incidents create confusion, waste resources, and, in the event of a real attack, costs lives. In sum, our limited abilities in this area actually increase the "terror" effect of such attacks or hoaxes, thus inviting additional events. The sooner we can field the types of portable detection equipment we are working on, the sooner we will be able to deter and reduce the number of such attacks.

There are questions raised from time to time about why involve the Department of Energy—whose weapons expertise is focused in the nuclear arena. To be direct, DOE and its laboratories have a broad range of ongoing programs in biological and chemical areas which provide it with a unique set of skills to apply to this problem. Although originally developed in the service of our primary nuclear mission, these world-class capabilities can be leveraged for critical chemical and biological detection work. Programs such as the human genome mapping project or chemical spill remediation efforts are also being drawn upon to better protect our citizens against the most insidious of attacks.

RESEARCH AND DEVELOPMENT

The larger part of our research and development program, for which we are requesting $221 million in total, is dedicated to other ground breaking and vital efforts to improve our national security. Within the NN office, our Research and Development activities are working to ensure the early detection of proliferation-related activities and to improve our ability to verify existing or planned international treaties. While I cannot discuss in open session some of our work, we are pursuing a number of important avenues which will help detect, with increasing reliability, efforts to produce and refine nuclear materials, as well as new and better ways to detect and characterize nuclear tests and activities contrary to international norms or U.S. security interests.

DECLASSIFICATION INITIATIVE

I would also like to highlight additional areas of work here at home. Within our Office of Security Affairs, we continue the critical effort to declassify hundreds of millions of pages of archived information while ensuring the appropriate protection of classified information. The Secretary and my entire Office are committed to meeting the goals of the President's executive order on declassification while, at the same time, ensuring that Restricted and Formerly Restricted Data are not inadvertently released. Some might see these two responsibilities as conflicting, but I do not. They are not only compatible, but mutually supportive. Our requirement to remain accountable to the American public by avoiding excessive secrecy, while at the same time ensuring the vigilant protection of our nation's nuclear information are part of the same goal—ensuring the security and freedom for the American public, and fulfilling our public trust. We must protect the nation from the threat of nuclear terrorism as well as the danger of excessive secrecy. Both are critical to meeting our obligations as public servants and I am confident in our ability—given continued support—to achieve these goals.

EMERGENCY RESPONSE

Even as we prepare to address the risk of attack here at home, including our CBW detection efforts and our domestic security work, we are constantly preparing for how to respond should an emergency develop. The Office of Emergency Response is a critical resource for the Department and the United States Government as a

whole. This extensive communications network and dedicated staff are vital assets, and enable the Department's leadership to receive and process updates and help manage the response to a large variety of contingencies. These include environmental concerns associated with the management of DOE sites, to the more extreme cases of attack or sabotage. As with the other offices within my responsibility, I have been extremely impressed with the professionalism and dedication of the staff within this program office. Their efforts help reduce the likelihood of a crisis and enable us to reduce the consequences, should one arise. Their efforts are generally underappreciated in the eye of the public, largely due to their skill and success in their jobs.

CONCLUSION

I would like to end where I began, and thank the Chairman and the entire Committee for their support for the Department and my Office as we address the nation's critical national security missions. I look forward to our continued work together. Thank you.

STATEMENT OF LAURA S.H. HOLGATE

Senator DOMENICI. Thank you very much, Ms. Gottemoeller.

Ms. Holgate, will you proceed with your testimony, and your prepared remarks will be made a part of the record.

Ms. HOLGATE. Thank you, Mr. Chairman, Senator Reid, members of the committee. I am pleased to appear before you today to discuss the Department of Energy's fiscal year 2000 budget for fissile materials disposition.

The Office of Fissile Materials Disposition's principal focus is on disposing of inventories of surplus U.S. weapons—usable plutonium, and highly enriched uranium, as well as providing technical support for and ultimately implementing Administration efforts to obtain reciprocal disposition of surplus Russian plutonium.

These disposition activities, along with other administration efforts aimed at dismantling weapons delivery systems, securing nuclear materials and preventing the spread of nuclear weapons knowledge, are part of the Administration's overall strategy to reduce the threat from weapons of mass destruction.

A recent New York Times editorial stated that nothing would do more to protect American security in the decades ahead than ensuring that Russia's immense stockpile of nuclear weapons and materials is diminished. That, members of the committee, is our goal.

FISCAL YEAR 2000 BUDGET REQUEST

The fiscal year 2000 budget request for these activities is $200 million, an increase of $32 million over the fiscal year 1999 comparable amount. The increase in fiscal year 2000 will allow the Department to continue detailed design of the pit disassembly and conversion facility and the MOX fuel fabrication facility, as well as begin design of the immobilization and processing facility, key elements of the United States hybrid plutonium disposition strategy involving immobilization and burning of mixed oxide [MOX] fuel in existing, domestic reactors.

This budget request will also allow the program to continue testing the pit disassembly and conversion prototype at the Los Alamos National Laboratory, to establish a technical baseline for the ceramic immobilization plant process, conduct fuel qualification, continue MOX fuel facility license activities, initiate a MOX lead test assembly program, and conduct a repository analysis associated with disposition technologies.

The $160 million out of the fiscal year 2000 budget request is allocated for these elements, required to dispose of 50 tons of excess U.S. plutonium.

Proceeding with planned design, development, and licensing is important, because it strengthens the U.S. negotiating position with Russia and sends a strong message that the United States is serious about reciprocal plutonium disposition. A decision to stop or significantly slow the design effort would result in demobilization of the disposition facility design teams, loss of continuity, and increased costs.

The United States, however, will not begin construction of new facilities for disposition of U.S. plutonium unless there is significant progress on plans for plutonium disposition in Russia. This is necessary to avoid putting the United States at a strategic disadvantage in future negotiations with Russia as well as to avoid large scale expenditure of funds until they are required.

U.S.-RUSSIA PLUTONIUM AGREEMENT

With regard to progress with Russia on plutonium disposition, important foundations have been laid in the last year. In July 1998, Vice President Gore and former Russian Prime Minister Kiriyenko signed a Scientific and Technical Cooperation Agreement. The agreement provides for conducting tests and demonstrations of technologies needed to dispose of surplus weapons plutonium in Russia, including plutonium conversion and nondestructive assay, burning mixed oxide fuel in reactors, and immobilization of waste.

This work is needed to build trust and cooperation and will add to the technical knowledge base, confirm the viability of certain technologies, and demonstrate the technologies that might be employed for disposition of surplus Russian plutonium.

The program's fiscal year 2000 budget includes $24.9 million to implement this agreement and to carry out other activities in support of the plutonium disposition in Russia as part of the President's Expanded Threat Reduction Initiative.

At the Moscow summit in September 1998, President Clinton and President Yeltsin signed a Joint Statement of Principles. This statement committed the two countries to seek to conclude a bilateral plutonium disposition agreement as soon as possible. This bilateral agreement will specify the technological approach and schedules to be followed by each country, the types of facilities to be constructed in Russia, and commitments with respect to the support of these activities in Russia.

Negotiations on this agreement are underway, and in initial conversations with Russian counterparts we feel significant commonality of vision on the content, structure, and timing of this agreement.

The United States delegation is led by the Department of State, with key negotiation and technical support being provided by my office. I believe that an agreement can be concluded this year to enable plutonium disposition to proceed in both countries.

Once this agreement is in place, the U.S. and Russia would each proceed with parallel programs with comparable rates of disposition. In Russia, the program will require the design, construction,

and operation of facilities to convert weapons plutonium metal into oxide powder and to fabricate MOX fuel, as well as to modify Russian reactors to permit MOX utilization.

The estimated annual capacity of existing Russian reactors is 2 metric tons of MOX fuel per year. The U.S. goal is to increase this rate of disposition in Russia of Russian material to no less than 5 metric tons per year, for the expansion of the plutonium conversion and MOX fabrication facilities, and the identification and utilization of additional reactor capacity, whether inside or outside Russia, to consume MOX fuel fabricated from plutonium withdrawn from Russian weapons.

FISCAL YEAR 1999 EMERGENCY SUPPLEMENTAL APPROPRIATION

The Department intends to assist Russia to implement this bilateral agreement initially through the emergency appropriation of $200 million provided in fiscal year 1999. This dramatic gesture has been instrumental in the Russians' current cooperative approach in this negotiation. This funding will be expended in the Russian Federation over a 2- to 3-year period following completion of the agreement.

A detailed budget justification and obligation plan will be submitted to Congress once the strategies are defined as part of the negotiations progress. This funding is likely to be utilized primarily to begin to create a MOX infrastructure in Russia.

The $200 million will not cover the entire cost of implementing this agreement. Russia will need to contribute some resources, and the Administration plans to seek support for a portion of this program from the international community, both the private and public sector. If, however, the program requires additional future appropriations, the administration will consider such needs in the course of its normal budget process.

GAS U.S.-RUSSIAN REACTOR TECHNOLOGY DEVELOPMENT

The fiscal year 1999 Energy and Water Development Act provided an earmark of $5 million for joint U.S.-Russian development of gas reactor technology called for the Russian Federation to provide a matching contribution of $3 million in either comparable funds or contributions in-kind. This level of funding should be adequate to cover gas reactor technology R&D efforts in fiscal years 1999 and 2000.

In closing, the Fissile Material Disposition Program has come a long way in building the domestic and international consensus necessary to begin disposing of surplus highly enriched uranium and plutonium. Along the way, the program has led U.S. efforts not only to identify a hybrid strategy for disposing of surplus weapons plutonium, but also to begin implementation of this strategy. Technology development, tests, and demonstrations are ongoing, and a prototype pit disassembly and conversion system successfully began operations at the Los Alamos National Laboratory in November.

DOE is about to announce a major contract award for MOX fuel fabrication and irradiation services, and Title I design will soon begin for two of the three disposition facilities. Negotiations have recently begun with Russia aimed at achieving a bilateral agreement for plutonium disposition.

Now is the time for the United States to continue this important mission by sending a clear signal to the world community that we are intent on finishing this job. Returning to the words of the New York Times editorial, the modest amount of money needed to achieve these goals now could save Washington many billions of dollars in the future to deal with the Russian nuclear threat.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF LAURA S.H. HOLGATE

INTRODUCTION

Mr. Chairman and members of the Committee, I am pleased to appear before you to discuss the Department of Energy's fiscal year 2000 budget request for Fissile Materials Disposition.

With the end of the Cold War, hundreds of tons of weapons plutonium and highly enriched uranium have become surplus to defense needs in both the U.S. and Russia. Continued downsizing of nuclear weapons stockpiles and implementation of arms reduction agreements are expected to result in further weapons dismantlements and increases in stockpiles of surplus weapons materials. Denying a potential proliferator access to these materials is the principal barrier to acquiring a nuclear weapons capability. Given the current political instability and worsening economic conditions prevailing in Russia, there is a very real threat that nuclear weapons materials could be stolen or diverted into the hands of terrorists or non-nuclear nations. These materials could be readily fabricated into crude nuclear weapons for use not only against other nations but also in the U.S. against Americans.

Within the Department of Energy, the Office of Fissile Materials Disposition's principal focus is on disposing of inventories of surplus U.S. weapons-usable plutonium and highly enriched uranium as well as providing technical support for and ultimately implementation of Administration efforts to obtain reciprocal disposition of surplus Russian plutonium. These disposition activities—along with other Administration efforts aimed at dismantling weapons delivery systems, securing nuclear materials, and preventing the spread of nuclear weapons knowledge—are part of the Administration's strategy to reduce the threat from weapons of mass destruction.

The fiscal year 2000 budget request for these activities is $200 million, an increase of $32.5 million over the fiscal year 1999 comparable amount. The increase in fiscal year 2000 is primarily to allow the program to begin design of a key U.S. plutonium disposition facility to immobilize surplus non-pit plutonium, procure lead test assembly equipment required for mixed oxide (MOX) fuel irradiation tests, and hire the field staff necessary to oversee plutonium disposition facility design activities at the selected DOE site. The sections that follow describe the current and planned activities and requested funding for the Department's fissile materials disposition activities.

SURPLUS PLUTONIUM DISPOSITION SUMMARY

The Program's efforts in fiscal years 1999 and 2000 will focus on implementing the Administration's hybrid strategy for plutonium disposition. This strategy calls for immobilizing surplus weapons plutonium in ceramic surrounded by vitrified high level radioactive waste and burning surplus plutonium as mixed oxide fuel in existing, domestic commercial reactors. Both approaches render the surplus plutonium as inaccessible and unattractive for retrieval and weapons use as the plutonium remaining in spent fuel from commercial reactors.

DOE is pursuing both disposition technologies because they provide important insurance against unexpected difficulties with the implementation of either technology by itself and they help ensure an early start for this important task. This hybrid strategy also provides the United States with flexibility and leverage in negotiating with Russia and our allies on the critical task of reducing Russian excess weapons plutonium. While the proposed immobilization technology would be expected to make the weapons plutonium difficult for terrorists or third world countries to use in weapons, the Russians have repeatedly expressed concern that the U.S. immobilization approach would not destroy plutonium and would leave it available for possible re-use in weapons, thus reversing the disarmament process. Moreover, there is reason to believe that if the U.S. implements only immobilization, Russia will continue to store, rather than eliminate, its stockpile of surplus weapons plutonium.

The Program is conducting necessary technology development and demonstrations, completing site-specific environmental analyses, designing three disposition facilities, and providing key negotiation and technical support for efforts to attain a bilateral agreement for the disposition of surplus Russian plutonium.

Proceeding with planned design, development and licensing is important because it strengthens the U.S. negotiating position and sends a strong message to the Russians that the U.S. is serious about reciprocal plutonium disposition. A decision to stop or significantly slow the design effort would result in demobilization of the disposition facility design teams, loss of continuity and increased costs. Since the licensing of the MOX fuel fabrication plant and use of MOX fuels in reactors is dependent upon a foundation of design and technical analysis, failure to proceed with the resulting technical program will significantly lengthen the critical licensing path.

PIT DISASSEMBLY AND CONVERSION

The United States has declared 50 metric tons of plutonium as surplus to national defense needs. Approximately two-thirds of this amount is either in the form of classified nuclear weapons components called "pits" or clean plutonium metal. Before weapons plutonium from pits can be disposed of, it must first be removed from pit form and converted to an unclassified oxide form suitable for disposition and international inspection. The Department plans to use the Advanced Recovery and Integrated Extraction System (ARIES) process, a low-waste, modular pyro-chemical process, to convert the pits and plutonium metal to plutonium oxide. ARIES is being developed jointly by the Los Alamos National Laboratory and the Lawrence Livermore National Laboratory. Sandia National Laboratories is developing robotics for the system.

In November 1998, DOE began operation of an integrated pit disassembly and conversion prototype which utilizes the ARIES process at DOE's Los Alamos National Laboratory. This demonstration, which involves dismantling up to 250 pits over a two to three year period, will provide important information for designing and operating a full-scale Pit Disassembly and Conversion Facility.

The fiscal year 2000 budget request seeks funding to continue testing of the integrated prototype system at Los Alamos. Funding is also being sought to complete Title I & begin Title II design of a full-scale Pit Disassembly and Conversion Facility. Contingent on significant progress on Russian plans for plutonium disposition, as well as successful testing of the prototype, a full-scale facility, capable of processing thousands of pits per year, could be operational in fiscal year 2005.

IMMOBILIZATION

Approximately one-third of the 50 tons of surplus U.S. plutonium is in the form of impure metal, oxides and reactor fuel which are unsuitable for MOX use without extensive purification. To dispose of this material, as well as to provide an alternate disposition pathway should the MOX/reactor approach prove impossible to implement, the Department is focusing on a "can-in-canister" approach for immobilization. Under this approach, feed materials would be converted to oxide which would be mixed with ceramic material to form disks. The disks would be stacked and sealed into steel cans which would be arrayed within large canisters into which vitrified high-level waste would be poured. The radioactive waste barrier increases the proliferation resistance of the immobilized plutonium. The can-in-canister approach would make use of a high level waste vitrification facility such as currently exists at Savannah River or is planned to be built at the Hanford Site. Subsequently, the canisters would be disposed of in a geologic repository.

While the United States has experience with immobilizing high level wastes, the technological aspects of how to immobilize weapons plutonium on an industrial scale need to be resolvedFiscal year 2000 efforts will be aimed at resolving technological issues associated with impurities in the surplus plutonium forms, developing and demonstrating production-scale processes and equipment, and conducting the necessary verification testing of the preferred can-in-canister approach in order to be confident that it can be successful in a timely and cost-effective manner.

The fiscal year 2000 budget request also seeks funding to begin Title I design of an Immobilization and Processing Facility. Contingent on significant progress on Russian plans for plutonium disposition, as well as successful development and refinement of the immobilization process, a full-scale facility could be operational in fiscal year 2006.

MIXED OXIDE FUEL FABRICATION AND IRRADIATION SERVICES

The other half of the hybrid disposition strategy involves irradiating MOX fuel in existing, domestic reactors. While MOX fuel is used in Western Europe on an industrial scale, the principal uncertainty in the U.S. involves the required cost and business arrangements. Because the Department doesn't own the reactors needed to irradiate the MOX fuel or a MOX fuel fabrication plant, DOE is conducting a competitive procurement to acquire the services of an industry consortium to design, construct and operate a MOX fuel fabrication facility; to irradiate the MOX fuel produced in that facility in existing, domestic, commercial reactors; and to deactivate the fuel fabrication facility at the end of the disposition mission. This approach would maximize private sector participation by teaming fuel designers and fabricators, architect & engineering firms, construction firms, and reactor operators. Under this arrangement the consortium will have full responsibility for construction and operation of the fuel fabrication facility as well as modification and operation of the reactors in which the fuel will be used.

The MOX Fuel Fabrication Facility would be designed, constructed, and operated by a private sector consortium at an existing DOE site. The facility would be government-owned and operated solely for the disposition of surplus U.S. plutonium. The government would retain the right to terminate operation of the fuel fabrication facility, either at the completion of the plutonium disposition mission or earlier, if required. The facility will be regulated and licensed by the Nuclear Regulatory Commission (NRC). In the case of operating reactors, the reactor owners would retain their inherent responsibility for operating their reactors safely in accordance with their NRC licenses.

The procurement was initiated in May 1998. Following analysis of three separate proposals, DOE expects to award a contract this month to an industrial consortium to start fuel fabrication facility design, licensing, reactor analysis, and fuel qualification.

The fiscal year 2000 budget request will fund process development for MOX fuel fabrication, procurement of lead test assembly equipment for irradiation tests of the MOX fuel, as well as completion of Title I and initiation of Title II design of a MOX Fuel Fabrication Facility. Contingent on significant progress on Russian plans for plutonium disposition, as well as successful completion of design and licensing efforts, a full-scale facility could be operational in fiscal year 2007.

RUSSIAN PLUTONIUM DISPOSITION

The next two to three years will be a crucial period in U.S. Russian relations concerning the disposition of surplus weapons plutonium. Proceeding with U.S. long lead-time activities leading up to construction is necessary to maintain momentum and pressure on Russia for a plutonium disposition agreement, and serves as a sign to private industry, the public and the world community that the U.S. is serious about disposing of stockpiles of surplus weapons plutonium. The United States is proceeding with research, design and licensing activities for disposing of surplus U.S. plutonium but will not begin construction of new facilities for disposition of U.S. plutonium (Pit Disassembly and Conversion Facility, Immobilization and Associated Processing Facility, and Mixed Oxide Fuel Fabrication Facility) unless there is significant progress on plans for plutonium disposition in Russia. Completing design is necessary to avoid putting the United States at a strategic disadvantage in future negotiations with Russia as well as to avoid the large-scale expenditure of funds until necessary.

At the Moscow Summit in September 1998, President Clinton and President Yeltsin signed a Joint Statement of Principles for Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes. The Statement committed the two countries to seek to conclude a Bilateral Plutonium Disposition Agreement. The Bilateral Agreement would specify the technological approach and schedules to be followed by each country, the types of facilities to be constructed in Russia, and commitments with respect to the financing of these activities in Russia.

Negotiations are underway, and initial conversations with Russian counterparts reveal significant commonality of vision on the content, structure, and timing of this agreement. The U.S. delegation is led by the Department of State with key negotiation and technical support being provided by the Department of Energy. The Russian delegation is led by the Ministry of Atomic Energy (MINATOM), supported by the Ministry of Foreign Affairs. I believe that an agreement can be concluded this year to enable plutonium disposition to proceed in both countries.

Once the Agreement is in place, the U.S. and Russia would each proceed with parallel programs with comparable, although not necessarily identical, rates of disposition. In Russia, this program would require the design, construction, and operation

of facilities to convert weapons plutonium metal into non-weapons form and to fabricate MOX fuel, as well as to modify Russian reactors to permit MOX utilization. The estimated annual capacity of existing Russian reactors (7 VVER–1000 reactors and 1 BN–600 reactor) is two metric tons per year. The U.S. goal is to increase this rate of plutonium disposition in Russia to five metric tons per year through the expansion of the plutonium conversion and MOX fabrication facilities and the identification and utilization of additional reactor capacity (whether inside or outside Russia) to consume MOX fuel fabricated from plutonium withdrawn from Russian weapons.

The Department intends to assist Russia to implement this Bilateral Agreement initially through the emergency appropriation of $200 million provided in fiscal year 1999. This funding will be expended in the Russian Federation over a two- to three-year period following completion of the United States/Russian agreement. A detailed budget justification and obligation plan will be submitted to Congress once strategies are defined as negotiations progress. Although the United States and Russia have not yet agreed on rates, techniques, or facilities for plutonium disposition, this funding will likely be utilized to begin to create a MOX infrastructure in Russia. The $200 million will not cover the entire cost of implementing the agreement. Russia will need to contribute some resources, and the Administration plans to seek financing for a portion of this program from the international community, both the private and public sectors. If, however, the program requires future appropriations, the Administration will consider such needs in the course of its normal budget process.

WORK WITH RUSSIA

In July 1998, Vice President Gore and the former Russian Prime Minister Kiriyenko signed a Scientific and Technical Cooperation Agreement. The Agreement provides for conducting tests and demonstrations (up to and including pilot-scale tests and demonstrations) of technologies needed to dispose of surplus weapons plutonium including plutonium conversion and nondestructive assay, burning mixed oxide (MOX) fuel in reactors, and immobilization. This work is needed to build trust and cooperation and will add to the technical knowledge base, confirm the viability of certain technologies, and demonstrate the technologies that might be employed for disposition of surplus Russian plutonium.

The fiscal year 1999 Energy and Water Development Appropriation earmark of $5 million for joint U.S.-Russian development of gas reactor technology called for the Russian Federation to provide a matching contribution of $3 million in either comparable funds or contributions-in-kind. This level of funding should be adequate to cover gas reactor technology research and development efforts in the fiscal year 1999–2000 timeframe.

The portion of the fiscal year 2000 budget to be allocated towards cooperation with Russia is $24.9 million. This funding will allow the Department to continue a series of collaborative disposition efforts which include analyses and small-scale tests and demonstrations of plutonium disposition technologies, and fund efforts in the United States to implement a United States/Russian accord for disposition of excess weapons plutonium in Russia. These activities are part of the President's Expanded Threat Reduction Initiative.

BUDGET REQUEST SUMMARY FOR PLUTONIUM DISPOSITION ACTIVITIES

In summary, the portion of the fiscal year 2000 budget to be allocated towards plutonium disposition activities (pit disassembly and conversion; immobilization; MOX fuel fabrication and irradiation services; and work with Russia) is $177.0 million. This funding will allow the Department to continue detailed design of the Pit Disassembly and Conversion Facility and the MOX Fuel Fabrication Facility; begin design of the Immobilization and Processing Facility; continue testing of the pit disassembly and conversion prototype; establish the technical baseline for ceramic immobilization plant process; conduct fuel qualification, continue MOX fuel facility licensing activities, initiate a MOX lead test assembly program; and conduct repository analyses associated with disposition technologies. The fiscal year 2000 budget for U.S. plutonium disposition activities represents an increase of $22.3 million over fiscal year 1999. This increase is due to the start of Title I design for the Immobilization and Processing Facility ($21.8 million), and Title II design for the Pit Disassembly and Conversion Facility ($8.7 million), procurement of lead test equipment for the MOX fuel approach ($7.5 million). This increase is partially offset by decreases in MOX Fuel Fabrication Facility design and other activities (−$15.7 million).

HIGHLY ENRICHED URANIUM DISPOSITION

In fiscal year 1999 and fiscal year 2000, the program will continue to focus on implementing the Department's July 1996 Record of Decision to disposition as much as possible of the surplus highly enriched uranium (HEU) by down-blending it with other uranium to make low enriched uranium which is commercially usable as power reactor fuel. This approach advances U.S. nonproliferation goals, reduces storage and security costs, and provides revenues to the Treasury from the commercial sale of these surplus assets over time. The remaining surplus HEU, originally determined to be unsuitable for commercial use, is to be down-blended and disposed of as waste.

To date, about 174 metric tons (MT) of HEU have been declared excess to national security needs. Because of the various forms of HEU and the availability dates from weapons dismantlement and site cleanup operations, down blending will take place over an extended period of time. Title to 63 MT of HEU has been transferred to the United States Enrichment Corporation (USEC). Thirteen MT was transferred to USEC and has been down-blended pursuant to the Energy Policy Act of 1992. An additional 50 MT is being shipped over the next six years (4 MT to date) pursuant to the USEC Privatization Act. An additional 33–40 MT of off-specification HEU material, not saleable on the open market, is expected to be transferred to the Tennessee Valley Authority (TVA) for use in its reactors over the period between 2001 and 2006. DOE is preparing plans for disposition of the remaining surplus HEU.

The portion of the fiscal year 2000 budget for surplus uranium disposition activities is $5.8 million. This funding will allow the Department to facilitate and implement disposition of surplus highly enriched uranium, including off-specification HEU.

SURPLUS FISSILE MATERIAL STORAGE

In January 1997, the Department issued a Record of Decision regarding the storage of all weapons-usable fissile materials and the disposition of surplus plutonium. The Department will reduce the number of sites where plutonium is stored through a combination of storage and disposition alternatives. Under this decision, DOE began shipping surplus plutonium pits from Rocky Flats to Pantex in April 1997 and will complete the shipments in fiscal year 1999. Stabilized and separated non-pit plutonium from Rocky Flats will be moved to Savannah River (after certain conditions are met). Storage of surplus plutonium at other sites will continue, pending disposition. Highly enriched uranium will continue to be consolidated and stored at the Oak Ridge Y–12 Plant, pending disposition.

In August 1998, the Department issued an amended Record of Decision to remove all surplus non-pit plutonium from Rocky Flats by 2002, in accordance with the Department's June 1998 Accelerated Closure Pilot Project that calls for closing the site by 2006. The plan calls for the Department to transfer surplus non-pit plutonium from Rocky Flats to Savannah River for storage in a modified Building 105–K.

The portion of the fiscal year 2000 budget to be allocated towards storage of surplus fissile materials is $4.3 million. This funding will allow the Department to begin operation of an upgraded storage area for surplus plutonium pits at Pantex. The increase of $3.4 million from fiscal year 1999 reflects a shift in Program emphasis from analysis of storage and transportation issues required during the construction phase to operation of the upgraded area. Design and construction of upgrades for surplus pit materials will be funded from fiscal year 1997 carryover balances.

CORE TECHNOLOGIES AND NEPA COMPLIANCE

The Department is currently preparing an Environmental Impact Statement to help determine the site(s) where surplus weapons plutonium disposition activities will take place. Four sites (Hanford, Idaho National Engineering and Environmental Laboratory, Pantex and Savannah River) are being considered for constructing and operating key disposition facilities.

On December 22, 1998, Secretary Richardson selected the Savannah River Site as the preferred site for building and operating the Pit Disassembly and Conversion Facility. Savannah River was selected because the site has extensive experience with plutonium processing. In addition, locating the pit disassembly facility with other existing and planned facilities at the site might provide some savings in infrastructure.

Previously, the Department named Savannah River as the preferred site for two other key disposition facilities—the Mixed Oxide (MOX) Fuel Fabrication Facility and the Immobilization and Processing Facility. Subsequent to the release of the

Environmental Impact Statement later this year, final site selection will be made in the Record of Decision to follow shortly thereafter.

The portion of the fiscal year 2000 budget for Core Technologies and NEPA is $5.6 million. This funding will provide crosscutting technologies and program integration activities.

PROGRAM DIRECTION

Program Direction provides the overall management, oversight, staffing, and administrative support necessary to carry out the Fissile Materials Disposition Program. The portion of the fiscal year 2000 budget for Program Direction is $7.3 million and represents an increase of $2.7 million over fiscal year 1999. This increase is for seven additional full-time equivalents (FTEs) over the fiscal year 1999 FTE level for field oversight and project management for the design of three plutonium disposition facilities. The increase also includes funding for FTEs funded with prior year balances in fiscal year 1999 and movement of support service activities into Program Direction from Core Technologies and NEPA in accordance with Congressional direction. The $7.3 million level for Program Direction continues to represent a modest 3.7 percent of the total Fissile Materials Disposition Program budget request.

CONCLUSION

This Fissile Materials Disposition Program has come a long way in building the domestic and international consensus necessary to begin disposing of surplus highly enriched uranium and plutonium. Along the way, the Program has led U.S. efforts not only to identify a hybrid strategy for disposing of surplus weapons plutonium, but also to begin implementation of this hybrid strategy. Technology process development, tests, and demonstrations are ongoing and a prototype pit disassembly and conversion system successfully began operations at the Los Alamos National Laboratory in November. DOE is about to announce a major contract award for MOX fuel fabrication and irradiation services and Title I design will soon begin for two of the three disposition facilities. Negotiations have recently begun with Russia aimed at achieving a bilateral agreement for plutonium disposition. Now is the time for the United States to continue this important mission by sending a clear signal to the world community that we are intent on finishing the job. It is an investment in our future well worth making.

SURPLUS NUCLEAR MATERIALS THREAT

Senator DOMENICI. We are going to proceed with questions, and if any Senator has a time schedule I would yield to them.

Ms. Holgate, I would like to hear you when I ask questions be able to explain this threat related to surplus nuclear materials, and what we are doing without having to quote the New York Times, so would you be thinking about that?

Ms. HOLGATE. Certainly, sir.

Senator DOMENICI. I would appreciate it. Not that they should not be quoted, but I would think you ought to have some other sources beyond the New York Times as to the importance of this program.

STOCKPILE SAFETY RELIABILITY, AND SECURITY

I suggest that we go one round quickly. Dr. Reis, for the record, is the nuclear weapons stockpile safe, reliable, and secure?

Dr. REIS. Yes, it is, Senator.

Senator DOMENICI. Do you have confidence that the weapons in the stockpile can and will perform as designed?

Dr. REIS. Yes, I do.

Senator DOMENICI. Do you have concurrence in those conclusions from the laboratory directors at the three nuclear laboratories?

Dr. REIS. Yes, we do, Senator. We sent a letter to the President, and I assume he will send the letter and the materials along with

that up to Congress very, very shortly indicating just those facts, including not just the laboratory directors, but the Commander-in-Chief of the United States Strategic Command as well.

CRITICAL NEEDS NOT ADDRESSED IN BUDGET

Senator DOMENICI. Are there any critical needs with reference to the Stockpile Stewardship program, that program upon which we predicate the safety and reliability and security of the weapons, not addressed in the budget because of a lack of budgetary resources?

Dr. REIS. We feel the budget is responsibly addressing the stockpile right now, sir.

Senator DOMENICI. If the defense side of this budget were to be cut substantially, could that change the answer to the three questions you have just given?

Dr. REIS. It certainly could.

Senator DOMENICI. Will you be prepared during the budget and appropriation process to respond in that regard?

Dr. REIS. I would be glad to do so.

CHILES COMMISSION REPORT AND RECOMMENDATIONS

Senator DOMENICI. The Chiles Commission report for just a moment, we will move to it first. Are you familiar with the report and, if so, can you review briefly the findings and recommendations?

Dr. REIS. Yes, sir. I have a copy of the report right here, and we have been through those recommendations with Admiral Chiles, who briefed myself, Under Secretary Moniz, and the Secretary.

They listed basically some 12 recommendations. I will not go through all of them now. In the briefing that they gave to the Secretary——

Senator DOMENICI. Just generally tell us, what they were concerned about?

Dr. REIS. This was—as you recall, a congressionally mandated commission that was to look at the personnel policies, will we have enough people in the long term to support the Stockpile Stewardship program. It was specifically oriented toward the people, the personnel policies, and the level of expertise at the laboratories, at the plants, and in the Federal structure.

What they discovered was, and we concur that we have some considerable amount of work to do. All is not well at any of those facilities, we have got some plans in place, but it is important to move aggressively to ensure that we have those people in the future when the time comes.

BALANCE OF PRODUCTION PLANTS AND LABS FUNDING

Senator DOMENICI. Let me move now to two different budgetary percentages, first the budget request, about 7.5 percent increase in the stockpile stewardship. At the same time, it includes a 4-percent reduction of stockpile management. Does this cause any problems in carrying out the program with the labs and the production plants?

Dr. REIS. Senator, every year we have to go through and balance very carefully the plants and the laboratories and that is not an

easy judgment to make. People can differ in terms of those numbers, but we believe those are the best numbers right now.

NUCLEAR POWER PLANTS IN RUSSIA

Senator DOMENICI. I will save this series of questions for you until after the other Senators have inquired. I will just ask one question each of the other two witnesses.

Ms. Gottemoeller, could you tell me how many nuclear power plants in Russia are of the type and model at Chernobyl?

Ms. GOTTEMOELLER. The Chernobyl style reactors are RBMK reactors, sir. I do not have that exact number at my finger tips, so I will have to provide that for the record.

Senator DOMENICI. Are there some?

Ms. GOTTEMOELLER. Absolutely, sir, yes.

[The information follows:]

RBMK REACTORS

There are currently 14 operational RBMK reactors. This includes 11 in Russia, 2 in Lithuania and the 1 remaining operational Chernobyl unit in Ukraine.

Y2K IMPACT ON CHERNOBYL-TYPE REACTORS

Senator DOMENICI. Might I just ask, we are helping to make these reactors safer, and working with them on technological advances and improvements. But I read with some concern that Y2K may have a very big impact on Chernobyl-type reactors. Are we aware of that, and is that any of our concern at this point?

Ms. GOTTEMOELLER. Sir, we have actually had a very productive seminar in cooperation with the IAEA, the International Atomic Energy Agency in Vienna. We have also had two workshops in Moscow. We have gone to Moscow and sat down with the power plant industry and, in fact, there are some considerable concerns, many of which are associated with the stability of the power grid serving the reactors.

There is quite a bit of concern that should there be a Y2K problem with regard to the electricity flow into the power reactors, the RBMK types as well as the other types, that it could lead to a serious accident, and so that has been a concern to us, and we have proposed to the Congress a reprogramming request to work quickly with the Russians on some programs to lay out the steps that they have to take within the next 9 months in order to resolve these problems. We think that they can be resolved, but they need to pay some attention to them.

Senator DOMENICI. Now, we granted your reprogramming, but the House has denied it twice. What was the reason for denying the Y2K programming?

Ms. GOTTEMOELLER. My understanding, sir, is that there was a concern with regard to a hardware request. That is, we had hoped to perhaps supply some emergency generators for the power plants in case there should be a power failure of the kind I described a few moments ago.

As a matter of fact, we have been able to respond to their concerns by really refocusing our request on the very important prioritization planning work that has to be done. In other words, we have removed the request for hardware from the reprogram-

ming request, and we hope that that will deal with the concerns that have been expressed by the House.

Senator DOMENICI. I misstated. We had not granted the reprogramming, but they denied it before we had a chance. We are prepared to, but all we got was a denial from the other body. We will work with you when you are ready on our side.

Ms. GOTTEMOELLER. Thank you very much.

U.S.-RUSSIAN PLUTONIUM AGREEMENT

Senator DOMENICI. One question now of Ms. Holgate. This $200 million that we have provided, set aside for implementation of the U.S.-Russian plutonium agreement, why isn't this just foreign aid to Russia that we are throwing down a rat hole, helping the Russians with their nuclear development by giving them money? How do you explain that?

Ms. HOLGATE. Well, first of all, sir, let me thank you personally for your role in providing that additional funding.

Senator DOMENICI. Obviously, I do not believe what I just said.

Ms. HOLGATE. I understand. Nor do I, sir. One of the key reasons that it is not simply throwing money down a rat hole, is that it is in pursuit, specifically, of U.S. national security interests.

The other reason is that the Department does not intend to implement that funding through writing a check to Boris Yeltsin or Minister Adamov. It will be implemented through a series of contracts, most likely with U.S. contractors, in achieving deliverables and providing goods and services in Russia in an auditable, reliable fashion. As we work out the details of what needs to be done in Russia, we will be coming to you with a detailed budget proposal on how we will do that.

The achievements of the work that will be accomplished with those funds contributes directly to our national security interests by reducing the threat associated with these materials. Russia, as you know, is one of the most likely sources of loose nuclear material, given the enormous volume that they have there, and access to the material is really the final barrier to the development of a rogue nation with nuclear capabilities.

Senator DOMENICI. Without divulging anything that is classified, how many bombs could this plutonium that we are going to dispose of that is Russian, how many bombs could it be used to make if it is not disposed of?

Ms. HOLGATE. Tens of thousands, sir.

Senator DOMENICI. So the starting point for your answer is, this will eliminate the potential for 10,000 or more Soviet nuclear weapons to use this plutonium as a part of their fabrication, correct?

Ms. HOLGATE. Yes, sir.

Senator DOMENICI. Senator Reid.

STOCKPILE Y2K CONCERNS

Senator REID. Thank you, Mr. Chairman.

Now, Dr. Reis, Senator Domenici asked Ms. Gottemoeller about Y2K, and we have here a report from GAO that just came out, and in this they say among other things resolving the year 2000 computing problem is the most pervasive time-critical risk facing Gov-

ernment today. Unless adequate actions are taken, key Federal operations, national defense it mentions could be seriously disrupted.

Tell us how you look at this Y2K, with all the many sensitive programs over which this subcommittee and you have jurisdiction.

Dr. REIS. Senator, we take Y2K very, very seriously. We have looked in detail at all the weapons themselves, all of the support systems, and the certification process. We provided the appropriate oversight to ensure the work is correct. All of those systems, all of the strategic systems are, in fact, Y2K-compliant—the weapons themselves and the support systems. The last time I looked at this there was only one, if you will, mission critical system that had not been certified. This is a pay system, and a badging system at Sandia.

It is certainly critical to people at Sandia that they get paid properly, but we are literally working basically at that level. Not only have we reviewed it, but we gave that review to the Nuclear Weapons Council. The Strategic Command has also reviewed their systems, so we are quite confident from a Y2K perspective that the strategic forces and their supporting systems that we have to deal with are compliant with Y2K.

EXPLOSIVE TESTING CONTAMINATION

Senator REID. Your written and oral testimony refers to a combination of experiments and computer simulations to demonstrate safety and reliability in our stockpile. Many of the experiments require violent explosions involving nuclear materials. I understand that explosive testing has resulted in some contamination of certain areas at the laboratories. Would you describe this contamination?

Dr. REIS. Senator, I will have to get back to you on the details on that for the record.

[The information follows:]

CONTAMINATION RESULTING FROM EXPLOSIVE TESTING

Explosive testing at the Los Alamos and Lawrence Livermore National Laboratories has resulted in the release of depleted uranium, beryllium, lead and copper into the immediate vicinity of the test location. The air, surface water, groundwater and soil at the sites are regularly monitored by the laboratories and reported to State and Federal agencies; sample concentrations for these contaminants remain below applicable Federal, State, and DOE standards for all environmental media.

In addition, as a result of explosive testing at the Lawrence Livermore National Laboratory experimental test site, in a remote area some 40 miles from the laboratory and population centers, tritium contamination of on-site groundwater exceeds Federal drinking water standards. Wells have been established between the contaminated areas and the site boundary to monitor tritium migration to ensure protection of the water supply. The measured migration data, along with the local geological structure known to exist and the inherent radioactive decay rate of tritium, are used to project contamination levels at the site boundary. There has never been, nor is there projected to be, a tritium contamination level at the site boundary that approaches the Federal drinking water standard. Water supplies are anticipated to remain unharmed.

MAINTAINING TEST READINESS

Senator REID. You are going to continue these very important experiments, is that not true?

Dr. REIS. That is correct.

Senator REID. How do you intend to demonstrate our continuing ability to resume testing?

Dr. REIS. Senator, we have looked at the Test Site, a number of areas, a number of activities that will maintain that capability. I think the one most vital is the continued and very aggressive series of subcritical experiments that we are working with plutonium and high explosive.

On those tests, of course, we do not have a nuclear explosion, but from a safety perspective, from procedures perspective, you go through many of the same things that one would do on a full scale nuclear test. We are maintaining the diagnostics facilities as well.

One of the things I was specifically concerned about, just for that question, is we have asked the Department of Defense this year to review our test readiness programs to give us an independent look at just how well we are doing on those. We feel comfortable, but we would like to have a broader look at that, and they will be looking at that specific area in detail over the next year.

ATTRACT AND MAINTAIN SKILLED WORKERS

Senator REID. You refer to the task, and in my opening statement I talked about the Chiles Commission, and Senator Domenici talked about the Chiles Commission, and their report is that the skills at the Nevada Test Site are in serious jeopardy because the workforce there is nearing retirement, and similar problems at the weapons labs to make sure that we attract and maintain the highest caliber of scientist, which we have had for the last 40-plus years.

What is your plan to attract and retain the skills necessary to maintain these capabilities at the laboratories and the Nevada Test Site?

Dr. REIS. The Chiles Commission also made some significant recommendations on how to do that, and again, I concur with those recommendations. They start off by suggesting that both the Administration and Congress must maintain a national commitment.

The type of people who go to work at the Test Site, who go to work at the laboratories, who go to work at these plants, these are not people who are necessarily interested in just making a buck for their day. They are really interested in supporting their country's efforts. They are interested in working on technical challenges, and that means that we have to demonstrate to them that we have that commitment, and we have the budgets, and we have the support that continue to go along with that over time.

So the first thing is to again maintain that commitment, and part of that, if you will, is to say that we support the programs that basically make that happen.

They are also attracted not just by the challenge of the job, but by the ability of having the facilities available to work on, and that also means that we have to support those. We have to support the facilities themselves.

In addition to which, certainly for the laboratories, and again for many of the other establishments is, we have to make the connections. Through the alliance program and through other things within the universities we get those people in the universities familiar with what we are doing, working on similar programs, so one could

recruit the right sorts of people. Some of those programs are in place and are working very, very well.

I think what the commission said, we ought to be doing more of that, and I certainly concur that we will have to be doing more of that.

Senator REID. Spread throughout the laboratories and the Nevada Test Site, there are some of the finest scientists in the world, Ph.D's in all kinds of scientific backgrounds. That is what we are talking about, maintaining these people in our defense capabilities, as compared to them going off and working in the private sector some place, is that not right?

Dr. REIS. That is correct.

NUCLEAR EMERGENCY RESPONSE PROGRAM

Senator REID. The nuclear emergency response program has undergone major revisions over the past few years. I continue to hear concerns that these changes may have diminished our response capabilities. These concerns need to be specifically and effectively allayed. How does the Department organize its lines of responsibility and funding for the emergency response program and, second, do you think this is the right organizational structure?

Dr. REIS. I believe we have a very good organizational structure right now. I believe the nuclear emergency support teams that we support within the Defense Programs continues to get high marks. I believe in terms of their ability to respond to emergencies it is integrated with the emergency response, the communications, the day-to-day emergency response work that Ms. Gottemoeller discussed.

These are always complex issues in terms of how one organizes it, because the broader emergency response of the Department has to do with a lot more than just the nuclear responses. As well, there is chemical, biological responses. There is just all sorts of different types of things which, as Ms. Gottemoeller said, they are duty 365 days a year, 24 hours a day.

I think the specifics of the nuclear emergency response teams that we are dealing with is embedded within that overall organizational structure.

EMERGENCY RESPONSE CAPABILITY

Senator REID. Do you think we need to undertake a study to establish our ability to respond to the variety of emergency situations that could occur, or do you think we are okay as is?

Dr. REIS. Do you want to try on that one?

Ms. GOTTEMOELLER. Sir, with regard to the emergency response capability in the Department, it is quite broad-ranging. I agree with Dr. Reis on that.

The complex is a very complicated structure with many different kinds of missions being undertaken, clearly, and it is, I think, very important to ensure that whatever approach we take to the organization of emergency response that it be highly integrated throughout the Department, and that the major operational programs, Defense Programs and our other major operational programs be intimately involved in the implementation of emergency response.

So I think that there is room for improvement in the way emergency response is organized in the Department. I speak with my hat on as the person responsible, as I said earlier, for overall emergency management in the Department. I think it is worth a look, but I would like to underscore very firmly that emergency response, wherever and however the necessity for it arises, must be very, very well-integrated with the other programs.

INITIATIVES FOR PROLIFERATION PREVENTION

Senator REID. As I indicated when I was complimenting Dr. Reis, you also have a knowledge of Russian language, is that true?

Ms. GOTTEMOELLER. Yes, sir.

Senator REID. I think that is worth a comment. That is one of your main responsibilities, and I am sure it makes it a lot easier with your having the Russian language capabilities, and I am sure that is an understatement.

One last line of questioning, Mr. Chairman, then I will stop.

In your opinion, how effectively can you prevent our proliferation and prevention vessels from delivering dual use benefits to the Russian military programs?

Ms. GOTTEMOELLER. Sir, this is an issue which we take extremely seriously inside the initiatives for proliferation prevention program and, in fact, since 1997, when a new management team took over the IPP program, we have redoubled our efforts to ensure that project proposals that come in do not have a dual use aspect to them. They are reviewed by multiple layers in the interagency, including the intelligence community here in Washington. They are reviewed by our scientists at the labs, who are also tied into the overall interagency governmental review process.

We are extraordinarily serious about this aspect. We want to ensure that the work that is done is valuable in its scientific importance but also, of course, keeps scientists at work at their lab benches and not wandering off to Iran or North Korea, but equally important is the necessity that these projects and this program do not serve the development of military capability on the Russian side.

NUCLEAR SMUGGLING

Senator REID. I applaud your efforts to interdict nuclear smuggling at important border crossings, but I have to acknowledge that we have not been very successful as a country in preventing illegal entry into the United States, and so I am really a little concerned about what efforts, based on how unsuccessful we have been, what efforts have the Russians mounted to provide border security against the smuggling of nuclear materials at points other than formal border crossings and at formal border crossings?

Ms. GOTTEMOELLER. I will say a few words to begin with, Senator, about our second line of defense program.

Our material protection control and our accounting program is the first line of defense, and I would like to underscore that that is I think really the first way that we prevent smuggling of nuclear materials by ensuring that the facilities themselves are under the best possible safety and security, that we have good fences, that we

have effective guard forces and good locks on the doors. That is the first way that we prevent nuclear smuggling from taking place.

We have also, through a very effective working relationship with the Russian customs service, just in the last year begun our second line of defense program where we work with the Russian customs service to put up nuclear detection devices at the most vulnerable and high volume border crossing points.

Senator Domenici was with us this past summer when we opened up the first of such border crossing protection points at Sheryemetyevo-1 Airport. They are extremely, I think, effective where they operate. They are at very high intensity sites. For example, the other point we opened up this summer was at Astrakhan seaport on the Caspian Sea, where there is a very high level of shipping traffic to Iran, so we are choosing very high priority places to put these nuclear detection devices, in addition to which, though, we have found that we have to layer basically these programs, and there are programs across the U.S. Government.

I do not want to say that the DOE is doing all the work in that regard. For example, there is a great deal of work that the Department of Defense is doing in working with the non-Russian Newly Independent States in order to improve their border patrols and border controls overall, and so we work very closely and pay attention to integrating the work that we do with the work in other U.S. Government agencies and in other agencies of the Russian Government as well.

Senator REID. Thank you, Mr. Chairman.

Senator DOMENICI. Thank you. Senator Reid, I failed to mention in response to your opening remarks, when you spoke of the extreme age of the scientists at the test site, and some of your other thoughts with reference to maintaining it, that I am going to work with you to see what we can do, and talk generally about it. We are now looking with your staff and with others at some specific things.

Senator Craig.

Senator CRAIG. Thank you very much, Mr. Chairman, and panelists, we appreciate your being here this morning. I will make a brief comment before I ask questions specific to the interest in my State at the INEEL and Argonne Laboratory West, because oftentimes when you think of them, I will tell you that DOE weapons and defense labs do not necessarily jump to your mind compared to New Mexico and Nevada and other places.

We have had a proud history at the site dealing with the country's naval nuclear propulsion program, and Idaho and the Navy have effectively and safely managed Navy spent fuel for decades.

Unfortunately, as we know, in Russia naval fuel has not been managed as carefully. The Defense Department's cooperative threat reduction program is beginning to address Russia's spent naval fuel. The INEEL and Argonne West have the experience to provide valuable technical assistance on this problem, and I would like to see a commitment from all of you to bring DOE's experiences into the project rather than to have DOD reinvent the wheel.

We are all squeezing budgets at this time and squeezing them hard, and my guess is there is a wealth of experience and knowledge already out there that could be of great assistance, as an ex-

ample, and we mentioned the Caspian Sea just a moment ago, and the shipping traffic there.

As an example of this experience base, Argonne West is working in Kazakhstan on storage of spent nuclear fuel at a breeder reactor on the shores of the Caspian Sea. The Kazakhstan Government has decided to shut the reactor down permanently, but some safety upgrades will be required first to fire protection systems, et cetera. Argonne has experienced people and a proven track record in Kazakhstan to see that this work is done quickly and efficiently.

Another issue we need to address is the continued production of plutonium in Russia at its BN–600 fast breeder reactor. Some people may not realize that at the same time we are trying to enter into agreements with Russia to dispose of its surplus stocks of plutonium, Russia is continuing to make plutonium.

Argonne West again has the experience to convert fast breeder reactors, because they did it in EBR–2 in Idaho. We need to use this expertise that we already have at our national labs to assist the Russians, who face similar problems.

The budget for nuclear energy work at Argonne is cut by $20 million in the President's request, and that would mean the laying off of about 250 workers. It really does not make sense to me that we lay off skilled workforce when their skills could be applied to pressing global nuclear safety issues, so it is with that in mind, Mr. Chairman that I will only ask a couple of questions, and then I will come back for more so that we can share equitably in this time.

ENVIRONMENTAL SURETY PROGRAM

Dr. Reis, as DOE facilities are retired from use and become part of DOE's cleanup program, I think it is important that we leave the facilities in a condition which minimizes the amount of waste we will have to clean up later. The INEEL has been assisting the defense sites in meeting this challenge for the last 2 years through the defense environmental surety program.

By all accounts, and from letters of endorsement received from defense production sites, DOE's environmental surety program was a very successful and cost-effective program. My question to you, why was this program zeroed out in the fiscal year 2000 budget?

Dr. REIS. Senator Craig, while we did zero it out from a headquarters perspective effective with the implementation of the fiscal year 1999 budget, what we have done is turned the responsibility over to the folks at the Los Alamos National Laboratory. I agree with you that it has been a successful and cost-effective program, but on any budget you basically have to make decisions. If the folks who are on the ground who have to do that environmental cleanup, which are the people at Los Alamos, feel that it continues to be a successful program, I have no doubt that it will continue to get funded.

Senator CRAIG. But it is not in the budget now.

Dr. REIS. It is not in the budget right now, that is correct.

Senator CRAIG. So for fiscal year 2000, if the President's budget came into place, we would assume this program would not exist.

Dr. REIS. No, I do not think that is true at all. If the folks at Los Alamos, who again are the people on the ground, decide this still is the best way to handle the job, it will get funded.

Senator CRAIG. Do we know the status of that at this moment?

Dr. REIS. We are still working on that, Senator Craig.

ENVIRONMENTAL SAFETY CENTER

Senator CRAIG. Well, we will still work on it with you, then.

Ms. Gottemoeller, at your confirmation hearing last fall you talked about DOE's plans to establish the joint U.S.-Russian international center for environmental safety to work on international nuclear cleanup issues. Some of this work was to be administered by the INEEL and Argonne West. Can you tell us where DOE is with respect to getting a signed agreement with the Russians and initiating this program?

Ms. GOTTEMOELLER. Yes, sir. I am actually very happy to be able to report progress to you since we last spoke on this matter last fall. The establishment of the Environmental Safety Center will be a centerpiece of the upcoming Gore-Primakov Commission meeting in 2 weeks time, and the statement establishing the center we actually expect to be signed by the Vice President and the prime minister, so it is a go, sir.

Senator CRAIG. Excellent. Congratulations.

Ms. GOTTEMOELLER. Thank you, sir. We are looking forward to having INEEL closely involved in it.

RUSSIAN NAVAL FUEL ASSISTANCE

Senator CRAIG. My next question in on Russian naval fuel assistance, and this may be for any witness here. Much of Russia's naval spent fuel is sitting in their idled submarines, we are told, and they do not really have the resources to deal with it.

In Idaho, the Navy has been safely managing U.S. naval spent fuel for decades, as we all know. Idaho's personnel have a lot of experience on this issue. Would any of the witnesses care to respond with ways we might more cooperatively work on the Russian submarine fuel issue to get it into a safer storage condition?

Ms. GOTTEMOELLER. Senator, if I may take a crack at that, we at DOE already have a very fast-moving material protection control and accounting program to deal with fresh fuel from the Russian submarine program, and that is in both the northern fleet area and the Far East.

It has been very fast-moving. The Russian Navy has really put a number of intense schedules on us, because particularly in the far north, of course, we have a very short construction period to work with, but we have been able to work very quickly to get that fresh fuel under better, safer, and more secure conditions.

We are currently on both the U.S. interagency basis and in discussions with the Russians considering how to move on to the broader range of problems that you address. DOD already has its successful efforts underway under the cooperative threat reduction program to dispose of the Russian strategic strike submarines, the SSBN's, and now we are considering what steps we should take and what priorities we should set in dealing with the broader question of naval spent fuel and submarine disposition.

So this, too, will be a subject for the Gore-Primakov Commission meeting coming up in several weeks time, but I wanted to assure you that not only are we engaged very actively in interagency dis-

cussions on this, but also we are beginning to engage with the Russians on this.

Senator CRAIG. So you mentioned a type of submarine. I assume that will be decommissioned and ultimately cut up, and therefore those are some of the subs that have that spent fuel in them. You will obviously have to deal with the fuel at that time.

Ms. GOTTEMOELLER. Exactly, sir. The program that the CTR program has undertaken to cut up the SSBN's, they already have embraced in that an entire complex of activities to address the spent fuel problem. The same kind of program would have to be worked out with regard to the attack submarines, the so-called SSN's and the cruise missile submarines, the SSGN's.

I would like to point out, however, that in examining this issue we do believe that it will be a very large task to undertake and quite expensive, and so we believe that this particular set of projects will be ripe for the involvement of the international community, and that is an explicit part of what we have been planning under the expanded threat reduction initiative, President Clinton's new initiative in this regard.

Senator CRAIG. I was just going to say, surely we were going to seek a shared burden there.

Ms. GOTTEMOELLER. Yes, sir, indeed, and I think that there will be other countries who are interested in participating.

RUSSIAN BREEDER REACTORS

Senator CRAIG. Mr. Chairman, let me do one more question, if I could, and then I would turn to our other colleagues here.

Even as we work cooperatively with the Russians on disposing of excessive weapons plutonium, Russia's fast breeder reactors are producing plutonium. That is an accurate statement, is it not?

Ms. GOTTEMOELLER. Yes, sir.

Senator CRAIG. In Idaho——

Senator DOMENICI. What was that, sir?

Senator CRAIG. As we are working with the Russians to get rid of weapons plutonium, we still have Russian reactors producing plutonium. That seems to be a bit of a contradiction, but it appears to be the case.

In Idaho we have experience in converting the breeding blanket on the EBR–2 reactor to stainless steel and making other fuel alterations to reduce plutonium production. Would any witnesses care to respond to how DOE could use the EBR–2 experience in collaboration with the Russians and Kazakhstan to alter their breeder reactors? Is there any thought in mind there?

Ms. HOLGATE. Yes, sir. I had the pleasure of meeting with some of the scientists from Argonne West to discuss this very issue within the last couple of weeks. We have an active R&D program underway in Russia to work on converting that BN–600 reactor to use MOX fuel, and a key element of that will be removing the breeder blankets that actually create the plutonium, and I am convinced that there is a cooperative role for Argonne West's experience as we move forward with the Russians on that project.

Senator CRAIG. These reactors I assume would be converted to energy production. Is that the intent with the MOX fuel?

Ms. HOLGATE. Yes, sir. There is only one of them.

Senator CRAIG. There is only one?
Ms. HOLGATE. Only one BN–600.
Senator CRAIG. Thank you.
Thank you, Mr. Chairman.
Senator DOMENICI. Thank you.
Senator Cochran.

SUFFICIENCY OF BUDGET REQUEST

Senator COCHRAN. Mr. Chairman, Thank you.

Dr. Reis, you responded to the chairman's question about whether or not the amount requested in this budget is going to be sufficient to ensure the safety and reliability of the U.S. nuclear weapons stockpile, and you answered in the affirmative.

I tried to remember our hearing last year when we talked about this program that was being put in place and using simulation and other processes as substitutes for testing of our nuclear weapons, and I thought I remembered at that hearing that you said, or some other witness said that it would require $5 billion a year to fund this stockpile stewardship program, and I am curious what has changed to make the request of $4.5 billion, $500 million less, sufficient.

Dr. REIS. Senator, I do not recall saying $5 billion. We could look back at the record. As long as I am the administration witness, I would support the President's budget, or I basically would not be here, and I have been through three administrations now.

Another witness might have said $5 billion, and I think there is no question it is a question of relative confidence. If the Senate, or if the Congress suggests that we could use more in certain areas, I would certainly not object to that one bit. Last year we asked for—$4.5 billion, and the Congress only gave us $4.3 billion, so there is clearly different adjustments in terms of how much money you can spend on this.

It is a matter (a) of confidence, and (b) getting through—dealing with other priorities within the Administration. You have heard some of these other priorities which are very important today, and again the Congress also has other priorities.

So I believe that the budget we have put forward to you is sufficient to answer the question, are we confident in our ability to support the stockpile now and support the stockpile in the future.

COMPREHENSIVE TEST BAN TREATY

Senator COCHRAN. Will the ratification of the comprehensive test ban treaty change any of the plans that you have underway for this program?

Dr. REIS. No, sir. In fact, the whole idea of Stockpile Stewardship was to project ahead toward that time when the Comprehensive Test Ban treaty was ratified and was in place, and so we are building as a basic assumption that it will occur.

I will add that in order for us to maintain confidence after that treaty is ratified, we would have to maintain the support for this program for the indefinite future.

AGING NUCLEAR SCIENTISTS OF CONCERN

Senator COCHRAN. There was something in your prepared remarks that got my attention, that the age of our nuclear weapons scientists, those who are familiar with the weapons and are capable of building a weapon, is such that by the year 2014 most of them are going to be gone. We will not have anybody around who knows how to build a nuclear weapon if we had to, or if we wanted to. Why is that a concern?

Dr. REIS. Clearly that is a concern because we may have to build again. The pace of the program, the reason we are moving ahead on the simulations, the reason we are moving ahead on the experiments is to get those new people in place to certify the stockpile while the people who have actually had the testing experience are there to help us. Let me tell you and tell the American people that those weapons are safe and the program we have in place is the right program. So far, so good, but we have to stay the course and keep moving in that direction.

Senator COCHRAN. On the question of proliferation, I was pleased to hear the work that is being done in Russia to try to improve the capacity there for controlling exports of weapons-grade material and other devices.

Do you get involved at all in missile proliferation issues as well, because that is so closely connected with nuclear weapons.

Ms. GOTTEMOELLER. Senator, actually the Department as you know focuses really on the warheads and on the fissile material and so no, I do not become directly involved in matters to do with missile proliferation.

CONCERN ABOUT RUSSIAN ASSISTANCE TO IRAN

Senator COCHRAN. There has been some concern about Russian assistance to Iran in building a nuclear reactor down there. Why does Iran need a nuclear reactor, with all of its oil reserves and other energy resources? What is the purpose of building a nuclear reactor, other than to produce weapons-grade material?

Ms. GOTTEMOELLER. Sir, that is a question we ask ourselves every day, and it is a very good question I think.

We have, as you know, imposed sanctions on three Russian entities just since January this year, two of which we are concerned are engaged in nuclear cooperation with Iran, and so we have been very much focused on that question and very concerned about it, and have been very direct with the Russian Government in expressing our concerns, and in conveying the necessity that they move rapidly to resolve these concerns and ensure that there is not cooperation going forward with the Iranian reactor program outside that which was agreed bilaterally with the Russian side regarding the Bushier reactor.

Senator COCHRAN. To your knowledge, have these sanctions had any effect on Russian business or institute activity?

Ms. GOTTEMOELLER. Sir, I know the Russian Government is paying close attention. I was in Moscow 2 weeks ago with Deputy Secretary of State Strobe Talbott. We have gotten their attention, there is no question about it, but there is a team in Moscow even today talking again with them about these issues, so there is no

question in my mind that the Russian Government is very focused on trying to resolve our concerns. We are just going to have to see what happens.

But again, this is an issue that has consistently been raised at the highest level in our Government, and I know it will be an issue in 2 weeks time at the Gore-Primakov Commission meeting.

Senator DOMENICI. Senator, would you yield on that?

Senator COCHRAN. Yes.

Senator DOMENICI. Let me just say to you, and for the record I indicated in my opening remarks about the only thing that Russia has going with America that is yielding any resources to Russia are energy programs. We do not have an economic program of assistance. We would be kind of foolish to be putting money into that, and they know from this Senator that we have to appropriate most of that in this committee.

They know that the Iranian situation could cause any of these programs to be canceled just because the United States Congress could feel, as you have expressed to me, a grave concern that while we are doing this they are having their games with Iran, and I think in the last 4 or 5 months there is evidence that has been raised to higher and higher levels, and they now know it, and they have made some statements which would indicate they cannot fool us any more, that something is really happening. They still question the scope of what they are doing, but nonetheless I think your line of questions is very, very important.

START II

Senator COCHRAN. In your visit recently to Russia, were you able to get a sense for what the intention of the duma might be toward ratification of START II, and do you continue to feel that that is an important initiative for our Government to continue to press with the Russians?

Ms. GOTTEMOELLER. Yes, Senator, I think it is absolutely an important initiative for us to press with the Russians, because START II will be an important aspect, I think, not only of further strategic arms reductions with the Russians but it also—you know, frankly, the Russians I think realize, particularly those professionals in the ministry of defense, that they have a tremendous budget burden to bear if they are expected to keep their force levels up to START I numbers, so within the ministry of defense, and I am convinced within the Government as a whole, there is a recognition of the importance of getting START II ratified.

Now, in the last couple of weeks we have seen, particularly in the media, but we have seen reference to the fact that there are those in the duma who also realize that it is time to begin to move to get this agreement ratified. Even, I noticed in the press last week, Mr. Zhirinovsky has spoken up now and said that it is time to move forward and get the START II treaty ratified, so we continue to be hopeful that in fact they will move and get it ratified, and then we can move forward and begin with a negotiation of the START III agreement.

STATUS OF NUCLEAR POWER PLANT IN CUBA

Senator COCHRAN. In connection with the nuclear power program in Russia, we know that because of the Chernobyl incident there are causes for concern about the integrity of the reactors. At one point it was a worry here that in Cuba they were going to build some Chernobyl-type reactors. What is the status of that situation in Cuba, and do we have any threat to safety and security of people in Florida or elsewhere in the United States because of their nuclear power program in Cuba?

Ms. GOTTEMOELLER. Senator, indeed the Russians, the Soviets before them and the Russians have been cooperating to build a nuclear power plant in Cuba. That project is currently dormant, however, because the Russians, as you know, are suffering severe economic problems and so are the Cubans, and so in terms of that program being an active project, it simply is not so at the present time according to our observations.

However, I would like to assure you that we keep a very close eye on that project in case it becomes active again.

Senator COCHRAN. Thank you.

Senator DOMENICI. I am sorry it has taken so long, Senator Dorgan. Now you can have as long as you like.

TRITIUM PRODUCTION

Senator DORGAN. I will be brief, Mr. Chairman. Let me thank all of you. This is frankly an area that I have not spent much time thinking about or discussing or studying.

Dr. Reis, your testimony is very interesting in giving us, at least giving me a description of what stockpile stewardship means. One part of your testimony, I would like to just ask a brief question about, is the production of tritium. I understand its role with respect to a nuclear weapon. What I do not understand is where this comes from.

I understand the decay requires it to be refreshed from time-to-time, and you are suggesting in your statement that we have not produced tritium since 1988, or whatever, and we, therefore, must begin going back into production. What is tritium?

Dr. REIS. Tritium is an isotope of hydrogen, and when you get—I will not get into the physics of it, but it has two neutrons in addition to the proton and the electron going around, and so it is a special isotope of hydrogen, and it is not found in nature. You have to make it, and the fact that it has those extra neutrons, that gets involved in the fusion process and also helps particularly in the fission process itself.

I would say it is like STP for your car, or something like that. It is a product that really is designed to make this whole nuclear weapon go. It is key to the whole hydrogen bomb approach, and is found in all our nuclear weapons, and as far as we know found in all the current modern nuclear weapons of all the nuclear weapons states.

COOPERATIVE EFFORTS WITH RUSSIA

Senator DORGAN. Thank you very much. Let me ask a question about the issues that Ms. Holgate and Ms. Gottemoeller discussed.

I have not been to Russia, regrettably, but I understand, their economy is in decay; in collapse. They have chaos virtually everywhere you look because they do not have the resources to do the things that they really need to be doing.

We are encouraging them under our arms control agreements to destroy weapons and destroy delivery systems, with some success. I think the Nunn-Lugar expenditures and other approaches have been remarkably successful.

We are also involved in the disposition of fissile material, ours and theirs, hopefully, and then also working very hard on nonproliferation issues. Included in that is the closed cities initiative.

One of the things that I have been interested in is the role of food in all of this. I want to ask just a general question. As you know, we produce an enormous amount of food in North Dakota, and Idaho, and some in New Mexico, and we produce grains far in excess of what we can use. My understanding is there is a desperate need for that, overseas even in Russia, and I am wondering if in the context of what we are doing with nonproliferation, with the destructions of weapons systems and delivery systems, whether there is a role either with respect to incentives or barter using food.

We use food in PL–480, we use it in GSP credits and so on, but is there an additional role that we might evaluate here in the context of all the things we are trying to do to encourage the Russians to move in the right direction at a time when they do not have enough food? Food, of course, is one of the requisites for living and stability.

So let me ask Ms. Gottemoeller if you would respond to that.

Ms. GOTTEMOELLER. Thank you, Senator. As you know, food assistance is in general a very important part of our cooperative efforts with Russia and has played a vital role in the crisis that has emerged since the August crash of the ruble, and so both historically and at the current stage it is an important, very important part of our overall relationship with Russia.

With regard to the very interesting idea that you have raised, we have already begun working together with your staff to evaluate the idea. My staff met with yours last week once, and I understand they will be meeting again today, and so I think it is an idea well worth exploring, and we really look forward to working with you on it.

Senator DORGAN. I appreciate that. This is one of the ideas that I have shared with Senator Craig, who I think also may have some interest in it.

I ask the question not to do anything other than enhance the kinds of subjects we are talking about. I happen to think that of all the issues we deal with in the world today, the proliferation of nuclear weapons and weapons of mass destruction and their delivery systems represent the one area that has the potential of seriously threatening us, our children, and our grandchildren, and the future of this world.

The work that you are doing and the work we are doing as a country to establish a priority in these areas is absolutely essential for our survival, and my hope is that we are able to see a START III and see continued reductions in nuclear weapons and delivery systems.

I hope all of that can be remarkably successful, but the discussion about Iran and North Korea and missile tests, the efforts in the black market to achieve materials to produce nuclear weapons, all of these things are very frightening and very scary, and that is why the work that you all are doing is very important, and that is why funding for that work is so important as well.

Mr. Chairman, I have more, but I will be meeting with the witnesses as I become more familiar with these areas. You have had the advantage of spending a lot of time in this area and have done wonderful work. I thank the representatives from the agency.

Senator DOMENICI. Well, Senator, the 5 years since the beginning of the Stockpile Stewardship as an alternative to underground testing, I have been the chairman of the committee for those 5 years, and I am very fortunate in that I have become acquainted with and am kind of proud of this program, and I do my best not only here but with the administration to keep their budget up.

I was part of getting them to go up to the $4.5 billion level without any question, and those who are familiar with it know that.

Dr. REIS. Without any question, Senator.

RUSSIAN PLUTONIUM DISPOSITION

Senator DOMENICI. And also with reference to the plutonium disposition, which I think you quickly caught on to, it is very, very important in terms of the disarmament, a major international disarmament approach, but it is difficult. I mean, there is no question they have different motives, different goals, et cetera, than we do.

I want to ask Ms. Holgate, Senator Craig raised the issue of—what he said, it is kind of ironic that in the fast breeder reactors they are producing plutonium and we are trying to get rid of 50 tons of their weapons-grade pit-formed plutonium. I know that some of these reactors do produce plutonium, but are they processing plutonium so that it can be used in weapons?

Ms. HOLGATE. Not that I am aware of, sir.

Senator DOMENICI. So there is a difference. That plutonium that is coming out of those reactors, something has to happen to that.

Ms. HOLGATE. That is correct.

Senator DOMENICI. And what we are talking about is pure plutonium for weapons that has already been processed and is in the kind of forms that were part of the nuclear weapons.

Ms. HOLGATE. That is correct, sir.

Senator CRAIG. Mr. Chairman, you are absolutely right. My intent was not to do that. My intent was to suggest that we could assist them in converting these reactors to breed less plutonium and we have the talent and the skill to do that.

PROGRESS WITH RUSSIA ON PLUTONIUM DISPOSITION

Senator DOMENICI. Senator, one of the anomalies that exists right now that makes it very difficult for this agreement with the Russians with reference to the disposition of plutonium to occur is that they actually believe this pure plutonium is a very, very valuable legacy, not a legacy for military use, but a legacy for civilian use in breeder reactors, because it is a great fuel for breeder reactors, and they have dreams of building the second and third generation of breeder reactors.

In fact, we are either fortunate or unfortunate, depending on how you look at it, to have the head of the Russian nuclear agency and an expert in this idea of coming forth with another generation that would use this plutonium, which caused them not to want to destroy it. On the other hand, I think we are struggling here with the concept of just keeping some kind of improved light water reactor, the next generation of that alive, and not a third and fourth generation breeder reactor, and that is causing some very difficult times in terms of the negotiating. It is a difficult concept, bridging.

Let me say to you, Ms. Holgate, I do not want to overstate the case of the urgency of getting an agreement signed and putting some of this money to actual use, but you know that I was instrumental in pushing to put a time limit in that communique you spoke of. In fact, it says we will be on the way in 6 months.

I do not know the exact words, but it has a 6-month time frame in there, and now I am telling you from a practical standpoint how important it is, because there it sits, and it has only been there since the supplemental of when, September, when did we do it, or October, and the House in trying to find money to cover a new supplemental is already contemplating using $125 million of it. I thought $100 million yesterday when I spoke to your negotiators. It is $125 million, or, I am sorry, $150 million. It is going up every day. They will have some more supplementals and they will use the entire $200 million as an offset.

So I think it is vitally important that we show some progress and that the Russians understand this is not going to sit around there for very long, and they have got to respond to money, because they desperately need it.

Ms. HOLGATE. I could not agree more, sir, and believe me, I am reminding our State Department colleagues of the importance of that on virtually an hourly basis.

PRODUCTION OF NEW WEAPONS

Senator DOMENICI. Well, I do want to say, since the Department of Energy has all the expertise, in my opinion, and talent, it is with great reluctance that I have sat by and watched the State Department of the United States take over these negotiations, but that is a bigger issue than me. I mean, that is an executive issue that I guess I could fix it by saying they cannot in a bill, but I would not do that.

But they have now guaranteed me that they have the best negotiator that they have ever had on these kinds of matters. I have met him. I just hope he is not a typical State Department negotiator, because they deal in eons in terms of relationships, and this one will not last that long.

Let me ask a question regarding the production of new weapons. In my State and in various parts of the country where we have groups that are against stockpile stewardship and our laboratories spending the money they are spending, which you were just asked, is it enough. They are saying it is too much, but they are also saying we are making new nuclear weapons, new nuclear bombs.

Now, are we currently producing or planning to produce any new nuclear weapons, and when did we last produce a new nuclear weapon?

Dr. REIS. There are no current plans whatsoever to produce new nuclear weapons. The last one produced was in 1989.

Senator DOMENICI. Now, I am certain that those very same people and groups do not believe you, and do not believe me.

Dr. REIS. I am under oath. [Laughter.]

Senator DOMENICI. Well, frankly, I just want to repeat that everything I can determine the Department is not engaged in any clandestine efforts to produce nuclear weapons, they are not being produced, and we have not produced them in quite some time.

Dr. REIS. That is correct, Senator.

REESTABLISHING PIT PRODUCTION

Senator DOMENICI. Now, sometimes the opponents say, well, you are producing, you are getting ready to produce pits, which are an integral part of the American, as we name it, the pits of an American nuclear weapon, and you are getting ready to have a facility in Los Alamos that could produce 20 pits by the year 2007, and they construe that to be making bombs, new bombs.

Now, the truth of the matter is, the Stockpile Stewardship Program is aimed, as you indicated, at determining each and every part of the nuclear weapon, and whether it still has integrity in it, and whether it still has life and can do its job, and the pit production, when we get there, it is to have some spare pits for replacement purposes. Is that correct?

Dr. REIS. That is correct. As you know, every year we take apart weapons in the stockpile. We take apart approximately 11 of each weapon type, bring them back from the stockpile, take them apart, and one of those from each type are, if you will, destructively tested, where we take the pit, and we look at its characteristics. We look at it under microscopes, electron microscopes. We go through all the forensics that we need to.

That pit is no longer useful, so when we have to replace those and put those back in the stockpile, we have to put a new pit in the weapon. We did make some spares when we made those production pits. Those spares will be running out in a relatively short period of time, and so we need a new system, a new factory, if you will, to put those pits together.

We have closed the Rocky Flats, where we made those pits in the past. It is completely closed, and no intention of opening it, so we have to replace the pits we are currently using for those surveillance programs.

GAO REPORT ON IPP

Senator DOMENICI. Let me move to Ms. Gottemoeller. The GAO has issued a report on one of the programs that is aimed at trying to keep Russian scientists with the kind of expertise that we are talking about here in Russia, rather than having them as a commodity for barter or sale in the world.

That report indicates that scientists who receive support from the IPP program may work on dual use technologies, or may even continue to work on weapons technology when they are not working in the IPP projects. How do you respond to that complaint?

Ms. GOTTEMOELLER. Well, Senator, if I may, I would like to divide my answer into two parts. First of all, as I indicated earlier,

we are very, very serious about ensuring that projects that are undertaken in the IPP program do not in fact contribute in a dual use mode or in a nuclear mode to the development of new capability in the Russian military establishment, and we are very serious about that.

We make every effort through our review processes, including through very serious review processes involving the intelligence community, to bring all information to bear in order to ensure that there is no such aspect to any of our IPP projects.

I would like to point out, though, that with regard to the nuclear weapons scientists, Russia is still a very important nuclear weapons State under the NPT, and they have the same stockpile stewardship concerns that we have. In other words, they need to continue to maintain the safety and the security of their very large nuclear arsenal, so essentially it is important for their nuclear scientists to continue to work in their stockpile stewardship program, and that is a very important aspect that we support for our own national security, because we want to ensure that their nuclear stockpile remains safe and secure.

However, with regard to the chemical and biological scientists, the problem is easier because chemical and biological weapons have been outlawed by international law, and so we really have an easier problem there in terms of delineating exactly what those scientists may and may not work on.

With regard to the nuclear programs it is a little bit more complex, but I am confident that we can ensure that the scientists are not contributing to new Russian nuclear capability.

RUSSIA'S PRODUCTION OF NUCLEAR WEAPONS

Senator DOMENICI. I would say, and you correct me if I am wrong, that the Russians could not honestly answer that they are not producing new nuclear weapons, because they do that, right? They still are producing them, is that correct?

Ms. GOTTEMOELLER. Sir, their approach to stockpile stewardship is——

Senator DOMENICI. I am going to get to that in a minute. Just answer my question.

Ms. GOTTEMOELLER. They are producing, yes.

Senator DOMENICI. The point of that, however, is that we chose a path at a juncture in our nuclear weapons history to go with very complicated weapons that we thought were far superior, difficult to put together, and we try to maintain them and keep them for long periods of time, which is what we are preserving, that kind of weapon.

Ms. GOTTEMOELLER. Yes, sir.

Senator DOMENICI. They made a decision to go with a much easier design that does not have as long lasting qualities and is—in some cases the parts are more robust. They replenish those frequently, as compared to us doing it rather infrequently, and us indicating now we are not going to replenish them as a weapon at all, and so they must do that to keep their stockpile up even if they were engaged in a stewardship program, is that correct?

Ms. GOTTEMOELLER. That is correct, sir. They employ a remanufacturing approach.

Senator DOMENICI. Remanufacturing of the weapon?

Ms. GOTTEMOELLER. Yes.

Senator DOMENICI. And we are engaged in pieces that we are going to replace to keep it solid. We need a huge inventory of new things to make sure we are doing that right. We need big computers. They may not. They might like to have them, but they may not need them to keep theirs going in a remanufactured mode.

I do want to say that I am very pleased with the work you are doing, and I did all I could to get your rank moved up. I think when you are over there negotiating with the Russians in the capacity that you are, you ought to have the right title, and I hope we can work on that again and get it working in the committee and see what we can do to raise your title to what it ought to be.

Ms. GOTTEMOELLER. Thank you very much, Senator. I very much appreciated your support throughout. You have been a great help.

NEW CONSTRUCTION PROJECTS

Senator DOMENICI. With reference to the construction of new buildings, Dr. Reis, there are three new construction starts in your stockpile stewardship program. The evidence before you and before us from the independent project review submitted to Congress gives a mixed picture of DOE's readiness to initiate new construction projects.

What actions have you taken to ensure that projects are thoroughly reviewed for mission needs, the scope, costs, and schedules are firm and clearly established, and that quality project management personnel are in place at the labs within DOE?

Dr. REIS. Well, Senator, I think I agree with you that our record in terms of new construction projects is mixed. Some we do very well, and some we have done less than very well, to say the least.

The Department has put together a detailed review by external reviewers. We have initiated our own processes as well, working particularly with John Browne, the Director out at Los Alamos where we have a particular concern. In addition, Dr. Bishop, Bill Bishop, our program manager for the accelerated production of tritium, which is one program that was on time and on budget and Dr. Bishop has gotten a special assignment, if you will, to go through and assure ourselves that we are moving in the right direction on construction projects.

There are others—the National Ignition Facility, which is probably the largest, most complex program being done in the Nation is on time, on schedule, and has put in place right from the start some of the very best program management that we know available.

So we are trying to, if you will, use a lessons learned approach as well. Those things that are doing well are going to help those things that are not doing so well.

Senator DOMENICI. Thank you.

Senator Craig.

NUCLEAR CITIES INITIATIVE

Senator CRAIG. Just one last question, and I guess it is really more of a comment than a question. Senator Dorgan referenced the nuclear cities initiative that Secretary Richardson has developed

with the closed weapon cities of the Soviet Union, and I see that initially the teams are between Russian cities and DOE weapons labs.

I guess my comment would be that it would be my hope that after the initial teams have been in place for a while, that maybe DOE would consider opening this initiative to nonweapons labs.

Once again, I think we have an opportunity to contribute here, and would like to do that, and I know certainly folks at my lab would very much like to.

Ms. GOTTEMOELLER. If I may comment, Senator, we already have that door open, and very much want to have the participation not only of the weapons labs but of the nonweapons labs as well, and frankly I think one of the very important areas that we can work on that will involve INEEL is with reference to the Environmental Safety Center.

The Russians have some interesting technologies that we have seen coming out of their nuclear complex, out of their nuclear cities which can provide some important help for them in their cleanup arena, and I expect that the Environmental Safety Center will be able to work with them to help to develop some of those technologies and perhaps commercialize them beyond Russia, so I really see an important role for INEEL in that regard.

Senator CRAIG. Great. Thank you.

Mr. Chairman, thank you.

Senator DOMENICI. Senator Cochran.

DOMESTIC SECURITY

Senator COCHRAN. Mr. Chairman, I feel constrained to ask about the so-called lapse in security that we have been reading about in the press, the fact that we have had secrets or classified information about our nuclear weapons program fall into the hands of other countries, particularly China in this situation, that we have had reported.

Have there been changes implemented now to fully protect the security of our classified information with respect to our nuclear weapons program?

Dr. REIS. Let me take that one, and perhaps Ms. Gottemoeller would like to comment.

We have had significant changes, and we have had those changes occurring over some years. I think Secretary Richardson has been particularly aggressive in that regard, but when this program, or this issue first came up some years ago both the Department and the other parts of the national security establishment were made aware, and we have begun compensatory actions right from the start.

Senator COCHRAN. Can you assure us that the information that we have classified and restricted is being safeguarded by new procedures that are being monitored carefully and enforced to protect the Nation's security interest?

Dr. REIS. We are doing everything we can in that regard, Senator Cochran.

Do you want to add to that?

Ms. GOTTEMOELLER. Senator Cochran, perhaps I would just add a few details. Secretary Pena, and after Secretary Richardson, and

Dr. Reis referred to the very energetic way in which Secretary Richardson has tackled this problem, but the implementation of Presidential Decision Directive 61 has been taken very seriously over the last 6 months by now two Secretaries, it has resulted in a senior FBI individual, Mr. Ed Curran, coming over and taking over the counterintelligence operations at DOE, working very closely with the labs. He has helped to bring in some very experienced FBI specialists to work with the laboratories and with the lab directors to improve their counterintelligence performance.

We have also doubled and then redoubled the budget for counterintelligence, beginning with $7 million and now up to $31 million over the past year, so we are moving in that regard, and you were referring to some of the security procedures. That has been an area that has received an enormous amount of attention, and we are really strengthening security procedures, including incorporating the use of polygraphs in certain circumstances.

So, I think that there is a great deal of attention to this set of problems now, and I think that we have a path forward. We have to continue working it very hard, but we do have a path forward.

Senator COCHRAN. Thank you very much.

CHINESE NUCLEAR WEAPONS

Senator DOMENICI. Dr. Reis, I want to join in a way with Senator Cochran, who expressed concerns. Obviously, we will all be hearing more about what has happened over the last years with reference to China.

I wonder, Dr. Reis, from another vantage point, you know, we know so much about the Russian nuclear stockpile, and the SALT negotiations have yielded a great deal in terms of where we ought to be and where we are moving, and what has dawned on me of late is that I have not heard anything about relationships between the United States and China regarding their nuclear stockpile, nor have I heard any assessment in any committees about how serious it is, and I think we ought to look at that, too.

We are so busy now worrying about Russia, and Russia is in an economic doldrum from which they may not spring forth with any economic vitality for a long time. But China is not in that condition, and China seems to be producing a lot of nuclear weapons, and they are not even loath, Senator Cochran, to putting them in parades. They just run their nuclear weapons down the streets and roads in parades.

So there is a lot know about them, but I think maybe we ought to consider asking somebody to brief us, or some committee, maybe yours, on the status of the Chinese nuclear weapons situation, because it is getting more and more serious, and we do not seem to be—other than now we are worried about how they got it, we do not seem to be talking about how serious it is.

Maybe you have in your subcommittee, when you are talking about antimissiles. Has there been some assessment of China in that?

Dr. REIS. Senator, I would encourage you to do so. I think we obviously cannot discuss this here. I think there are people in the laboratories who have, I think, as fine a knowledge as there is on that subject.

As you point out, we certainly do not know the same amount that we know about other nations' weapons, but I think we have the ability to give you, or to answer those questions about what we know and what we do not know. There are certainly experts at the laboratories who I am sure would be available to give you their candid views on what the status is in China.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. Could you answer our submitted questions within 2 weeks?

Dr. REIS. Absolutely.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR DOMENICI

CONDITION OF THE NUCLEAR WEAPONS STOCKPILE

Question. Dr. Reis, is the nuclear weapons stockpile safe, reliable and secure?

Answer. Yes. The Secretaries of Energy and Defense have completed the third annual certification and transmitted it to the President. It states that the nuclear weapons stockpile is safe and reliable and no underground nuclear testing is required at this time.

Question. Do you have confidence that the weapons in the stockpile can and will perform as designed?

Answer. Yes. Based on the detailed analysis conducted during the annual certification process, I am confident that the stockpile will perform as designed.

Question. Are there any critical needs not addressed in the budget request because of lack of budgetary resources? If so, please explain.

Answer. No. The budget request for Defense Programs is sufficient to address all critical needs. We have considered carefully both the long-term and short-term needs of the Stockpile Stewardship program, and believe that we have presented a balanced program within the $4.5 billion funding envelope.

FUNDING FOR WEAPONS ACTIVITIES

Question. Will the budget request before the committee allow DOE to meet all the DOD annual weapon alterations, modifications, and surveillance schedules? If not, explain what they are and why they are not of sufficient priority that they are not included in the Department's budget request?

Answer. The budget request does not allow DOE to meet DOD's targets for annual weapon alterations, modifications, and surveillance schedules. Although the highest priority requirements are met in our budget request, some workload related to alterations, modifications, and surveillance has been stretched out. This includes: Pantex workload to support full stockpile surveillance efforts on the W80, W62, B83 and W88; Y–12 plant workload activities for surveillance test assemblies for the W87, W88, and B61; Kansas City Plant workload for the B61–7 common radar alteration; and Sandia workload for surveillance test assemblies for the B61 alterations, and for Gas Transfer Systems for the W62, B83, and W87. The changes were necessary to balance near-term stockpile requirements with long-term stockpile stewardship needs. While these deferred activities are important, they will not have a direct impact on the safety or reliability of the stockpile for fiscal year 2000.

CHILES COMMISSION REPORT

Question. In response to a provision in the National Defense Authorization of 1997, the Commission on Maintaining United States Nuclear Weapon Expertise (the so called Chiles Commission) has submitted their final report and recommendations on recruiting and retaining the critical technical and scientific workforce needed to support and maintain over the long term a safe and reliable nuclear weapons stockpile in the absence of underground nuclear testing. First, are you familiar with the report, and if so, can you review briefly the Commission's findings and recommendations?

Answer. Yes, I am familiar with the report. The Commission's report contains 12 findings and 12 specific recommendations for action to be taken by the DOE, the

Congress, the Administration, DOE national laboratories, and production plants. These recommendations emphasize competitive recruiting and retention practices, management and structural reforms, and long-term stability and oversight issues.

Question. Does DOE agree with the findings and recommendations? Does this cause you alarm or concern?

Answer. The Commission was comprised of individuals with knowledge of the Stockpile Stewardship Program. Their findings and recommendations are sound and I find no reason to be either alarmed or concerned. The Commission "found a great deal that was healthy in the nuclear weapons complex with many trends moving in the right direction" and that "the nuclear weapons program is not in crisis, but additional steps are needed now." I commend the Commission for its thoroughness and willingness to report their findings and recommendations in an objective manner.

Question. How does DOE plan to respond to the Commission's recommendations?

Answer. The Commission's recommendations call for actions not only by DOE but by the Congress, the Administration, and the DOE laboratories and production plants. The Department's response to the Chiles Commission report will encompass a number of actions beginning with a request to DOE Defense Program lab and plant directors for data regarding critical skills and newly hired employees. This information will help us to corporately assess whether current hiring trends will maintain critical technical positions.

Question. Now, one of the Commission's recommendations was that the DOE establish and implement, on a priority basis, plans for replenishing essential technical workforce needs in critical skills which will erode significantly over the next few years. How does the Department plan to proceed with this recommendation?

Answer. To proceed with the Commission's recommendation to replenish the essential technical workforce, we have requested a listing of critical skills from all DOE Defense Program laboratory and plant directors to include: the number of people to be hired in these critical skill areas during fiscal year 1999; the number hired as of April 1, 1999; the projected number to be hired for the remainder of fiscal year 1999 and for fiscal year 2000 consistent with current budgets; and, an assessment of the number of new hires on the demographics in the critical skill areas. The data from the labs and plants will enable us to assess whether current and projected hiring is sufficient to ensure that critical skill areas are not eroding over time. By the end of fiscal year 2000, new hires in critical skill areas should begin to lower the average age of the technical and scientific workforce in the nuclear weapons program.

STOCKPILE STEWARDSHIP

Question. Overall, the budget request for Stockpile Stewardship increases by $160 million or 7.5 percent over the fiscal year 1999 appropriation of $2.126 billion for a total of $2.286 billion requested for fiscal year 2000. Major increases are being requested for the core stockpile stewardship program, construction of new facilities to support the stockpile stewardship effort, and the Accelerated Strategic Computing Initiative (ASCI).

I note that the budget request projects a 7.5 percent increase for Stockpile Stewardship and at the same time includes a 4 percent reduction for Stockpile Management. Does this cause any problems in carrying out an integrated program with the Labs and the production plants?

Answer. This does not cause any significant problems in carrying out an integrated program with the labs and production plants. The budget must balance many legitimate but competing requirements within a finite resource envelope. I believe that the budget request submitted to Congress reflects the appropriate balancing of priorities.

Question. Why has Defense Programs allocated such significant increases in the Stockpile Stewardship program and apparently reduced the Stockpile Management program?

Answer. The increases in the Stockpile Stewardship program are primarily driven by the planned growth in the Accelerated Strategic Computing Initiative program itself, and increases to support its integration into the ongoing science and engineering programs. This integration will allow these programs to more effectively support the long-term needs of the stockpile, both at the labs and at the plants, particularly through support to the Stockpile Life Extension Program, the Enhanced Surveillance Program, and the Advanced Manufacturing Design and Production Technologies initiatives.

The reduction in the Stockpile Management program reflects reduced dismantlement requirements; completion of one time costs associated with the restart of en-

riched uranium operations at Y–12; and completion of congressionally directed infrastructure improvements at the plants.

Question. The approach in the past has been to have an integrated program between the weapon labs stockpile stewardship and the production plants stockpile management effort. How does this budget unify and integrate the laboratories and the production complex?

Answer. We continue to have a closely integrated program that balances near and longer term needs of the stockpile. Ongoing maintenance and evaluation of the current stockpile ensures the near-term viability of the stockpile, while investments in science today will provide the technologies and tools necessary to conduct maintenance and evaluation of the enduring, long term stockpile. Examples of this integration are found in the Accelerated Strategic Computing Initiative, the Enhanced Surveillance Program, the Advanced Design and Production Technologies initiative, and Stockpile Life Extension Programs.

Question. Dr. Reis, the Department has been spending over $2.0 billion annually to develop the scientific base, the Stockpile Stewardship effort, to replace the capabilities lost when the United States made the decision to stop underground nuclear weapons testing. How much has been spent to date in developing this scientific and analytical capability?

Answer. We have invested about $2 billion annually, on average, in these scientific and analytical capabilities since the initiation of the Stockpile Stewardship Program in 1996, for a total of about $10 billion through fiscal year 2000. This represents roughly half of Defense Programs' funding for this period.

Question. When will the Department be able to say with confidence that the Stockpile Stewardship program is capable of replacing the underground testing program? Can you give the committee any examples of how the scientific capability of Stockpile Stewardship program has already contributed to solving real problems in the current stockpile?

Answer. Stockpile Stewardship is working now. While it has been more than six years since the last nuclear test, we have successfully addressed several problems with existing warheads by using a combination of computer analysis, archived test and manufacturing data, and most importantly, the collective judgment of the two weapon design laboratories. This success, using the experimental and testing tools available today, provides confidence that even more powerful computing and testing tools being developed will allow us to solve future stockpile problems without nuclear testing. By annually certifying the safety and reliability of the stockpile, the DOE confirms that Stockpile Stewardship can be relied on now and in the future. We have successfully completed the process three times, and the fourth annual certification process is underway. The third certification was provided to the President by the Secretaries of Energy and Defense on December 22, 1998.

The scientific capability of the Stockpile Stewardship Program is solving real problems in the current stockpile. Observations from our surveillance program have led to questions which have been resolved through the combined application of our advanced computational codes and laboratory experiments. The success in providing B61–11 certification relied heavily on the scientific capability of the Stockpile Stewardship program. New capabilities developed since the start of the Stewardship program, such as proton radiography, have provided scientific contributions to certification. Complex chemistry models of high-explosive binder materials, benchmarked by proton radiography experiments, have provided us estimates of the service lifetime of our high explosives enabling us to make some decisions regarding stockpile refurbishment schedules.

Question. Is the Department of Defense confident that the Stockpile Stewardship program is capable of addressing the nuclear weapons stockpile security, safety and reliability needs and issues?

Answer. I cannot speak for the Department of Defense, however, the Department of Energy has maintained an active dialog with the Department of Defense regarding our Stockpile Stewardship Program since the program was established at the direction of the President as part of his decision to extend the moratorium on underground nuclear testing. Our Stockpile Stewardship Program Plan which outlines the steps necessary to ensure that the enduring U.S. nuclear stockpile continues to remain safe and reliable for the foreseeable future in the absence of underground nuclear testing has been reviewed and approved each year by the Department of Defense. The Secretaries of Defense and Energy have recently concluded their third annual stockpile certification to the President affirming that there is no need to conduct an underground nuclear test to resolve any safety or reliability problem in the stockpile.

NATIONAL IGNITION FACILITY

Question. The budget request for fiscal year 2000 includes $248 million for the National Ignition Facility (NIF) which is a major element of the Stockpile Stewardship effort fiscal year 1999 was the peak year for construction funding, and the budget request for fiscal year 2000 maintains the fiscal year 2003 completion schedule. The project remains within the estimated $1.1 billion cost estimate.

Dr. Reis, how important is the NIF to the success of Stockpile Stewardship and maintaining the nuclear deterrent?

Answer. The National Ignition Facility (NIF) is essential for the success of the science-based Stockpile Stewardship program. It will enable us to conduct weapon physics experiments and measurements important to primaries and secondaries at temperatures and densities close to those occurring in nuclear weapons detonation. The NIF will examine the effects of specific age-related changes and other nuclear component modifications on weapon performance. The fusion ignition mission will test many of the same skills used in analyzing nuclear weapon performance and NIF will test simulation codes developed under the Accelerated Strategic Computing Initiative (ASCI).

As the world's premier laser facility, NIF will attract the highest quality scientists for work in high energy density science and weapons physics. It will provide an excellent tool for recruiting and training the next generation of scientists for the Stockpile Stewardship Program.

Question. Now, I understand that DOE plans to use the first several beam lines of NIF to address nuclear weapons stockpile issues prior to actual completion of the entire facility in fiscal year 2003, is that correct? Explain the importance in using NIF as early as possible and how this will contribute to the overall success of not only the NIF project, but also to the Stockpile Stewardship Program as well.

Answer. The size and complexity of NIF and the scientific precision needed to achieve ignition, make it important to gain detailed understanding of the laser performance at NIF as soon as possible. For non-ignition weapons science, we would like to get the results of selected higher energy experiments as soon as possible. In particular there are a number of important tests that could significantly aid development and testing of the computer simulations in ASCI. Therefore, the NIF project plans to provide the infrastructure on a schedule that allows for experiments to be done before the completion of the construction in 2003.

NIF will be about fifty times more energetic than present facilities, such as the Omega laser at the University of Rochester. Even the first several beam lines of NIF will have significantly more power and energy than present facilities. This higher power and energy of these beam lines will allow experiments on stockpile specific issues, hydrodynamics, radiation physics, and material properties to expand into new parameter regimes not presently attainable. The NIF Weapons and Ignition planning groups have developed proposed campaigns, which exploit partial NIF operation during the startup and testing process and better prepare NIF scientists for full-power NIF operations. Early experimental utilization of NIF will also improve NIF maintenance, startup and operating procedures.

Question. Now, the budget justification implies that there is a shortfall in funding for NIF which puts the ignition at risk, delays the initiation of the cryogenic handling system, and provides only minimal development of target diagnostics and experimental equipment. If NIF is as important to the national security as you say and setting aside budget constraints, how do you explain the lack of budget support to these elements of NIF? What impact does this shortfall have on DOE's fiscal year 2001 initial use of NIF and the fiscal year 2003 project completion schedule?

Answer. The fiscal year 2003 project completion schedule is not at risk, nor is the ultimate technical objective of achieving ignition. However, there is a potential delay from the schedule established in 1996 in the start of new program activities on the cryogenic target system that is required for ignition experiments as well as a potential delay in development of selected NIF diagnostics. The delays have no impact on completion of the NIF construction project, but could delay achieving ignition by as much as one year. Experiments using the first eight laser beams are still expected to begin in fiscal year 2001 and will result in obtaining significant data for ignition, weapons physics, and laser startup, but collection of some specific experimental data may be delayed due to the potential diagnostic delays. We are working to improve the integration of our experimental, computational and stockpile workload to better meet stockpile certification needs. In that process, we are developing options that could mitigate or eliminate the potential delays in the diagnostics and cryogenic target system for NIF should that prove to be a higher priority than other activities within the ICF or Core Stockpile Stewardship lines of the budget.

Question. The budget request includes $5.9 million in operating funds to support the NIF Project. Is this sufficient to support the hiring and training of scientists needed to meet DOE Program goals once initial operation of NIF begins and the project is fully operational in fiscal year 2003?

Answer. The $5.9 million budget request in operating funds for NIF is contained within the Other Project Cost (OPC) portion of the Total Project Cost (TPC) for the NIF Project and is not used for the purposes of funding the operations or staffing of NIF. The OPC funding request is to provide for project funded activities such as required environmental and safety documentation and startup planning. The hiring and training of scientists needed to achieve the NIF mission is funded by the national ICF and weapon science programs. In the present plan, the staffing requirements for first use of NIF are adequately funded in the program operations budget.

Question. What impact does the budget request have on the schedule for proving ignition from laser fusion?

Answer. We plan to prove ignition with the indirect drive approach as expeditiously as possible. When we submitted last year's budget, we projected that ignition experiments would begin in early fiscal year 2006. At the time this year's budget was submitted, we projected a delay of up to one year in the start of ignition experiments due to unavailability of the cryogenic target handling system and some diagnostics. We have been studying options that may mitigate or eliminate these potential delays.

ADVANCED DRIVER DEVELOPMENT

Question. Over the past several years, scientists at Sandia Lab have made major advances in pulsed power accelerators using the Z facility. Yet, the fiscal year 2000 budget before the committee requests no funding to continue important advanced driver development. Other than budget constraints, what is the rationale for this drastic action?

Answer. Development of pulsed power accelerator technology such as that used at the Z-facility, is funded in fiscal year 1999 and fiscal year 2000 within the Inertial Confinement Fusion budget. The Sandia pulsed power program has achieved outstanding success at the Z facility and continues to set performance records in x-ray output, and in power level and temperature. The Department's fiscal year 2000 budget request at Sandia also reflects the completion of the installation of the important Z/Beamlet backlighter Z facility. The Z facility will be used for experiments contributing to stockpile evaluations and for research to understand the potential of reaching fusion conditions with z-pinches. A review by the National Academy of Sciences will begin within a few months to evaluate the scientific and technical credibility of obtaining fusion with the z-pinch approach.

Consistent with Congressional direction, the Advanced Driver Development budget category under the ICF Program supports only the development of high average power lasers and should not be confused with funding for advanced pulsed power. No funding is requested for the Advanced Driver Development budget category in fiscal year 2000.

Question. Does DOE plan to accomplish this work in other parts of the Inertial Fusion program?

Answer. The Department's strategy in the near-term is to fully exploit the Z facility for Stockpile Stewardship needs. Development of advanced pulsed power accelerator technology depends on continued progress in Z-pinch physics, validation of fusion ignition on the National Ignition Facility, as well as a consensus on mission need. Any decision to proceed with another fusion facility within the Stewardship program would have to consider the value of additional fusion capability balanced against other program needs.

Question. What impact will this action have on the goals of inertial fusion energy and future defense program needs?

Answer. The continuance of the Defense Programs pulsed power program enables the United States to retain world leadership in this rapidly advancing technology. The Z accelerator at Sandia has already been used for some Stockpile Stewardship program applications. Pursuing inertial fusion for defense applications advances inertial fusion energy because the two applications have many areas in common. However, substantial additional technology development is required for inertial fusion energy, including a reliable high-repetition rate driver and a target-driver standoff concepts. The Department intends to use laser, pulsed-power, and other facilities to advance its capability in inertial fusion for defense and energy applications. The great challenge of obtaining inertial fusion and the complexity of applying this capability for defense and energy interests dictates the need for expert judgments in evaluating development paths. The Department needs both steady technical

progress and scientific reviews to guide its fusion development decisions. The present programs are balancing these factors.

Question. How important is the work undertaken in the Advanced Driver Program to attracting and retaining scientists in DOE's stewardship program?

Answer. The Z-pinch drivers are being applied to DOE's stewardship program today and this work is a factor in attracting and retaining scientists. These experiments are attracting experimentalists and theorists throughout the nuclear weapons community, including Los Alamos and Lawrence Livermore National Laboratories. These scientists are using and advancing their skills to design and field experiments at the Z facility that validate large simulation codes—skills which are required for a successful stewardship program. The excitement and satisfaction level of these scientists is high. As a result, the laboratories are attracting some of the best new scientists in the field to participate in these experiments, particularly in the disciplines of shock physics and radiation transport—both key areas of expertise in nuclear weapons science. Other areas of Stewardship activity are similarly vibrant and important. The Z-pinch success is a useful, but not a dominant factor in attracting and retaining scientists for Stewardship.

FUNDING FOR STOCKPILE MANAGEMENT

Question. The stockpile management program supports the enduring stockpile by assuring the availability of adequate supplies of tritium; provides safe and secure storage of nuclear materials and components to prevent proliferation; provides the ability to respond to potential or real weapons incidents or accidents, and the capability to respond to evolving nuclear terrorist threats; and provides a flexible infrastructure capable of supporting changing stockpile size.

The goals of the program are to: provide high confidence in the safety, reliability and performance of the enduring stockpile without nuclear testing; ensure the effectiveness of the U.S. nuclear deterrent; and provide the ability to resume underground nuclear testing and reconstitute nuclear weapons production capacities should national security demand them in the future.

The total budget request for Stockpile Management is $1.998 billion, a reduction of $48 million below the current year funding level. However, the details reflect a significant reduction in the dismantlement of retired nuclear weapons (down 36 percent or $23 million); and the core stockpile management program (down 4 percent or $68 million).

Dr. Reis, does the reduction in the Stockpile Management program concern you?

Answer. I would be concerned with the safety and reliability of the stockpile at any funding level. It is my job to be concerned. That said, the budget request for Stockpile Management is sufficient to address all critical needs.

Question. What will be the adverse impacts resulting from the reductions in various elements of the Stockpile Management Program?

Answer. To manage within the Stockpile Management Program budget, we have reduced funding for the dismantlement program which may be reflected in a reduced workforce. Our goal is to manage employment level reductions through attrition as much as possible.

Question. Which elements have been reduced to the point to give you major concern? Please explain why.

Answer. Again, as I have said, I would be concerned with the safety and reliability of the stockpile at any funding level. Among my current concerns are that we renegotiated several of the workload commitments to the Air Force and Navy. None of these adjustments will reduce the safety or reliability of the stockpile. These renegotiations will, however, continue to push out work into later years. Secondly, we must work to develop a multi-year budgeted modernization program at the plants. We do not have all of the manufacturing capabilities that are critical to extending the life of the nuclear weapons stockpile. We plan to start to reestablish these capabilities as part of an integrated plant modernization program in the fiscal year 2001 budget. Lastly, we are concerned with maintaining plant critical skills as we continue to experience manpower reductions. A large majority of the current workforce will be of retirement age within the next few years. This is the labor force that has the experience of building nuclear weapons. It is critical that we undertake our Stockpile Life Extension Program while this labor force who knows how to build weapons is still available. This problem is exacerbated by the fact that manpower reductions have made it difficult to retain junior level people to gain these skills for future requirements and to attract new personnel. The Commission on Maintaining United States Nuclear Weapons Expertise recognizes the problem and made various suggestions including incentives to retain personnel at retirement and attract new personnel.

REESTABLISHMENT OF PIT PRODUCTION

Question. Over the past several years, DOE has been working to reestablish plutonium pit manufacturing at Los Alamos to replace pits destructively tested in the surveillance program and to replace pits in the future should surveillance indicate a problem with a pit. This is a critical element of DOE's production complex reorganization.

Could you update the committee on DOE's efforts to reestablish pit production at Los Alamos? Are you still on schedule to achieve an annual production capacity of 20 pits by 2007?

Answer. The DOE is on schedule to deliver a certified W88 warhead to the stockpile in fiscal year 2001 which is required to achieve a manufacturing capacity of 20 pits per year by fiscal year 2007.

Currently, we are manufacturing development units to refine the processes to be used in production. Two development units have been completed and a third is scheduled for assembly in the near future. Manufacture of development units will continue into the beginning of fiscal year 2000. Once the processes, tooling, and qualification infrastructure are fully in place (much of which is being accomplished in fiscal year 1999), manufacture of qualification units will begin in fiscal year 2000. Qualification testing (to insure processes, procedures, and tooling can meet the consistency and product reliability of manufacturing and design specifications) will then be initiated. Achieving the capacity of manufacturing 20 pits per year in a reliable and sustained manner will require additional manufacturing equipment and facility improvements to both the plutonium facility and supporting facilities.

Question. Have you been able to produce a certifiable pit? What problems or issues remain to be resolved in order to achieve certification?

Answer. We are scheduled to produce a certifiable W88 pit in fiscal year 2001. Currently, there are no specific problems or issues with regard to certification, but much remains to be done. A number of qualification, engineering, and physics tests must be conducted to achieve certification.

Currently, we are manufacturing development units to refine the processes to be used in production. Manufacture of development units will continue into the beginning of fiscal year 2000. Once the processes, tooling, and qualification infrastructure are fully in place (much of which is being accomplished in fiscal year 1999), manufacture of qualification units will begin in fiscal year 2000. At this time qualification testing (to insure processes, procedures, and tooling can meet the consistency and product reliability of manufacturing and design specifications) will be initiated. Engineering and physics testing will continue to confirm that performance of the newly manufactured pits are equivalent to those currently in the stockpile.

Question. How does the budget request for fiscal year 2000 advance your efforts to reestablish this capability, and does the budget request maintain the 2007 date for producing DOE's goal of 20 pits per year?

Answer. The budget request for fiscal year 2000 enables DOE to continue to reestablish a pit manufacturing capability and to conduct qualification, engineering, and physics tests required to certify newly manufactured pits for entry into the nuclear weapons stockpile and to establish a 20 pits per year capacity by 2007.

On the manufacturing side, the budget request allows continued development of processes, tooling, and procedures necessary to manufacture the pits, and actual manufacture of W88 qualification pits. The budget also supports replacement of older laboratory equipment with new equipment required to manufacture twenty pits per year.

For certification, the budget request provides funds for qualification, engineering, and physics tests to continue. In fiscal year 2000, qualification testing (to insure processes, procedures, and tooling can meet the consistency and product reliability of manufacturing and design specifications) will be initiated. Engineering and physics testing begun in fiscal year 1999 will continue.

TRITIUM PRODUCTION

Question. In December of last year, the Secretary of Energy selected the commercial light water reactors for tritium production, and designated the linear accelerator as "backup" technology if needed sometime in the future. What was the basis of the Secretary's decision to select the commercial light water reactor? What major hurdles remain that could slow down or derail the use of commercial light water reactors as a tritium source?

Answer. After spending a great deal of time considering the alternatives, the Secretary determined that the use of Tennessee Valley Authority reactors offers the lowest technical and schedule risk, and the lowest cost of the options under consideration. At the same time, the Secretary designated TVA's existing Watts Bar and

Sequoyah reactors as the preferred facilities for tritium production rather than investing in the completion of TVA's unfinished Bellefonte Unit 1 reactor. The use of existing reactors offers unique advantages over any other tritium supply option including significantly lower investment costs and potentially the lowest life cycle cost. It is the only option that avoids a large capital expenditure on a major new weapons facility at a time when we are pursuing further arms reductions. It is the only option that allows us to proceed on a pay-as-you-go basis, allowing the Department to buy only what it needs. Because TVA has agreed to a cost-based Economy Act transaction, the annual costs will be low, particularly so if the options are not exercised and the reactors remain in a stand-by mode.

Assuming that adequate funding is provided and Congress places no additional restrictions on the project, there are no "major hurdles" that would slow or derail the project.

Question. Now, I understand that the NRC must provide regulatory approval in order to use a commercial reactor for tritium production, is that correct? What is the date that you must have NRC approval in order to meet the 2005 availability date of tritium? Have the DOE and NRC established firm schedules and major milestones to meet DOE's need date?

Answer. The NRC must approve amendments to the facility operating licenses for Watts Bar and the Sequoyah reactors in order for them to use the burnable absorber rods designed by DOE, rather than the standard burnable absorbers used. TVA must obtain NRC approval for these license amendments in time to insert the tritium-producing burnable absorber rods into the Watts Bar reactor core in early fiscal year 2004 and into the core of one of the Sequoyah reactors a few months later.

DOE and TVA estimate that the application for license amendments for Watts Bar and Sequoyah will be completed and submitted to the NRC about 14 months from now, about the middle of calendar year 2000. The NRC Chairman has committed that the agency will expeditiously review these license amendment applications. DOE and TVA expect, conservatively, that by the middle of 2002 the NRC will be in a position to act favorably upon the amendment requests. That expectation is based upon an assessment of the activities that are involved in the review and approval of license amendments by the NRC including the confirmatory demonstration just completed at the Watts Bar facility.

Question. I believe the Secretary stated that the commercial light water reactor was the most consistent with U.S. arms reduction goals. Can you explain why the Department believes this to be the case? Does the Administration believe that the commercial light water reactor option is also best suited to meet U.S. nonproliferation goals, and if so, why?

Answer. On balance the Administration believes that the commercial light water reactor (CLWR) option is best suited to meet U.S. nonproliferation goals. The CLWR option entails the use of a civilian reactor to produce material for use in nuclear weapons, departing from the long-standing principle of maintaining a distinction between U.S. civil and military activities. Such distinction, however, is not mandated by law with respect to tritium production or by treaty; there have been many past exceptions involving dual-use facilities; and a number of factors will mitigate the impact on U.S. nonproliferation efforts.

These mitigating factors include the fact that the reactor to be used for tritium production belongs to TVA, a U.S. government instrumentality with a long history of supporting U.S. defense needs; the fact that the reactor could remain eligible for (and be compliant with) International Atomic Energy Agency (IAEA) inspections; and the fact that implementation of this option could be delayed until necessitated by tritium demand, which could be reduced through additional arms control treaties.

The accelerator option does not transgress the civil/military dichotomy, but it could not follow possible future reductions in tritium requirements as efficiently. The substantial early investment in an accelerator specifically built for military purposes, moreover, could be seen as building up U.S. nuclear weapon production capabilities at a time when the U.S. is seeking to reassure non-nuclear weapon states that it is committed to nuclear arms reductions. This could weaken U.S. bargaining positions in such fora as the 2000 Non-Proliferation Treaty Review Conference.

Question. What are the Department's plans for an orderly close out of the accelerator, including associated target design, tritium separation and balance of plant design? What is DOE's funding profile to complete this work?

Answer. In accordance with Presidential guidance and in keeping with the Department's commitment to have a backup technology, DOE will complete the development and demonstration work and the preliminary design of the APT plant. All of the components mentioned are included in that work. The project will provide a final report to the Department with all of the technical information and the prelimi-

nary design that will allow the Department to finish the design and build a plant should that ever be required.

This effort will require $88 million in fiscal year 2000 and a total of $172 million between fiscal year 2000 and fiscal year 2002, at which time the project will be completed. The current profile (pending completion of a detailed re-planning), with fiscal year 1999 as a reference, is shown in the table below.

ACCELERATOR PRODUCTION OF TRITIUM FUNDING FOR FISCAL YEAR 1999 THRU FISCAL YEAR 2002

[Escalated dollars in millions]

	Fiscal year				
	1999	2000	2001	2002	2000–2002 Total
Operating	$85	$57	$35	$23	$115
Capital	20	31	26	.....	57
Total APT	105	88	61	23	172

INDEPENDENT PROJECT REVIEW

Question. Over the past few years, the committee has been working with the House Energy and Water Subcommittee and the Department to establish an independent project review process for capital acquisitions by DOE. The committees felt that this was necessary because of major cost overruns and changes in a project scopes which have resulted to significant schedule delays and increased projects costs. Over the past several months, DOE has been completing and transmitting to the Congress independent project reviews which assess the readiness of particular projects to proceed to construction. These reports have indicated varying states of readiness at the Labs to begin construction of projects funded in prior years.

The budget request for fiscal year 2000 includes 3 new construction starts for the Stockpile Stewardship program and 1 new start under Non-proliferation and Verification R&D.

Dr. Reis, the fiscal year 2000 budget includes funding for 3 new construction starts under Stockpile Stewardship. The evidence from the independent project reviews submitted to the Congress gives a mixed picture of DOE readiness to initiate project construction. What actions have you taken to insure that projects are thoroughly reviewed for missions needs; that scope, costs and schedules are firm and clearly established; and that quality project management personnel are in place at the Labs and within DOE?

Answer. We have instituted measures to ensure that the three new construction starts for Stockpile Stewardship are thoroughly reviewed to confirm that they are ready to proceed. External Independent Reviews on site have already been scheduled for the three new projects in the fiscal year 2000 budget request. These reviews will focus on mission need and project cost, schedule and scope baselines.

We are planning preparatory readiness reviews for each project that will be led by DP staff with project management expertise who are independent of line managers, and include members from the U.S. Army Corps of Engineers, other agencies, and contractors with cost and management expertise. These reviews identify areas needing improvement, and ensure that the projects are ready for the external assessments, including mission need and scope, cost and schedule baselines.

We are in the process of placing experienced project management personnel in place at the labs and within DP for these and other projects. A survey of the qualifications of all project management personnel is under way to support that process. In addition, DP will work with the Department on its recently proposed certification program and related training for project managers.

Question. Now there have been significant problems at Los Alamos in the past related to establishing firm project scopes, and keeping projects on schedule. Specifically, what has or is being done at Los Alamos to strengthen their construction oversight and project management practices?

Answer. Defense Programs has made significant efforts to strengthen construction oversight and project management at Los Alamos. The Department and the Los Alamos National Laboratory (LANL) conducted a construction projects management assessment in 1997 and concluded that there was a need for better project baselines,

management, and control systems. Bases on this assessment, the Department and LANL developed an Action Plan to management construction projects. In July 1997, the Nuclear Construction Project Office was established at the Albuquerque Operations Office to provide a single field line management organization to provide management and oversight of stockpile management projects at LANL.

Formal agreements between the Department and LANL are completed on each project to define their respective roles, responsibilities and accountability; the project baselines and management systems that will be employed during project execution; and the specific programmatic objectives that must be met by each project. A more rigorous and formal project authorization system has also been put into place providing improved funds control, definition of project deliverables, and supporting documentation. This enables management to ensure that appropriate resources are in place to support construction project activities

An integrated review process has been developed which ensures program, project, and safety objectives are quantified and achieved through technical review and decision processes. Integration between program and construction project activities is supported by plans that integrate programmatic work with equipment installations and construction activities.

Question. One of the new construction starts is a new $106 million Strategic Computing Complex at Los Alamos. When will the Independent Project Review be completed for this project? What specific actions will you take to ensure this project is managed to critical schedules, and that cost management is critically reviewed?

Answer. The independent assessment for the Strategic Computing Complex is scheduled to begin on April 12, 1999, with a final report to Congress by the end of May, 1999, although some slippage may occur due to other ongoing reviews. Additionally, a readiness review for the Strategic Computing Complex will begin on March 29, 1999, and will be completed before the independent assessment begins.

In terms of project management, Defense Programs has revised the way construction projects are managed. These revisions are based upon critical analysis of the program and utilize many of the attributes that have been successfully employed in projects such as the National Ignition Facility. Key changes include the creation of small project teams with clear, unambiguous roles, responsibilities, and appropriate authority to execute the projects; organizational changes to ensure senior management monitoring of the baselines; and an interim qualification of all project management team members.

Los Alamos National Laboratory has taken additional steps to improve the management of this project by hiring a professional construction project management firm to assist them in the oversight of the "design and build" contractor. They have also hired a professional engineering firm to assist them in their reviews of mechanical systems. The addition of these two external groups will significantly enhance the strength of the Laboratory's management team on this project.

CHEMISTRY AND METALLURGICAL RESEARCH (CMR) BUILDING UPGRADE

Question. The Department has been struggling with upgrades to the CMR building at Los Alamos for many years. This facility, built in the 1950s, undertakes important analytical work related to plutonium, uranium, and other alloys and materials in support of the weapons program. The project has been plagued with constant scope changes, cost increases and significant schedule delays. The Department has had a difficult time determining how to proceed with the project which has been suspended for the past few years in an effort to determine firm baselines of scope and costs for the CMR facility upgrade project.

Explain the Department's decision and plans for the CMR building at Los Alamos. Why was the decision made to proceed with upgrades of the existing facility, which was constructed in the 1950s and sits on an earthquake fault, instead of constructing a new facility?

Answer. In 1988, the Special Nuclear Materials Laboratory (SNML) project (88–D–105) was authorized to replace the CMR Building to support continued weapons production and certification. In 1991, the long term mission of the SNML became uncertain as weapons production ceased and there was uncertainty relative to the amount of work involving plutonium material which CMR would be required to support in the coming years. Therefore the Department decided not to proceed with construction of the SNML, but provide interim upgrades to the CMR. These upgrades were initiated in 1992 and later designated as Phase 1. In addition, studies were conducted to determine further upgrades required for continued long-term operations (later designated Phase 2). In 1995, the Department opted to initiate Phase 2 of the CMR Upgrades, bringing the Total Estimated Cost for the entire project to $174.1M, and cancel the SNML project.

It has only been in the past year that ongoing geologic studies have revealed the presence of a seismic fault running under the North side of the CMR facility. Because of the geologic information, the project has been refocused on completing only those upgrades necessary to maintain safe and reliable operations in the facility through fiscal year 2010. The Department is examining the activities at CMR to determine where these activities should be conducted in the future.

Question. How important is the CMR facility to the defense mission of DOE? What role will this facility play in carrying out the defense mission of DOE?

Answer. The capabilities of CMR are essential to DOE's defense mission. The CMR facility is the only laboratory facility with full capability for performing analytical chemistry and materials science for special nuclear materials. The CMR is critical to the Stockpile Stewardship Program in pit surveillance, pit manufacturing, stockpile lifetime extension, and nuclear weapons certification. Analyses performed at CMR assure that specifications for plutonium are met in pit production and pit surveillance.

Question. How do you plan to use the $18 million requested for fiscal year 2000?

Answer. The fiscal year 2000 budget request provides $18 million for completion of facility upgrades necessary to meet the safety and regulatory requirements for continued CMR operations. These requirements, and their scheduled implementation, have been formally defined and prescribed by the approved CMR safety authorization basis—the Basis for Interim Operations. These high priority safety upgrades are necessary to reduce CMR operational risks to the public and workers in the near-term, and to operate the CMR facility safely through fiscal year 2010. To meet the safety and regulatory requirements, the majority of the safety upgrades have been initiated in fiscal year 1999, and fiscal year 2000 funding will allow the design and construction of these upgrades to continue. If these upgrades are not completed as scheduled, the CMR facility operations will be severely curtailed or suspended.

Question. What steps and actions has the Department taken at the field and headquarters level to ensure that the project does not experience further scope changes and costs increase once work proceeds?

Answer. In the spring of 1997 the Department initiated an in-depth review of project management issues at the Los Alamos National Laboratory (LANL) as they related to the stand down of the CMR Upgrades Project. The review identified root causes, contributing factors, and, when put into place, corrective actions that will address systemic institutional performance problems and as well as construction project deficiencies. An external independent assessment was also conducted in August 1998 and a number of findings and recommendations were made, which again reflected the issues previously identified in 1997.

While corrective actions have been initiated on the basis of both institutional and project-specific issues, both the DOE and LANL have taken other actions to assure control over project scope, schedule, and cost. Significant organizational changes have occurred to put senior management focus on corrective measures and to assure project accountability. Technical expertise has been expanded both within the project and within engineering support offices. Procedures and other management tools have also been improved to increase project control. All findings and recommendations from previous assessments/reviews, including the two mentioned above, have been captured as part of an Action Plan (AP). The AP details both the institutional and project-specific correction actions to be taken to address the findings and recommendations. The AP is being used to establish baselines for several stockpile management construction projects and to strengthen project management oversight of milestones and cost. Project baselines and stronger oversight will enable management to ensure that appropriate resources are in place to support construction project activities. In addition, the Stockpile Management program established the Nuclear Construction Projects Office (NCPO) at Albuquerque to integrate and strengthen oversight of all the program projects at Los Alamos. Staffing was increased and roles and responsibilities were clarified between the NCPO, Los Alamos Area Office, and LANL.

IDAHO OPERATIONS OFFICE

Question. I notice that funding for the Idaho Operations Office is being reduced significantly below the fiscal year 1999 funding level? Why is this?

Answer. In fiscal year 2000, support will continue for the Radiological Assistance Program of approximately $400 thousand per year. The DP tasks supported by the Idaho National Engineering and Environmental Laboratory under the umbrella of the Idaho Surety Program will either be completed in fiscal year 1999 or have been refocused into areas outside of Idaho's expertise. This is the case with the task supporting the Advanced Design and Production Technologies initiative, the program

has refocused its priorities from modeling efforts to the development of processes and tools specifically required to support the Stockpile Life Extension Program.

USE OF PRIOR YEAR BALANCES

Question. Last year there was sizeable controversy regarding the expected level of unobligated balances within the Weapons Activities budget. If I recall correctly, the House reduced the program by several hundred million dollars based on information developed by GAO on projected levels of unobligated funding.

Could you review for the committee last year's situation and update us on where the program ended up as it relates to unobligated balances? How did the balances carried over into fiscal year 1999 actually compare to GAO's estimate and Defense Programs' estimates?

Answer. Last year, reports from the authorizing and appropriations committees specified that Defense Programs should use prior year balances, ranging from a low of $50 million to a high of $341 million, to offset the need for new budget authority to fund the fiscal year 1999 program. The final appropriation directed that the fiscal year 1999 program be financed using $4.4 billion in new budget authority and $82.5 million in prior year balances.

The controversy arose because the information developed by the GAO and provided to the committees differed significantly from DP's analysis. GAO reported to the committees that DP would have up to $340.7 million in "excess" balances at the end of fiscal year 1998, while DP's estimates indicated that little or no excess uncosted balances were expected, and $49.4 million for unobligated balances. The actual end-of-year unobligated balances for direct programs in the Weapons Activities account were $46.6 million.

Question. Now, the final appropriations bill used some $82.5 million of prior year balances to finance the fiscal year 1999 budget. Were these balances available? If the balances were not available, what adjustments were you forced to make?

Answer. No. There was not $82.5 million in excess prior year balances available to finance the fiscal year 1999 budget. We plan to obligate $4.447 billion in fiscal year 1999, which includes $28.6 million for program scope justified and approved in prior years but delayed until fiscal year 1999. The balance, $4.418 billion, represents obligations for new workscope composed of $4.4 billion in new appropriations, and $18 million in prior year balances.

In an effort to implement the guidance in the appropriation, which directed that fiscal year 1999 activities be funded using $4.4 billion in new budget authority and $82.5 million in prior year balances, Defense Programs undertook a rigorous process to examine all prior year balances reported at the end of fiscal year 1998. Since overall ending fiscal year 1998 uncosted balances for Defense Programs were well below the Department's goal for operations and maintenance activities, there was little flexibility to use these funds against fiscal year 1999 requirements. Only about $18 million was available from unobligated and uncosted balances to be redirected without unacceptable impact to ongoing program activities. Therefore, we will only execute program level that falls $64 million below the level outlined in the conference report accompanying the 1999 appropriation.

Question. If I understand your budget, you were forced to make some $64 million in program reductions because there was only a little over $18 million of prior year balances available. How was the $64 million reduction allocated by specific activity, and did this result in any adverse impacts?

Answer. To arrive at the current program and site allocations, we accommodated first all congressional direction contained in the appropriation and authorization bills and reports on fiscal year 1999 programmatic and site funding, and then assessed the reduction proportionally to each Defense Programs decision unit. Much of the reduction has been accommodated by small slips to work schedules, procurements and maintenance with no significant adverse impacts.

OFFICE OF COUNTERINTELLIGENCE FISCAL YEAR 2000 BUDGET REQUEST

Question. The fiscal year 2000 budget request for the Office of Counterintelligence requests funding of $18.6 million with another $12.6 million in additional funding to come from the national laboratories from other Defense programs to be spent by the Office of Counterintelligence. Why did you find it necessary to "tax" other programs for additional funds?

Answer. The Counterintelligence (CN) program for fiscal year 2000 is a $31.2 million program. All of the $31.2 million will be under the management purview of the Office of Counterintelligence. However, it is composed of two pieces. The first is direct funding of $18.6 million which is for costs primarily related to central counterintelligence activities. The second portion, $12.6 million, is not a tax rather it is an

estimate of the activities the laboratories will need to fund to better cover their counterintelligence responsibilities under the direction of the Office of Counterintelligence.

Question. Specifically, where will the $12.6 million come from? Provide for the record a list by site of how the $12.6 million will be assessed.

Answer. The funds will come from the laboratories that need to make additional expenditures to cover their counterintelligence responsibilities. This includes primarily the three weapons laboratories, but some additional expenditures will be required at other laboratories as needs for enhancements in counterintelligence are identified. The character of the improvements necessary will dictate whether these costs to be borne by the laboratory are from direct program funding or from overhead. The counterintelligence program is sending a team out to the laboratories in April and one of their responsibilities will be to get an estimate by site and activity of the expenditures necessary. When the information is complete, we will provide it to the Committee.

PRESIDENTIAL INITIATIVE

Question. Ms. Gottemoeller, three years ago, I considered the programs you oversee to be critical to U.S. national security. What I have come to realize since the collapse of the Russian economy, since the IMF and the World Bank have pulled out, and now that Yelsin's power is in serious question, is that your programs are the centerpiece of U.S.-Russian relations. I've met with the President's national security staff to discuss the President's Russia initiative, and I agree something has to be done since Russia cannot fulfill its obligations under many of our bilateral agreements. But I only see a few very small increases in your programs. Can you tell me how the President's initiative affects the programs you oversee?

Answer. The President's initiative is a positive step for the programs I oversee. His five year plan provides additional resources to what I consider to be one of the United States' top national security threats: nuclear proliferation.

In the area of nuclear security in Russia and the Newly Independent States, the President's Expanded Threat Reduction Initiative will keep the Materials Protection, Control, and Accounting (MPC&A) Program's budget at a more sustained level than previously planned and will help to provide a more vigorous level of effort during the next five years of the program's implementation. The President's Russia initiative provides the MPC&A program with funds to address the expanding mission, including work at additional Russian navy and civilian sites with weapons usable nuclear material; emergency measures and long term operations efforts; and nuclear material consolidation. The President's initiative will provide top level support for these measures and enable the MPC&A program to undertake these new, key projects to improve nuclear materials security and simplify the nuclear materials problem in Russia.

Other key programs affected by the President's initiative are the Initiatives for Proliferation Prevention (IPP) and the Nuclear Cities Initiative (NCI) programs. The President's initiative foresees providing funding support at the $30 million level annually for each program through 2004. Each is integral to the initiative and promotes the initiative's objectives. The two programs, while both addressing nonproliferation in the former Soviet Union, are complementary, but different. Let me explain the two programs in more detail.

IPP addresses chemical, biological, and nuclear nonproliferation issues in Russia, Ukraine, Kazakhstan and Belarus. It seeks to prevent the drain of expertise from former Soviet weapons of mass destruction institutes to countries of proliferation concern by engaging scientists and engineers working at those institutes in cooperative projects with DOE National Laboratories. The purpose of these projects is to verify technical feasibility and identify Newly Independent States (NIS) technologies for commercialization in partnership with U.S. companies. The hallmark of the IPP program in the NIS is the scientist-to-scientist interface, which is enabled through firm, fixed-price contracts between the NIS laboratories and the DOE National Laboratories. These contracts assure stringent oversight of the projects at the NIS institutes. In addition, the project proposals themselves are reviewed by the U.S. Government interagency community for dual-use and policy concerns. For projects where technical feasibility is verified and demonstrated, the project is moved to a second stage, a three-way partnership involving a U.S. industry partner, a DOE National Laboratory, and an NIS institute. Finally, through the development of free-standing businesses or product lines, long-term economic outcomes, in terms of royalties and jobs, are created for the NIS scientists and engineers involved. IPP has funded over 400 projects in total, of which 84 are cost-shared with U.S. industry. Several of the IPP projects have reached the point of full commercialization.

The NCI focuses on job creation for scientists and technicians who are being shed from the Russian nuclear weapons complex as a result of downsizing. It is taking place in the ten closed nuclear cities of Russia, starting with just three—Snezhinsk, Zheleznogorsk, and Sarov. Extension to other closed cities, planned for the second year, will be guided by lessons learned during the first year of engagement at the first three cities. These were chosen because IPP, and before that, the DOE lab-to-lab program, had engaged extensively with these cities and developed contacts. While IPP operates in the institutes of the closed cities, NCI operates in the more open municipal areas, engaging the new, post-Soviet political and civic leadership and encouraging the development of the non-weapons economy. In these areas, its efforts include such measures as infrastructure development, creation of low capital requirement businesses, and business/entrepreneurship training. NCI has only recently been authorized to obligate funding, and so the first NCI activities are now being funded in the three closed cities.

MATERIALS PROTECTION CONTROL AND ACCOUNTING (MPC&A)

Question. You know that I have had some very serious concerns about the management of some of your programs; Materials Protection and IPP in particular. I know you have made changes, and those programs now report directly to you. I understand that the number of sites that need to be secured is much higher than the original estimate. How long do you think this program will need to continue?

Answer. The Materials Protection, Control and Accounting program based its original completion date on data contained in the 1995 Joint Atomic Energy and Intelligence Committee (JAEIC) Report. The report identified 80–100 buildings in the Former Soviet with weapons grade nuclear material which required rapid upgrades. The program determined that upgrading these 80–100 buildings would require a sustained effort through 2002. However, since the 1995 JAEIC Report, the program has greatly expanded due to improved knowledge of and access to sites and buildings containing weapons usable nuclear materials. To date, the program has identified approximately 400 buildings requiring upgrades at 55 sites. We also have expanded the work with the Russian Federation Navy to include all sites with fresh nuclear fuel and naval spent fuel of proliferation concern. Our initial planning did not project such excellent cooperation with or access to so much of the Russian Naval complex. Also, economic and political uncertainties in Russia during 1998 made security of the nuclear material more difficult and have slowed some work.

While the harsh Russian economic conditions have increased the risk of theft of nuclear materials, it also has created new opportunities to address proliferation risks. For example, the program is initiating a material consolidation program to simplify the nuclear security problem by moving material into fewer buildings at fewer sites. Prior to this crisis, this innovative approach would have been less likely to be supported by the Ministry of Atomic Energy (MINATOM). The recent violent acts at MINATOM and Russian Naval nuclear installations have promoted a more proactive approach by the Russian Federation to reduce the size of the problem. We are now actively working with the Russian Federation to develop a strategy to consolidate nuclear material into fewer buildings at fewer sites.

Today, the program is still on track to complete rapid upgrades at 100 of the most vulnerable buildings by the 2002 targeted date. However, in light of the expanded work, we are currently updating the plan. Our new estimate of 400 buildings requiring upgrades will likely be adjusted downward if we are able to undertake a vigorous consolidation effort with the Russians, which we fully expect at this time. Thus, as we develop our new work plan, we are necessarily factoring in some uncertainties. The President's Expanded Threat Reduction Initiative shows the program extending through fiscal year 2004, but work may be required beyond that time. We will keep you informed as our new work plan develops.

Question. Russia has now offered to work with us to consolidate the nuclear material in Russia. Have we reached an agreement on that proposal?

Answer. Material consolidation is a new element to the Material Protection, Control, and Accounting Program and is under discussion currently. We are exploring opportunities with the Russian Federation to consolidate nuclear material into fewer buildings at fewer sites to simplify the nuclear security task and also possible blend down of some of the excess highly enriched uranium to low enriched uranium. At this time, we have not finalized the proposal, but we are working with the Russian Federation Ministry of Atomic Energy to develop a strategy and a proposal that will work towards consolidating nuclear material in the near future.

Question. Do we know how much material the Materials Protection program has secured?

Answer. The Materials Protection, Control, and Accounting Program is improving the security on approximately 400 metric tons of weapons usable nuclear material by installing initial rapid upgrades, such as delay barriers, access control and portal monitors. Of this amount, we have completed the installation of fully integrated material protection, control and accounting systems for approximately 30 metric tons.

Question. I also am aware of the conflict between some of your managers and the leadership of the labs over the Materials Protection program. Both sides make good points, but are you aware of that problem and are you taking steps to resolve it?

Answer. Our MPC&A program was originally established as a temporary task force, but work in Russia has proven to be much bigger, tougher and longer-term than anyone would have expected when we began in 1994. The Russian economy has not improved, and in fact has gotten worse. The size and geographic span of the Russian nuclear material storage complex is greater than anyone in the United States knew. I took steps, as Director of our Office of Nonproliferation and National Security, to establish a more permanent management structure for our nuclear security operations in Russia and the MPC&A Task Force. Now the MPC&A Task Force is reporting to me directly, and I have brought on board a senior State Department official to advise me and the Department on new approaches to manage the MPC&A program and other Russian programs. I expect these changes will dramatically improve the oversight and implementation of this extremely important program and provide for a more efficiently and effectively managed effort. Our goal is to further increase the successes and effectiveness of the MPC&A program in Russia through this change.

GAO REPORT ON INITIATIVES FOR PROLIFERATION PREVENTION (IPP)

Question. Ms. Gottemoeller, the GAO has issued a report critical of the IPP program. How do you respond to the complaint that Russian scientists who receive support from the IPP program may work on dual-use technologies or may even continue to work on weapons technologies when they are not working on IPP projects?

Answer. The Department and General Accounting Office (GAO) do not agree on this issue. GAO claims that some Initiatives for Proliferation Prevention (IPP) projects support the development of "dual-use" technology that may enhance Russian military capabilities. The cases cited by GAO provided no direct aid to Russia's military or weapons of mass destruction programs. Moreover, DOE has been extremely concerned about this issue and reinforced the existing review process in the mid-1997 time frame. This reinforcement enhanced interagency participation in the review process, to screen out potential "dual-use" projects—especially in the areas of chemical and biological weapons. Nevertheless, we have implemented GAO's recommendations to further strengthen the review process.

IPP is not subsidizing Russian weapons activities, as GAO contends, because each project is designed to produce non- defense products and results in one or more specific deliverable. The deliverables are reviewed by a U.S. laboratory principal investigator who verifies that these meet the original terms of contract requirements. We take this oversight very seriously. DOE scientists spent the equivalent of ten man-years in the NIS in fiscal year 1998 alone, ensuring that IPP projects were being properly conducted, according to firm, fixed-price contracts. Time spent by Russian scientists on these non- defense IPP contracts is time that they cannot spend working on Russian weapons projects—or on weapons of mass destruction programs for third parties.

We know that senior Russian weapons scientists are devoting time to their IPP projects, because we are receiving work products, reports, equipment prototypes, and other deliverables that reflect their project work. Moreover, in many cases IPP program money is the only actual payment scientists are receiving, thus making IPP work more attractive to Russian participants than non-paid defense-related assignments.

The involvement of DOE laboratory personnel with that of NIS scientists and engineers provides assurance that old reports and data from archives are not sent in as new deliverables. The direct interface with DOE personnel also helps ensure that IPP funds are being spent on IPP projects and are not diverted to other purposes at the recipient institutes.

The fundamental goal of the IPP program is to keep NIS weapons specialists working in their home countries, rather than selling their services to foreign states or organizations of proliferation concern. At virtually all Russian weapons institutes, salaries are going unpaid for months. These scientists and those formerly employed at the institutes are the proper targets of the IPP program, because these are the individuals who are most likely to be tempted to sell their services abroad.

GAO also raised the possibility that 19 chemical and biological projects had not received necessary interagency review. It has recently been verified by review of IPP documents and records that these 19 projects had received necessary interagency review before their approval. In addition to this, the remaining IPP chemical and biological projects (for a total of 30) have been rechecked to assure that necessary interagency reviews are underway and should be completed by April 15, 1999.

INITIATIVES FOR PROLIFERATION PREVENTION (IPP)

Question. I am interested in the GAO's finding that most of the IPP funds are spent at our labs and not in Russia. Would you provide to the Committee a breakdown of the how much of the funds appropriated for Materials Protection and IPP is spent in the U.S. and how is spent in Russia?

Answer. IPP expenditures in the United States have been high because of the involvement of the DOE National Laboratories—an involvement that is one of the core strengths of the IPP program and one that is mandated in the legislation founding the initiative. It is the close involvement of DOE National Laboratory scientists and engineers in the IPP projects that assures that the work done and the deliverables received, under firm, fixed-price contracts, are receiving stringent oversight. The principal investigators monitor each contract, collaborate with the NIS scientists and engineers, working jointly on a given project, participate in selecting an industry partner in the U.S., arrange the Cooperative Research and Development Agreements (CRADA) with the industrial partner, and then monitor the CRADAs. Often, joint publications and joint inventions result from these collaborative efforts.

This crucial involvement of DOE laboratory personnel provides confidence that NIS scientists and engineers are not submitting old reports and data from their files as new deliverables. The hands-on involvement of DOE personnel also helps to safeguard that IPP funds are being spent on IPP projects and are not sidetracked for other activities at the recipient institutes. In fiscal year 1998 alone, IPP principal investigators from the laboratories spent the equivalent of nearly 10 man-years at facilities in the NIS ensuring that IPP projects were being done properly and in compliance with contract requirements. (It should be noted that although these days were worked in the NIS, the travel funds were counted as being spent in the United States, an accounting artifact that does not provide a full picture of resources devoted to work in the NIS).

Another factor affecting the proportion of IPP funds expended in the United States is that IPP provides important support for other U.S. government programs. For example, since International Science and Technology Center (ISTC) funds cannot be spent in the United States, IPP funds are used for work at U.S. National Laboratories in support of ISTC work in Russia. Over the life of the Program, six IPP projects worth approximately $950,000 were funded in direct support to ISTC projects. In addition, IPP has been funding nearly $500,000 in ISTC salaries on an annual basis. IPP has also provided continued indirect support to ISTC from National Laboratory overheads and other related sources. DOE lab scientists are listed as 'collaborators' on 238 ISTC projects and perform a number of activities which can include proposal review, review of reports and performance of hands-on research. Indirect support duties also include performance as program 'coordinators' for ISTC projects for which at least partial compensation is received.

Despite these factors, however, the IPP program is implementing changes to increase the commercial emphasis of IPP projects and to raise the overall proportion of project funds sent to the NIS to well above 50 percent. Our goal is 60 percent. This will be accomplished by requiring that each laboratory place more of its IPP project dollars on U.S. industry cost-shared projects, to which U.S. industry is contributing resources, as opposed to technology demonstration and feasibility projects not involving U.S. industry. For these U.S.-industry cost-share projects, an increased share of funding will go to the NIS. In addition, on-going technology demonstration projects that are not meeting project milestones or have only a slight chance of commercialization will be canceled and the funds made available for more commercially promising projects. As an aggregate, these measures will result in an increasing commercial emphasis, more U.S. industry cost-share and participation, and a greater percentage of overall IPP funds going to the NIS.

For fiscal year 1997 Initiatives for Proliferation Prevention (IPP) appropriated funds, the DOE National Laboratories allocated $12.4 million to the Newly Independent States (NIS). They allocated $15.5 million to laboratory-related activities. This amounts to 44.4 percent of IPP project dollars allocated to NIS contracts in fiscal year 1997.

For fiscal year 1998 appropriated funds, the allocation percentage to NIS contracts is projected to be 48 percent as new contracts are finalized. The current dis-

tribution reflects that the DOE National Laboratories have allocated $6.7 million or 28.2 percent to the NIS and $17.0 million or 81.8 percent of funds is committed to laboratory-related activities. As contract negotiations with NIS institutes are completed and costing of funds under the new contracts can begin, the NIS expenditures are anticipated to rise to as high as 48 percent, allocating a 52 percent portion in the National Laboratories.

It is also the IPP program goal to increase the number of Thrust Two projects, which involve a cost-sharing with U.S. industry, as a percentage of overall projects underway. This will contribute, in a positive way, to increasing the flow of funds to the NIS partners.

For the Materials Protection, Control and Accounting (MPC&A) Program, during fiscal year 1996 and fiscal year 1997, as the program was getting established and U.S. coordination costs were higher, the MPC&A program spent $107.7 million on U.S. laboratory labor and travel and $56.3 million on upgrades at FSU facilities, including FSU labor and MPC&A equipment installed at FSU facilities (this equipment was from FSU and Western commercial vendors). This broke down to about 66 percent and 34 percent, respectively.

Since fiscal year 1998 through January 1999, the MPC&A program costs were $100.7 million for U.S. laboratory labor and travel and $90 million for FSU labor and MPC&A equipment. These costs amount to around 53 percent and 47 percent, respectively. This trend is heading toward lower U.S. laboratory costs as the MPC&A program engages in more efficient management.

It must be stressed that much of the laboratory travel associated with both the MPC&A and IPP programs is carried out in Russia and the NIS, overseeing or performing project work in inhospitable or even hazardous environments. Without the travel of laboratory specialists to these difficult and remote locations, MPC&A and IPP project work would not be possible.

NUCLEAR CITIES INITIATIVES (NCI)

Question. This year's Defense Authorization Act required a report on the Nuclear Cities Initiative which we have received—but it is very vague. Will you submit to the Committee a more detailed report so we can understand basic issues about the Nuclear Cities Initiative such as; who will serve as the United States executive agent for this program, where the money will be spent, or what the money will be spent on?

Answer. The Department will be happy to provide ongoing status reports of progress under the Nuclear Cities Initiative (NCI) to the Committee. The Nuclear Cities Initiative has progressed considerably since the December report that DOE submitted to the Congress.

DOE serves as the U.S. Executive Agent for Nuclear Cities Initiative on behalf of the U.S. Government.

As reported to the Gore-Primakov Commission in March 1999, important initial projects are being launched in each of the three initial target cities, Sarov, Snezhinsk and Zheleznogorsk. Highlights of the current status and plans are:

Working groups have visited each of these three cities and identified promising projects. One of the primary aims of the mutual effort will be to establish a business friendly infrastructure within the cities. As a start, in 1999, almost $2 million in funding will be devoted to upgrading the telecommunications systems and to establishing business development centers to promote market-based economic activity within each community.

In Snezhinsk (Chelyabinsk–70), a pharmaceutical packaging project has been identified for joint work, leveraging resources to support this important activity to benefit public health and welfare. In Zheleznogorsk (Krasnoyarsk-26), the U.S. working group team has just completed its evaluation. The Silicon of Siberia project, which alone could result in the creation of 500 jobs over four years, will be one target of joint development, with other smaller projects currently being identified.

Progress in the six short months since the NCI Agreement was signed has been impressive and both U.S. and Russian participants look forward to building a foundation of cooperation that will lead to sustainable job creation in the closed nuclear cities.

STATUS OF RUSSIAN TALKS

Question. Ms. Holgate, Deputy Secretary Moniz, Deputy Secretary Holum, and you briefed me in some detail on this yesterday but, for the record, would you summarize the status of the talks with Russia?

Answer. The negotiations are underway. Initial conversations with Russian counterparts, particularly in February, reveal substantial common ground on a number

of substantive elements as well as on the structure and urgency of this agreement. The U.S. delegation is led by the Department of State with key support being provided by the Department of Energy. The Russian delegation is led by the Ministry of Atomic Energy (MINATOM), supported by the Ministry of Foreign Affairs. I believe that an agreement can be concluded this year to enable plutonium disposition to proceed in both countries.

PARALLEL U.S. AND RUSSIA PROGRAMS

Question. Congress directed in last year's Act that "the United States should not proceed unilaterally to dispose of excess plutonium without parallel progress on the Russian side." The budget request states that the Administration will not construct new facilities for disposition of U.S. plutonium unless there is significant progress on plans for plutonium disposition in Russia. When the Administration says "significant progress," is that consistent with the Congressional requirement for an agreement to be in place?

Answer. Yes. The United States will not unilaterally dispose of its surplus plutonium without parallel progress on the Russian side. The Department's fiscal year 2000 budget request for fissile materials disposition seeks funding to proceed with the up-front research, design, licensing and fuel qualification activities. Proceeding with these long lead-time activities is necessary to maintain momentum and pressure on Russia for a plutonium disposition agreement, and serves as a sign to private industry, the public and the world community that the U.S. is serious about disposing of stockpiles of surplus weapons plutonium. The United States will not begin construction of new facilities for the disposition of U.S. plutonium unless there is significant progress with Russia on plans for the disposition of surplus Russian plutonium. A comprehensive bilateral agreement would certainly represent "significant progress."

Question. Your budget request for fiscal year 2000 includes funds to complete Title I and Title II design of the pit disassembly and conversion facility and to procure some long-lead equipment. You are also on the verge of issuing a contract this year with a fuel fabricator and utility team to fabricate and burn MOX fuel. It seems to me that Russia is years behind in that regard. Are you getting in front of Russia, and how do you plan to deal with a slow-down if the Russian program does not proceed quickly?

Answer. I do not believe the United States is getting out in front of the Russians on this matter. Russia is currently conducting feasibility studies on various technical alternatives for converting plutonium metal to plutonium oxide, suitable for fabrication into mixed oxide (MOX) fuel. Following a decision by Russia, we can proceed with design of a full-scale Russian plutonium conversion facility. On the U.S. side, once we have a contract in place, we too can proceed with the design of the full-scale plutonium conversion facility. The contract for MOX fuel fabrication and irradiation services is written so as to allow changing the output of the MOX plant to allow for parallel progress with Russia.

The U.S. contract for MOX fuel fabrication and irradiation services was awarded on March 22, 1999. We needed to award this contract in order to select and obtain commitments on which reactors would be used. Among other things, the first phase of this contract will include design of the fuel fabrication facility. Without the facility design and the identification of reactors, we would be unable to move forward with the licensing requirements for the fabrication facility and the reactors. Russia, on the other hand, already knows which reactors will be used for plutonium disposition and they have begun work on fuel qualification. Russia is working on a conceptual design of a MOX fuel fabrication facility with the French. Our Technical Cooperation Agreement gives us a key mechanism to keep Russian research and development moving ahead during the process of negotiating a comprehensive bilateral agreement.

Question. Is the procurement of that long-lead equipment consistent with the commitment to proceed in parallel with Russia?

Answer. Yes. In order to obtain the necessary equipment design information for review and use, the architect-engineer must procure the long-lead equipment early in the design phase, before the facility design is complete. However, no equipment manufacturing would begin unless there is significant progress with Russia on plans for plutonium disposition. Should significant progress be delayed, equipment vendors would not be authorized to fabricate hardware.

DEFINITION OF 50 TONS

Question. Russian Minister Adamov has complained to me that the 50 tons of plutonium the United States plans to disposition of is not all weapons grade. I under-

stand that initially we will work with Russia to dispose of equal amounts of each country's plutonium, but, over the long run, Russia has a great deal more plutonium that the U.S. How are we going to achieve parity over the long run?

Answer. You are correct in your understanding that under the bilateral agreement currently envisioned, the United States and Russia will likely dispose of equal amounts of plutonium and that Russia is believed to have a great deal more plutonium than does the United States. Parity in remaining plutonium stockpiles is intended to be addressed as part of the broader strategic arms reduction process (START).

Question. Would you provide for the record a list of what plutonium each country possesses—in the case of Russia it will be our best estimate—and a list of what plutonium each side has proposed to dispose of?

Answer. As specified in the DOE publication, Plutonium: The First 50 Years (DOE/DP–0137, February 1996), the current U.S. plutonium inventory is 99.5 metric tons (MT). The U.S. inventory is composed of 85.0 MT of weapons grade (less than 7 percent Pu240), 13.2 MT of fuel grade (more than 7 percent and less than 19 percent Pu240), and 1.3 MT of reactor grade (more than 19 percent Pu240). Of the 85 MT of weapons grade plutonium, 38.2 MT have been declared excess to national security needs. In addition, the Department of Energy considers 14.3 metric tons of non-weapons-grade plutonium to be surplus.

The DOE publication, Materials Protection, Control, and Accounting (MPC&A) Program Strategic Plan (January 1998), states that experts believe that the former Soviet Union produced more than 150 MT of plutonium. In September 1997, Russian President Yeltsin announced a decision to remove gradually from military nuclear programs, up to 50 metric tons of plutonium which has become available through the nuclear disarmament process. Thus far, Russia has provided no further breakout of this material.

MOX VS. VITRIFICATION

Question. Ms. Holgate, your program proposes to dispose of excess U.S. plutonium in two ways: burn it in reactors as MOX fuel or mix it with a ceramic, place that material in a steel can and surround the steel can with vitrified high-level waste. It seems to me that it will be relatively easy to recover the plutonium stored in steel cans, especially as the radioactivity of the waste around it decreases—something that will occur fairly rapidly. Have you determined that the steel can storage technique meets the spent fuel standard?

Answer. The Department is focusing on this "can-in-canister" approach for plutonium immobilization. Under this approach, plutonium feed materials would be converted to oxide which would be mixed with material to form ceramic disks. The disks would be stacked and sealed into steel cans which would be arrayed within large canisters into which vitrified high-level waste would be poured. The radioactive waste barrier increases the proliferation resistance of the immobilized plutonium. Subsequently, the canisters would be disposed of in a geologic repository. The Department believes that this "can-in-canister" immobilization approach meets the spent fuel standard in which the surplus plutonium is made as inaccessible and unattractive for retrieval and weapons use as the plutonium remaining in spent fuel from commercial reactors. Nonetheless, DOE has asked the National Academy of Sciences to examine the degree to which both U.S. disposition technologies meet the spent fuel standard. The National Academy of Sciences assessment is expected to be completed this summer.

Question. Would you be comfortable with China or North Korea disposing of plutonium using the steel can approach?

Answer. As a practical matter, a nuclear weapons state such as the United States, Russia or China has the technology to recover separated plutonium from either spent MOX fuel or the immobilized waste form. The real question that needs to be asked, however, is whether it is practical for a nuclear weapons state to do so in light of more readily available alternatives, which are cheaper and easier. Given this fact, the United States would be comfortable with Russia or China disposing of their surplus plutonium through immobilization and subsequent disposal in a geologic repository. North Korea, however, is not a recognized nuclear weapons state and is believed to lack key technology and readily available stockpiles of plutonium with which to readily fabricate nuclear weapons. As a result, under no circumstances would the U.S. be comfortable with North Korea disposing of surplus plutonium in this manner, should such material be available.

SCHEDULE

Question. Ms. Holgate, your program proposes to actually begin burning up U.S. plutonium in 2007. When do you plan to complete the disposition of all 50 tons of excess U.S. plutonium?

Answer. Assuming the U.S. and Russia complete a plutonium disposition agreement later this year, the United States could dispose of its 50 metric tons of plutonium by 2022. This assumes a peak disposition rate of 5 metric tons of plutonium per year, with the ability to accelerate this rate should parallel progress be achievable in Russia.

Question. How did you decide what an acceptable schedule would be?

Answer. The schedule is an aggressive one based on a number of factors including technical considerations, cost, infrastructure and Russian considerations. However, given the current political instability and worsening economic conditions prevailing in Russia and the very real threat that surplus plutonium could be stolen or diverted into the hands of terrorists or non-nuclear nations, I feel that the aggressive schedule is warranted.

CANADIAN REACTORS

Question. I've been intrigued by the idea proposed a number of years ago to burn U.S. and Russian weapons-derived plutonium in reactors in Canada. Do you still plan to fabricate fuel for Canadian reactors, and when might we ship that fuel to Canada?

Answer. Yes. A joint U.S.-Russian non-proliferation experiment is planned to be conducted this summer in Canada to demonstrate the feasibility of disposing of excess weapons plutonium by using it in mixed oxide (MOX) fuel in CANDU reactors. The Los Alamos National Laboratory has fabricated eight small fuel pins containing 119 grams of plutonium from dismantled U.S. weapons for the United States part of the experiment. The Russian Federation's Bochvar Institute is preparing to fabricate a similar amount of fuel from Russian plutonium. In the experiment, a Canadian test reactor will simultaneously irradiate these small quantities of MOX reactor fuel.

DOE believes there is adequate interest and reactor capacity available within the United States to dispose of all excess U.S. plutonium. There may, however, be a need for additional reactor capacity to augment Russia's capability to dispose of its plutonium in reactors.

QUESTIONS SUBMITTED BY SENATOR CRAIG

NONPROLIFERATION TECHNOLOGY

Question. Secretary Richardson recently challenged all DOE national laboratories to "identify technical breakthroughs which will revolutionize our proliferation detection capabilities." Do you plan to increase your support of research and development at non-defense laboratories so that the full capabilities of the DOE laboratories can get to work on meeting this important challenge?

Answer. The Nonproliferation and Verification Research and Development (R&D) Program will continue to support R&D at both defense and non-defense laboratories to utilize the full capabilities of the DOE laboratories. In fiscal year 2000, Chemical and Biological Nonproliferation has been identified as the highest priority growth area with a budget request for this program of $31.2M, an increase of almost 70 percent over the fiscal year 1999 budget of $18.5M.

In preparation for an expanded fiscal year 2000 budget the Chemical and Biological Nonproliferation Program invited all DOE National Laboratories to participate in a call for proposals. Technology gaps in our current program as well as on-going projects that could be accelerated into fielded capabilities through the infusion of additional R&D funding were the targets of this solicitation. Laboratories were encouraged to team with both academia and industry where technical expertise was needed and where systems were maturing towards implementation.

Both new proposals and ongoing research and development projects will undergo a rigorous two-step peer review which will be conducted this Spring. The peer review panel will consist of technical experts and end-users from other government agencies, industry and academia.

Funding decisions will be made on the basis of this peer review process which will focus upon the work's potential impact and advancement over current state of the art capabilities, the scientific and technical quality of the work, and finally the program management and technology implementation plan. It is expected that some of

this important work will be conducted at the DOE's non-defense laboratories to meet our proliferation detection challenges.

RUSSIAN NAVY FLEET

Question. I understand that the current U.S. program to dismantle Russian ballistic missile submarines is only addressing a fraction of the total number of inactive Russian submarines. The fuel for these submarines could present an environmental threat if not dealt with. Do you agree that these submarines pose a threat? Would you support an accelerated program to defuel all of the Russian submarines?

Answer. Yes, I agree that the possibility of an environmental threat is present if dismantlement is not handled properly; we are also concerned about possible nuclear safety and security threats. We are coordinating through an interagency process to develop a strategy to deal with this very important issue. We will keep you informed of our progress.

KAZAKHSTAN BN–350 ACTIVITIES

Question. I understood Argonne-West is conducting a very successful program to secure the spent fuel and blanket assemblies from the BN–350 reactor in Kazakhstan. I also understand that Kazakstan has decided to shut down the BN–350 permanently. Experience in Idaho with the Experimental Breeder Reactor-II could be used to assist Kazakhstan in fire protection and handling of the radioactive sodium. Do you have plans for helping to resolve these concerns and assist the shutdown of the BN–350 reactor?

Answer. The Department of Energy intends to assist Kazakhstan with the safe shutdown of the BN–350 reactor. In this effort, we plan to work closely with the International Atomic Energy Agency, the Government of Kazakhstan, and other countries with experience in sodium cooled reactor technology. We plan to place particular emphasis on safety issues, including sodium fire protection and sodium draining. Due to its experience with the operation and shutdown of the experimental Breeder Reactor-II, Argonne National Laboratory-West is playing and will continue to play a large role in our work to improve safety and to assist in the shutdown of the BN–350.

NUCLEAR CITIES INITIATIVE

Question. The Mayor of Idaho Falls has expressed interest in establishing a sister cities arrangement with the Russian city of Ozersk and supporting the work of ANL and INEEL in that city. What is your position on the mayor's proposal and on opening up the Nuclear Cities Initiative to DOE's non-weapons labs?

Answer. The NCI Program has already been cooperating with Idaho Falls. Through the Energy Communities Alliance Annual Conference, NCI brought together the Mayor of Idaho Falls, Linda Milan, and the Mayor of Ozersk, Sergey Cherishov, to discuss economic development strategies. Additionally, NCI staff introduced the Russian and American mayors to the Director of Sister Cities International, Alexander Gorev, to promote their cooperation. And finally, NCI program staff has requested Sister Cities International to permit both Idaho Falls, ID, and Richland, WA, to pair with Ozersk in a new "Sister Cities" relationship.

The Department supports the participation of the non-weapons laboratories in the Nuclear Cities Initiative (NCI). Currently, the Savannah River Site and the Pacific Northwest National Laboratory have significant roles assigned under the NCI. For example, the Savannah River Site teams with Los Alamos National Laboratory in heading the Sarov City Working Group. Pacific Northwest National Laboratory is teamed with Lawrence Livermore National laboratory in the program efforts at Snezhinsk. The Oak Ridge Site and Sandia National Laboratories are teamed in the Zheleznogorsk Working Group. Argonne National Laboratory was recently tasked with the development of a new medical isotopes functional working group under NCI.

BN-600 REACTOR

Question. Russia's BN–600 reactor still incorporates a breeding blanket that produces about 450 kilograms of weapons-grade plutonium per year. Does the Administration plan to propose the conversion of the BN–600 blanket and the use of MOX fuel in the BN–600 as part of its plan to spend the $200 million emergency appropriation for Russian plutonium disposition provided by Congress?

Answer. The government of Japan recently announced its intention to provide funding for the conversion of the Russian BN–600 breeder reactor for operation as a plutonium burner. The Department of Energy intends to cooperate with the Rus-

sian Ministry of Atomic Energy (MINATOM) and the Japanese government on issues associated with the conversion and the related funding.

SUBCOMMITTEE RECESS

Senator DOMENICI. Okay. We look forward to that. We stand in recess.

[Whereupon, at 11:45 a.m., Thursday, March 11, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2000

THURSDAY, MARCH 18, 1999

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:30 a.m., in room SD–124, the Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Gorton, Craig, Reid, and Murray.

Also present: Senators Campbell and Allard.

DEPARTMENT OF ENERGY

ENVIRONMENTAL MANAGEMENT AND CIVILIAN WASTE MANAGEMENT PROGRAMS

STATEMENTS OF:

JAMES M. OWENDOFF, ACTING ASSISTANT SECRETARY FOR ENVIRONMENTAL MANAGEMENT

LAKE H. BARRETT, ACTING DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

OPENING STATEMENT

Senator DOMENICI. The hearing will please come to order. I know Senator Reid is not here, but he will arrive shortly. I apologize, but I can only be here until 10:15, because I am finishing the budget markup upstairs in another room. So I would like to get started and keep my remarks to a minimum, in order to get on with testimony of our witnesses.

We welcome the presence of Senator Campbell, who, while not being on the subcommittee, has asked, as he did last year, if he could come here and ask some questions about Rocky Flats. We will be glad to let you do that, Senator.

This morning we review the budget request of the Department of Energy's Environmental Management Program, and the Civilian Radioactive Waste Management Program, otherwise known as the Yucca Mountain program.

I want to welcome the witnesses here today, Mr. James Owendoff, Acting Assistant Secretary, Office of Environmental Management; and Mr. Lake Barrett, Acting Director of the Office of Civilian Radioactive Waste Management.

Gentlemen, we have a busy schedule today in the Senate, and I ask that you be as brief as possible in summarizing your prepared

statements, as you know they will be thoroughly read by the subcommittee. Without objection, right at the offset, your full prepared statements are going to be made part of the hearing record.

Before I turn to Senator Reid, who will be along shortly, I want to mention one item of particular interest to Senator Reid and me, and that is the accelerator transmutation of waste. We included in last year's act $4 million to develop a road map for accelerated transportation of waste technology.

The Department has made a great deal of progress in developing that road map, and I hope to come back to that issue at a hearing in April specifically for that purpose.

Having said that, I wonder if, Senator Campbell, would you like to——

Senator CAMPBELL. Perhaps just a brief comment.

Senator DOMENICI. Please.

STATEMENT OF SENATOR BEN NIGHTHORSE CAMPBELL

Senator CAMPBELL. Thanks for letting me sit with this subcommittee. I am a member of the full committee as well. Because of Rocky Flats, I have a very, very keen interest in this, and I am very pleased to see the administration has requested $657 million to continue the cleanup. I might tell you, Mr. Chairman, the sooner we get that cleaned up, we will be able to perhaps supply more money to WIPP, which is in your state.

One thing I am concerned about is a proposal by the administration that we build some temporary tent structures to house it until this lawsuit is handled in New Mexico. I think I should tell my friends here that are going to be testifying, that is absolutely unacceptable. Our communities will go nuts if we tell them we are going to store any kind of waste in temporary tents, because their feeling, of course, is that once it is stored there in tents, it is just going to stay there, and we will not really make a concentrated effort to get it cleaned up.

Last year, as you probably know, we did get an additional $30 million through the budget here in the Senate to accelerate that cleanup, but it has not been going as fast as some of us would like it. I am sure you are aware of that, and I would hope, as I am going to ask Secretary Richardson this afternoon, at Interior appropriations, to try and prioritize that. He has said that he will come out and take a look at that himself, as Hazel O'Leary has done, and a few others have done.

Unfortunately, in the past, they come out for the photo ops, and then they don't make a concentrated effort to get the cleanup done. I think Secretary Richardson, since he is from New Mexico, and is very keenly aware of the problem in New Mexico and Colorado, will prioritize it, and I would hope that you would, too. Thank you, Mr. Chairman. I will ask some questions at the appropriate time.

Senator DOMENICI. Senator Reid, since I have to leave at 10:15 to finish the budget markup, I started——

Senator REID. I am glad you did.

Senator DOMENICI [continuing]. In your absence.

I think both of you know that we are involved in activities in the Department of Energy that are vitally important and can have significant impacts on the budget of the Department of Energy, be-

cause of very expensive programs. I might say in the presence of Senator Campbell that the one object of cleanup that is going along with some sense of urgency, and some real goals that are being accomplished, is the Rocky Flats. It is a shining star and we hope it will stay on track.

We want to fund it and get it done. It seems like at the other cleanup sites, we are no further ahead today than we were 10 years ago, that is just my editorial comment, but Rocky Flats is doing very well.

So let us proceed. If you would proceed at this point, we would be delighted to hear your testimony, Mr. Owendoff.

STATEMENT OF JAMES M. OWENDOFF

Mr. OWENDOFF. Mr. Chairman, and members of the committee, thank you for this opportunity to appear before you to discuss the Department of Energy's Environmental Management program and our fiscal year 2000 budget request. I would like to cover several subjects in my brief oral statement.

First, I will mention some significant progress we have made, as well as some of the challenges we face. Second, I will describe our budget request for fiscal year 2000.

PROGRAM GOALS AND PROGRESS

As you know, the Environmental Management program is responsible for managing and cleaning up the environmental legacy of over 50 years of production of nuclear weapons and government nuclear energy projects. Cleaning up environmental contamination is just one part of our program. In addition, we are responsible for the safety and security of more than 25 metric tons of weapons-useable plutonium, over 2,000 tons of intensively radioactive spent nuclear fuel, and for storing, treating, and disposing millions of cubic meters of radioactive waste.

Clearly, this is a big job. To bring some closure to this program we have set a goal of cleaning up as many sites as possible by the end of 2006. By closing sites early, we reduce the hazards facing the public and our workers, concentrate our resources on cleaning up sites, rather than overhead costs necessary to keep a site open, and thereby lowering the long-term cost to the taxpayers.

We have set very ambitious goals for closing, by the end of 2006, the Rocky Flats site in Colorado, and the Mound and Fernald sites in Ohio. Our plans for closing these sites assume a stable funding stream, but a stable funding stream is not enough. Our ability to reach these goals will also require the creative use of the facilities and technical personnel at other sites.

A cooperative strategy of integration across the complex is imperative. Such a strategy requires dedicated efforts by DOE, contractors, regulators, Native Americans, local governments, and other stakeholders to succeed.

We are making progress toward our goal, as evidenced by some of the recent accomplishments. When we came before you at this time last year we had 53 sites requiring active cleanup. During this past year we reduced that number to 48, and we planned to complete cleanup at six more sites by the end of fiscal year 2000.

With the completion of the remaining last two sites last year we completed surface cleanup at all 22 uranium mill tailings sites, as well as more than 5,300 contaminated properties in the vicinity of those sites. We have made real progress in reducing risks and mortgages at our large sites, where cleanup will continue past 2006.

HANFORD ACTIVITIES

For example, in fiscal year 1998 we completed deactivation of the N-reactor complex, the last of nine reactors, at the Hanford site, and the B-plant, a plutonium processing facility at Hanford. In both cases we reduced annual surveillance and maintenance costs from $20 million to less than $1 million.

Our past investments in technology development are now making significant demonstrable contributions. In the past year alone we demonstrated 40 technologies to reduce risks and/or costs of cleanup projects, and our sites used new technologies in 108 instances.

WASTE ISOLATION PILOT PROJECT

We have made significant steps toward beginning the operations at the Waste Isolation Pilot Plant in New Mexico, where we intend to dispose of our transuranic waste. In May 1998, the Environmental Protection Agency certified that WIPP met disposal standards, and in June 1998, the Defense Nuclear Facilities Safety Board concluded that WIPP could be operated safely.

We expect to begin shipments of non-mixed transuranic waste to WIPP, assuming pending litigation is favorably resolved. We are also working with the state to obtain a permit that will allow us to ship mixed waste.

FISCAL YEAR 2000 BUDGET REQUEST

Turning to our request for fiscal year 2000, we are requesting $5.7 billion in traditional budget authority, $100 million more than was appropriated for the current fiscal year. We are also requesting $228 million in budget authority to support privatization projects. This budget will support accelerated cleanup and closure, the deployment of new technologies, and progress in treating and disposing of nuclear waste, including shipments to WIPP.

The request also supports closure of Rocky Flats. We have developed a baseline defining the critical path for closing in 2010, and have identified opportunities to accelerate closure to achieve the goal of closing the site by the end of 2006.

In the fiscal year 2000 budget request, we have given priority to our high-risk problems, such as stabilizing and ensuring the security of plutonium, stabilizing high-level waste tanks, and ensuring the safe storage of spent nuclear fuel, including the foreign research reactor spent nuclear fuel, with highly enriched uranium, that we are bringing back to the United States to reduce worldwide nuclear proliferation risks. We intend to meet our statutory and regulatory requirements, as well as our obligations under compliance agreements, with state and federal agencies.

We will continue to ensure that our cleanup projects are well managed and use the taxpayers dollars most efficiently. All of our

cleanup work is organized into projects. You can see the projects and the associated performance measures in our budget request, which is organized by project, as requested in last year's appropriations bill.

We are also taking a number of actions to improve our project management performance. We are conducting external independent project assessments and enhancing our federal staff capability to independently review our projects, and we continue to improve our contracting methods to provide our contractors with the right incentives and penalties for good or poor performance.

In conclusion, our fiscal year 2000 request will enable us to reduce our risks, meet legal obligations, and continue to work toward our goal of completing as much cleanup as possible by 2006. We would like to continue to work cooperatively with Congress to meet these goals.

I also ask for the committee's consideration of the $53 million reprogramming request that we have submitted for the operation of the high-level waste tanks for the fiscal year 1999 budget. I want to apologize for the untimely submission of that request. It was in no way intended to preclude an appropriate review by the Congress of that request.

PREPARED STATEMENT

As we indicated to the committee staff, we are also finalizing a reprogramming request for the Savannah River site in South Carolina and expect to submit that request in the next several weeks.

Thank you, Mr. Chairman. I am pleased to answer any questions asked.

Senator DOMENICI. Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF JAMES M. OWENDOFF

Mr. Chairman, and Members of the Subcommittee, I appreciate this opportunity to appear before you to discuss the Department of Energy's Environmental Management (EM) program and its fiscal year 2000 budget request.

During this past year, the Department has made a significant amount of progress both in cleaning up sites and in operating a truly performance-based management system. Our budget request for fiscal year 2000 provides $5.7 billion in traditional budget authority, allowing us to continue progress towards our cleanup goals. The request also includes $228 million in budget authority to support privatization projects.

The commitments based on this budget will be accelerated cleanup and closure, deployment of new technologies, and progress in treating and disposing of legacy nuclear waste. We have set very ambitious goals for closing several sites by the year 2006, including the Rocky Flats Site in Colorado, and the Mound and Fernald Sites in Ohio. We also plan to complete cleanup at the Weldon Spring Site in Missouri, our sites in California and various other locations by that date. Consequently, we are eager to continue working with Congress to focus funding on cleaning up and closing sites.

The EM budget also reflects our expectation that we will begin shipments of transuranic waste to the Waste Isolation Pilot Plant (WIPP) this year and our intent to support and increase shipments in fiscal year 2000. The U.S. Environmental Protection Agency (EPA) certified WIPP for disposal of radioactive waste in May of 1998. We hope to make our first shipments this year if pending litigation is resolved favorably, a crucial step forward in providing for the permanent disposal of a portion of the Department's long-lived radioactive waste and the accelerated closure of sites like Rocky Flats.

INTRODUCTION

Before discussing our fiscal year 2000 budget request, I would like to provide an overview of our program and some of our accomplishments in the past year. We continue to work towards the goal we have established to clean up as many of the remaining contaminated sites as possible by 2006, safely and cost-effectively. Indeed, when we came before you at this time last year, we had 53 sites requiring active cleanup. Having completed cleanup at three sites, with transfer of another two sites to the State of North Dakota at its request, that number is now reduced to 48, and will decrease by six more sites by the end of fiscal year 2000. By working towards our goal for accelerated cleanup, we not only reduce the hazards presently facing our workforce and the public, but also reduce the long-term financial burden on the taxpayer. For every year that a site remains open because cleanup has not been completed, we are paying a "mortgage" of overhead costs for activities such as site security, facility operations, personnel, and safety. The fiscal year 2000 budget request is now fully structured to emphasize site closure and project completion.

A. MEETING THE CHALLENGE OF THE ENVIRONMENTAL LEGACY

The EM program is responsible for managing and cleaning up the environmental legacy of the nation's nuclear weapons and government nuclear energy projects. Beginning with World War II, DOE and its predecessor agencies developed the largest government-owned industry in the United States, responsible for nuclear weapons research, development, testing, and production as well as a variety of other nuclear-related research projects. When most nuclear weapons production operations ceased in 1989, DOE established the Office of Environmental Management to address the environmental legacy of nuclear weapons production and other nuclear-related programs. Our responsibilities include facilities and sites in 30 states and one territory which encompass about 2.1 million acres—an area equal to that of Rhode Island and Delaware combined.

Although EM is often referred to as the "cleanup program," this term can be misleading if it is interpreted to compare EM's program to EPA's Superfund program or the environmental restoration program at the Department of Defense. In addition to these "standard" cleanup duties at DOE sites, EM is also responsible for the world's largest nuclear stewardship program, which maintains the safety and security of more than 25 metric tons of weapons-usable plutonium and over two thousand tons of intensely radioactive spent nuclear fuel, and for carrying out critical nuclear non-proliferation programs.

Completing the cleanup of the legacy from nuclear weapons production will allow the Department to focus on its science, security, and energy missions and will fulfill commitments to communities and, where appropriate, return lands and facilities to the communities for reuse.

Finally, it is important to note that the nature of much of the waste handled by DOE is fundamentally different from most chemical waste cleanup programs, since radioactive waste cannot be broken down into constituent elements, but instead requires isolation from the environment through treatment and/or disposal while it decays. Because of the frequently long-lived radioactive nature of the 36 million cubic meters of waste (containing about one billion curies of radioactivity), we can treat it, stabilize it, contain it, isolate it and monitor it, but we cannot destroy it with currently available technology.

B. ACCOMPLISHMENTS AND PROGRESS—CLEANING UP AND CLOSING SITES

I am pleased to report that our program has produced substantial cleanup results at contaminated nuclear facilities around the country. For example:

Since 1989, we have completed necessary cleanup actions at nearly half (about 4,100) of individual waste sites (known as "release sites") out of a total inventory of 9,700 release sites.

We completed surface cleanups of all 22 large uranium mill tailings sites as well as more than 5,300 "vicinity properties," including elementary schools and homes. This project included remediation of over 40 million cubic yards of contaminated soil and material, a volume that would cover a football field with a mound of dirt four miles high. We are now monitoring low-level ground water contamination at some mill tailings sites, with active remediation planned at three sites.

We have made significant steps toward beginning transuranic waste disposal operations at the Waste Isolation Pilot Plant (WIPP) in New Mexico—we received certification from the U.S. Environmental Protection Agency in May 1998 that WIPP met disposal standards and notification in June 1998 from the Defense Nuclear Facilities Safety Board that WIPP can be operated safely.

We successfully operated two high-level waste vitrification facilities in South Carolina and New York, where last year we converted nearly 2,500 cubic meters of waste into 331 canisters of "glass logs" ready for disposal. The first phase of the high-level waste vitrification campaign at the West Valley, New York facility was completed in fiscal year 1998, under budget and ahead of schedule, and we are now vitrifying the tank heels.

The Department awarded the second part of "Phase 1" of a "privatization" contract, covering the extended design of new facilities for the treatment of a portion of the high-level waste in the tanks at the Hanford Site in Washington.

We finished connecting community drinking water hookups surrounding Brookhaven National Laboratory in New York. We have sponsored more than 1,500 hookups for off-site residences from fiscal year 1996 through fiscal year 1998 to ensure that residents' drinking water supply remains unaffected during long-term ground water cleanup.

In support of non-proliferation goals, we have now completed a total of eight shipments of spent nuclear fuel from foreign research reactors from fifteen countries, including Chile, South Korea, and Columbia. Seven shipments have been received at the Savannah River Site in South Carolina and, in fiscal year 1998, the first shipment to the Idaho National Engineering and Environment Laboratory was completed.

We completed "closure" of a second high-level waste tank at the Savannah River Site in South Carolina. After removing waste, the tank was backfilled using an innovative grout to immobilize residual radionuclides.

We disposed of 30,000 cubic meters of low-level waste and 10,000 cubic meters of mixed low-level waste in fiscal year 1998 alone.

At Rocky Flats, we stabilized or repackaged about 5,000 kilograms of plutonium-bearing residues in fiscal year 1998. In addition, Rocky Flats staff drained acid plutonium liquids from two 2 liquid-piping systems in Building 771 and then removed the pipes.

We demonstrated 40 alternative technology systems and made 42 systems ready for implementation with cost and engineering performance information.

Field operations' use of new technologies that can reduce cleanup cost and schedules is gaining momentum. EM has verified the first-time use of alternative technologies at a site in 108 instances at cleanup projects throughout the DOE complex in fiscal year 1998.

We continue to use pollution prevention techniques to reduce our overall costs. In fiscal year 1998 alone, DOE sites completed over 700 pollution prevention projects, avoiding the generation of 45,000 cubic meters and saving an estimated $155 million.

We continued our financial management improvements: at the end of fiscal year 1998, our uncosted balances were lower than the established benchmark for the third year in a row.

We are proud of our accomplishments, but also realize that completing our daunting task will require accelerated cleanup and greater efficiency if we are to succeed at the level of funding requested in the year fiscal year 2000.

THE FISCAL YEAR 2000 REQUEST REFLECTS THE EVOLUTION OF THE EM PROGRAM

We have been giving priority to high risk problems such as stabilizing and ensuring the security of plutonium, stabilizing tanks containing high-level radioactive waste, and ensuring the safe storage of spent nuclear fuel, including foreign research reactor fuel in support of non-proliferation goals. We are working to accelerate cleanup and reduce "mortgages," and have aligned our budgeting and management systems to support this goal. We are integrating waste and materials management across the DOE complex to support closure of sites like Rocky Flats and to improve the efficiency of our operations. We also know that successful cleanup requires investing in developing and deploying more effective technologies; without successful investments in innovative technologies, the cost and technical challenges would make long-term success impossible. Finally, we have found that performing good technical work is not enough. Getting the job done requires cooperation with regulators and other stakeholders. We have supported effective public participation through continued relationships with states and site-specific and national advisory boards, as well as funding for Indian tribes potentially affected by our activities.

The fiscal year 2000 request of $5.7 billion, $100 million more than the level appropriated in fiscal year 1999, reflects our effort to maintain a stable program that provides sufficient resources to meet our multiple demands of risk reduction, compliance and mortgage reduction.

A. MANAGEMENT REFORMS

In last year's presentation to you, we described a number of changes in the way EM manages its work to better reflect our focus on completion and closure and to provide better accountability to program managers, Congress, and our stakeholders. The reforms begun in fiscal year 1998 and fiscal year 1999 have now been institutionalized and are more fully integrated across the different components of the program.

1. Taking a Project-Based Approach to Cleanup

The EM program has made great strides over the last several years in organizing the work that must be accomplished to complete the cleanup of the weapons complex into "projects." These projects have end-state goals and contain schedules and life cycle costs for achieving those goals. This "projectizing" of the work has resulted in increased site ownership and accountability and improved cost-effectiveness in planning and conducting our work. We recognize, however, that improvements are needed, for example, in the way the projects are structured and in the underlying baseline data defining schedules and life-cycle cost to complete each project. We are actively working to improve the quality of data by implementing a more formal system to control and document changes to the project baselines, and are also pursuing various strategies to validate the baselines. To determine if these efforts have been effective, the Secretary has requested that the Office of the Inspector General review some representative projects in July, and report back on additional improvements that may be needed. Through such efforts, we expect to see data quality improve with each subsequent update.

With more than 350 projects of the scope and complexity of those facing EM, it is critical that we clearly define what we are trying to accomplish, how and when we are going to accomplish it, and at what cost; and that we are applying sound project management practices. To improve our project management performance, EM is developing the capability to conduct in-house independent reviews of projects to examine their cost, schedule, and technical baseline, as well as other parameters of good project management. Our reviews use experts within DOE and in external organizations with nationally-recognized expertise in project management. EM has conducted independent reviews of three privatization projects—the Hanford Tank Waste Remediation System, the Oak Ridge Transuranic Waste Treatment project, and the Carlsbad Transuranic Waste Transportation Project—and a review of alternatives to the In-Tank Precipitation process at the Savannah River Site. In addition, the Office of Field Management has conducted a number of baseline reviews, as directed by report language accompanying the Energy and Water Development Appropriations Act of fiscal year 1998. We are using the recommendations from these reviews to improve the management of our projects.

2. Restructuring the Budget

In fiscal year 1999, we established a new budget structure to align with our goals of accelerated cleanup and to support project-based management of our work, allowing us to more closely track costs and performance at a project level. The fiscal year 2000 budget request continues that structure, but is now built from the ground up, one project at a time, with costs, schedules and expectations for performance identified for each project. Congress supported this change to "projectizing" our work in last year's budget request and directed EM to prepare its fiscal year 2000 budget request based on individual projects, an approach we fully support.

The budget and management structure is based on our vision of completing cleanup at as many sites as possible by the year 2006. These accounts—in both the defense and non-defense portions of the budget—are:

—*Site Closure Account*.—Includes funding for sites for which the EM program has established a goal of completing its cleanup mission by the end of fiscal year 2006. After EM's cleanup mission is complete at these sites, no further Departmental mission is envisioned, except for limited long-term surveillance and maintenance, and the sites will be available for some alternative use;

—*Site/Project Completion Account*.—Funds cleanup projects anticipated to be completed by fiscal year 2006 that are located at sites or facilities where a DOE mission (e.g., weapons research/production or scientific research) will continue beyond 2006;

—*Post 2006 Completion Account*.—Funds projects and site cleanup that are too technically complicated and expensive to be completed by 2006 and includes treatment of high-level wastes and cleanup of large intensely contaminated "canyon" buildings.

3. Measuring—and Managing—Performance

In accordance with the Government Performance and Results Act, EM has moved aggressively to develop and implement a performance-based budget that measures tangible, on-the-ground accomplishments to demonstrate results for the resources provided. EM has established Corporate Performance Measures that demonstrate environmental cleanup progress and provide a balanced approach to assessing effectiveness and efficiency. The fiscal year 2000 budget request provides quantitative performance goals at the project level for these Corporate Measures. By combining this project data at the Operations/Field Office level, we have established Management Commitments that are being used to review and evaluate quantitatively performance in the field.

We began developing the current performance measurement system in fiscal year 1994 when EM became a pilot program under the Government Performance and Results Act. We have continually refined the system and have made significant progress in incorporating the requirements and spirit of the Act into our management system. The measures we have established—quantities of waste disposed, release sites completed, nuclear materials stabilized, facilities deactivated and decommissioned—represent tangible progress, not just paper progress, that link to our cleanup goals. The performance measurement system is increasingly integrated from top to bottom—from the EM Program level across the complex to the project level in the field. The accuracy and consistency of the data have improved from year to year and, as reliability improves, the determination of the field and the Program to meet their performance commitments increases as well. We are now working to improve our life-cycle quantity estimates so that they can be used to set near-term performance goals.

B. PROGRESS TOWARD COMPLETING CLEANUP

By focusing on completing cleanup at most of our sites by 2006, we expect to substantially reduce life-cycle costs. We have made substantial progress towards this vision. We are completing site cleanups: in fiscal year 1998, EM completed surface cleanups at all uranium mill tailings sites with the completion of the last two of the 22 originally designated sites. EM is scheduled to complete its work at another three sites in fiscal year 1999, specifically Sandia National Laboratory in California, Ames Laboratory in Iowa, and Princeton Plasma Physics Laboratory in New Jersey; and this fiscal year 2000 budget request provides funds for completion of another three sites—Argonne National Laboratory-West in Idaho, the General Atomics site in California, and the Battelle Columbus-King Avenue site, in Ohio.

We are making progress toward reaching our closure goals at Rocky Flats and other closure sites. Rocky Flats has defined the critical path for closing in fiscal year 2010 and is now revising this "baseline" to reflect a closure goal of 2006. This fiscal year 2010 baseline identifies a number of opportunities to accelerate closure and achieve the fiscal year 2006 goal, such as accelerating off-site shipments of plutonium residues and metals and oxides by two years and decommissioning facilities more efficiently. The accelerated closure goal is obviously aggressive, and we have a lot of challenges ahead—including beginning operations at WIPP to allow for the disposal of Rocky Flats transuranic waste. However, we are committed to making our best efforts, and the fiscal year 2000 budget request supports the current baseline and activities already identified as necessary to meet the fiscal year 2006 goal. For example, the fiscal year 2000 request provides for shipments of plutonium-bearing materials to Savannah River Site for temporary storage. It also includes decommissioning of the Building 779 cluster, a former plutonium production facility, by June 2000, constituting not only an acceleration of the schedule for this specific project, but also providing an opportunity to examine technologies to accelerate the overall schedule for decommissioning, useful for other projects at Rocky Flats and throughout the DOE complex.

We continue on track at the Mound and Fernald sites in Ohio, with a goal of turning over as many of the facilities at the sites as possible to the communities for private use. In fiscal year 1998, for example, the Department executed a sales agreement with the Miamisburg Mound Community Improvement Corporation for transfer of facilities and structures at the Mound Site, documenting our commitment to completing work at the site. We are seeing progress at our sites funded from the Non-Defense account as well: in fiscal year 1998, we completed the primary vitrification campaign of the high-level waste at the West Valley Demonstration Project ahead of schedule, and have begun the vitrification of high-level waste tank heels which will continue through fiscal year 2001.

We are also making progress at our larger sites, where cleanup will continue beyond 2006, in completing projects and reducing the mortgage and the "footprint" of

the cleanup task. For example, we completed deactivation of N-Reactor in fiscal year 1998, the last of nine production reactors at the Hanford Site in Washington. This involved the deactivation of 86 facilities and the removal of 33 grouted "monoliths" containing most of N-Reactor's high-dose materials. Completing the deactivation at N-Reactor reduced overhead costs of safely maintaining the facility from about $20 million to $500,000 a year. In addition, C-Reactor was placed in safe storage, with the result that inspection requirements can be reduced from every one to every five years, and with an annual surveillance and maintenance savings of $190,000.

After completing active cleanup, the Federal Government will be obligated to maintain some controls at many sites to monitor, maintain, and provide information on the stabilized and contained residual contamination. These activities are necessary to ensure the continuing integrity of the cleanup and the protection of public health and safety. Such long-term stewardship will include passive or active controls and, often, treatment of groundwater over a long period of time. The extent of long-term stewardship required at a particular site will depend on the remedy and resulting end-state developed in consultation among DOE and other representatives of the Administration, Congress, Tribal Nations, representatives of regulatory agencies including state and local authorities, representatives of non-governmental organizations, and interested members of the public. The Department is committed to meeting its obligations to provide long-term stewardship of these sites.

Funding for long-term stewardship is managed through various organizations, including (1) the Grand Junction Office, which funds long-term surveillance and maintenance at closed uranium mill tailings sites and several former nuclear weapons sites, such as the Pinellas Site, as well as closed experimental reactors; (2) the Nevada Operations Office, which funds long-term surveillance and maintenance for former nuclear explosion sites, located in Alaska, Colorado, Mississippi, New Mexico and Nevada; and (3) individual DOE Operations Offices, where cleanup of some areas has been completed but other activities continue. We are currently preparing a study on long-term stewardship, pursuant to the settlement of a lawsuit on the Programmatic Environmental Impact Statement (*NRDC* v. *Richardson*). We expect to complete the study by December 2000.

C. SCIENCE AND TECHNOLOGY

The EM Program has made significant changes in the way our science and technology program conducts its business of providing new or improved cleanup solutions. No longer solely a developer of cleanup technologies, this program has extended its role to provide the full range of science and technology resources and capabilities that are needed to deliver and support fully developed, deployable solutions to DOE's cleanup and long-term environmental stewardship problems—from basic research through development, demonstration, deployment and technical assistance. We are also enhancing the membership of our Focus Areas—the teams that address DOE's five major environmental problems—to include a lead national laboratory for each team to complement talent already on the teams. It is our intent that these teams of the Nation's best available environmental scientists will serve as "centers of expertise" to provide the broadened services assumed by this program.

More than 500 site-identified environmental problems need new technological solutions if we are to meet EM cleanup goals. Over 80 percent of these problems are categorized as high and medium priority. To provide sound advanced planning and a well executed strategy to ensure we are making the best possible science and technology investments to meet these needs, we have recently developed three complementary products: an EM R&D Program Plan that "maps" investments in solutions to our cleanup needs, a Strategic Plan for the Office of Science and Technology (OST) to administer these investment plans, and an OST Management Plan that delineates improved business processes. These new plans provide a fully integrated approach that ensures our science and technology activities are planned and managed in an interactive, coordinated and participatory relationship with EM cleanup project managers and stakeholders.

The request of $230.5 million in fiscal year 2000 support science and technology activities that:

—meet the highest priority cleanup project needs
—reduce the cost of EM's costliest cleanup projects
—reduce technology risk
—accelerate and increase technology deployment by bridging the gap between development and use

EM's past investments in science and technology are already making important cleanup contributions. Let me offer some examples:

During fiscal year 1998, innovative technologies made an increasingly important contribution in cleanup actions at the sites. For instance:

—The Savannah River Site used an improved in-tank grouting process to seal the second of 24 high-level waste tanks that must be emptied and sealed with grout to trap the residual waste and strengthen tank integrity.

—The Borehole Miner, which was adapted from the mining industry and uses a water jet to mobilize waste for pumping, was used at Oak Ridge to remove sludge and saltcake from underground storage, successfully transferring 95 percent of the waste from five hydrofracture tanks. This technology provides access to previously inaccessible areas.

We now have several technologies to treat mixed waste, including polymer macroencapsulation. Waste from over 20 sites has been treated using this process, where solid waste is encased in a non-leaching plastic monolith suitable for disposal.

We are now able to safely perform tasks in extremely hazardous environments using remotely operated robotic equipment, such as the "Houdini vehicle." The Houdini can be inserted through 24-inch openings into radioactive tanks and then opened into a four-by-five foot mini-bulldozer, complete with a plow blade, manipulator and remote cameras to perform various tasks. The Houdini provides access to the interior of the tank, which was previously inaccessible.

During fiscal year 1998, 40 technologies that meet needs identified by site personnel were demonstrated. All of these technologies reduce risk and/or costs associated with cleanup or provide technical solutions that did not previously exist. Another 42 alternative technologies were made available for implementation in cleanup projects during fiscal year 1998. Valuable cost and engineering performance data are available for all of our technologies as they are made available for implementation. Many other new technologies are currently in late stages of development and will be ready for use in time to contribute to our accelerated cleanup goals.

We are also seeing significant success in moving beneficial technologies out into the field through the Technology Deployment Initiative (now known as Accelerated Site Technology Deployment), begun in fiscal year 1998. In fiscal year 1998, we initiated 14 competitively-selected projects, resulting in 13 deployments by the year's end, and another 42 projects were selected for possible funding in fiscal year 1999. In our fiscal year 2000 budget request, deployment assistance activities are an integral part of the work performed by the Focus Areas, rather than a separately budgeted activity.

Our Environmental Management Science Program (EMSP), which is managed in partnership with DOE's Office of Science and operates in tandem with the Focus Areas, is EM's assurance that basic scientific knowledge is advanced to support the development of cutting-edge environmental technologies. This program is proving to be a programmatic and management success for DOE's cleanup effort. The National Academy of Sciences has given EMSP high marks, and it was recognized with the Vice President's "Hammer Award" in 1998 for the innovative management approaches it is using. Research sponsored by EMSP is providing some significant technical results. For example, researchers at the University of Washington are genetically engineering a natural soil bacterium with high resistance to radiation into a natural detoxifier for complex mixed wastes. The efforts may yield an inexpensive, effective bioremediation of contaminated sites.

In fiscal year 1998, we awarded 33 3-year EMSP grants in two areas to respond to EM technology needs: decontamination and decommissioning, and high-level radioactive waste. During fiscal year 1999, we have issued Request for Proposals solicitations for vadose zone, subsurface contamination research, and research on the biological effects of exposure to low doses of ionizing radiation.

D. COMPLEX-WIDE INTEGRATION TO SUPPORT CLEANUP

Critical to our success in closing sites and accelerating our work is integrating the way the Department manages its waste and materials by making the best use of the unique capabilities at DOE sites to address cleanup problems. This means taking a corporate view of EM's work and sharing information and resources across sites. Our integration initiative is seeking to consolidate treatment, storage and disposal facilities where it makes good sense; apply innovative technologies at multiple sites; eliminate redundant facilities and use available capacity rather than construct new facilities; and apply lessons-learned and site successes complex-wide.

We have made significant progress in the past year in building the information base and the institutional structure to support and encourage integration. For example, we now have complex-wide data on waste and material inventories, both current and projected, and on their disposition pathways. Cross-site teams are identifying and evaluating integration opportunities, such as the consolidation of small

quantities of transuranic waste currently being stored at small sites such as Battelle Columbus in Ohio and Energy Technology Engineering Center in California. These efforts will provide the technical basis and focal point for working with local communities and regulators, as well as within the Department, on integration proposals.

We have several key initiatives to facilitate closure by moving materials to other sites for interim storage, with requested funds supporting the necessary activities in both the receiving and the sending sites. For example, the Department has been consolidating storage of certain special nuclear materials, such as plutonium. Plutonium weapons components from the Rocky Flats Site for example, have been shipped to the Los Alamos National Laboratory in New Mexico or to the Pantex Plant in Texas, an action that is now complete. This consolidation has allowed the Department to greatly reduce the cost of maintaining security for the remaining plutonium materials at the Rocky Flats Site.

Second, the Department has proposed shipping certain plutonium metals and oxides (non-pit plutonium) from the Rocky Flats Site to the Savannah River Site in South Carolina. The Savannah River Site is in the process of modifying the K Area facilities to store this excess plutonium, consistent with a recently issued decision made in accordance with the National Environmental Policy Act.

Third, the Department is seeking to share facilities with comparable capabilities to avoid duplication in treating and disposing of similar wastes. We have been conducting extensive technical analyses and working with state representatives and with other stakeholders to address both technical and non-technical issues. In fiscal year 1999 we expect to make decisions based on the Waste Management Programmatic Environmental Impact Statement that will further clarify the number of low-level and mixed low-level waste treatment and disposal facilities that will be needed for DOE's wastes. These decisions are likely to result in some consolidation of waste disposal as well as development of capabilities that do not currently exist, capabilities that are needed to support closure of sites.

Finally, the Waste Isolation Pilot Plant (WIPP) in New Mexico provides one of the most compelling examples of shipping nuclear waste to greatly reduce costs and risks. Currently a large amount of transuranic waste is being stored at about two dozen sites around the United States. In many cases, this waste has been stored for decades with no place to go for disposal. Beginning disposal operations at WIPP will allow the Department to reduce the number of sites where this type of waste is stored and is critical to the closure of sites such as Rocky Flats, where the site cannot be cleaned up and closed unless the transuranic waste is disposed of. We have made significant steps toward beginning disposal operations, but still need to resolve outstanding litigation and permitting issues so that disposal operations can begin. Our ability to meet waste management commitments in other states—most notably in Idaho and Colorado—is dependent on beginning operations.

CONCLUSION

The EM program has a vision for completing cleanup at most sites by 2006. Focusing on this goal will not only accelerate risk reduction, but will result in substantial cost reductions that can be applied to cleanup at other sites. Realizing this vision will require a sustained national commitment. We understand that this is attainable only with an enormous amount of work and with the Department working cooperatively with Congress.

APPENDIX A

SUMMARY OF THE FISCAL YEAR 2000 BUDGET

The total fiscal year 2000 budget request for the Department of Energy's Environmental Management Program is $5.7 billion in traditional budget authority and $228 million of privatization funding. The fiscal year 2000 appropriation will fund cleanup at sites in twenty-two states across the Nation. Five sites receive two-thirds of Environmental Management funding—Savannah River Site in South Carolina, Hanford Site in Washington, Rocky Flats in Colorado, Idaho National Engineering and Environment Laboratory in Idaho, and Oak Ridge Reservation in Tennessee. This section describes progress and highlights from the fiscal year 2000 budget request for the major Environmental Management sites and other selected sites.

Tables 1 and 2 summarize our fiscal year 2000 request, organized by the five primary appropriation accounts and by Operations/Field Office and Site, respectively.

Our fiscal year 2000 budget proposal provides details on each project, including performance measures, which we use to hold managers accountable, and expect to be held accountable by Congress. We would like to summarize the budget request and some major activities for several sites:

1. Savannah River Site, South Carolina;
2. Hanford, Washington;
3. Rocky Flats Environmental Technology Site, Colorado;
4. Idaho National Engineering and Environmental Laboratory, Idaho;
5. Oak Ridge Reservation, Tennessee;
6. Fernald Environmental Management Project, Ohio;
7. Waste Isolation Pilot Project, New Mexico;
8. Los Alamos, New Mexico;
9. West Valley Demonstration Project, New York;
10. Wiamisburg Environmental Management Project (Mound Site);
11. Weldon Spring Site Remedial Action Project, Missouri;
12. Nevada Test Site, Nevada;
13. Brookhaven National Laboratory, New York;
14. California Sites.

TABLE 1.—ENVIRONMENTAL MANAGEMENT FISCAL YEAR 2000 BUDGET REQUEST [1]

[Dollars in thousands]

Program Account	Defense Facilities Closure	Defense EM	Def. EM Privatization	Non-Def EM	UE D&D Fund	Total
Site Closure	$1,054,492	.....	.....	$211,146	.....	$1,265,638
Site/Project Completion	.....	$980,919	.....	100,866	.....	1,081,785
Post 2006 Completion	.....	2,513,548	.....	18,922	.....	2,532,470
UE D&D Fund	.....	.....	.....	.....	$240,198	240,198
Program Direction	.....	349,409	.....	.....	.....	349,409
Science & Technology	.....	230,500	.....	.....	.....	230,500
Subtotal, Traditional Budget Authority	1,054,492	4,074,376	.....	330,934	240,198	5,700,000
Privatization	.....	.....	$228,000	.....	.....	228,000
Total EM request	1,054,492	4,074,376	228,000	330,934	240,198	5,928,000

[1] Does not include $420,000 payment to the Uranium Enrichment Decontamination and Decommissioning Fund, requested in the Defense appropriation, Post-2006 Completion account.

TABLE 2.—ENVIRONMENTAL MANAGEMENT FISCAL YEAR 2000 BUDGET REQUEST—FUNDING BY SITE

[In thousands of dollars]

	Fiscal year		
	1998 appropriation total	1999 appropriation total	2000 congressional request total
Albuquerque operations office:			
Albuquerque Operations Office	18,120	8,080	5,550
Grand Junction	14,015	7,163	8,500
Kansas City Plant	3,513	1,756	1,100
Los Alamos Nat. Lab.	131,315	81,574	110,834
Lovelace-BERI	789	478	481
Maxey Flats	8,000	1,200	1,200
Monticello	25,558	34,250	22,000
Pantex Plant	23,243	11,299	15,000
Pinellas	2,318	2,797	5,500
Sandia National Laboratory	48,368	27,260	19,435
UMTRA Ground Water Sites	5,559	5,902	13,000
UMTRA Surface Sites	35,936	20,782	.....
Subtotal	316,734	202,541	202,600
Carlsbad area office: Waste Isolation Pilot Plant	173,700	185,404	186,404
Chicago operations office:			
Ames Laboratory	363	306	260

TABLE 2.—ENVIRONMENTAL MANAGEMENT FISCAL YEAR 2000 BUDGET REQUEST—FUNDING BY SITE—Continued

[In thousands of dollars]

	Fiscal year		
	1998 appropriation total	1999 appropriation total	2000 congressional request total
Argonne Nat. Lab.—East	15,921	18,170	19,761
Argonne Nat. Lab.—West	3,630	1,142	809
Brookhaven National Lab.	26,137	30,001	29,553
Chicago Operations	435	1,101	644
Princeton Plasma Physics Lab.	3,290	3,343	3,073
Subtotal	49,776	54,063	54,100
Idaho operations office: INEEL	415,556	435,642	409,422
Nevada operations office:			
Amchitka	848	765	592
Central NTS/Project Shoal	1,858	4,160	4,969
Gasbuggy/Gnome Coach	235	66	278
Nevada Test Site	64,985	73,045	76,673
Rio Blanco/Rulison	160	75	2,669
Salmon Site	832	1,970	126
Subtotal	68,918	80,081	85,307
Ohio field office:			
Ashtabula	14,637	15,405	15,405
Columbus	12,567	12,125	16,134
Fernald	258,700	274,002	280,589
Miamisburg	86,622	88,949	93,353
Ohio Field Office	.....	94	94
West Valley	113,746	107,353	107,353
Subtotal	486,272	497,928	512,928
Oakland operations office:			
Energy Technology Engineering Center	17,625	16,494	17,398
General Atomics	4,280	2,030	1,100
General Electric	.....	313	500
Lab. for Energy-Related Health	6,802	4,389	3,863
Lawrence Berkeley Nat. Lab.	9,265	10,668	11,098
Lawrence Livermore Lab.	54,210	49,214	49,891
Oakland Operations Office	2,279	2,700	1,100
Separations Process Res. Unit	.....	.....	500
Stanford Linear Accelerator Center	1,006	1,000	1,400
Subtotal	95,467	86,808	86,850
Oak Ridge operations office:			
Oak Ridge National Lab.	49,439	59,677	57,805
Oak Ridge Offsites	53,131	22,516	23,839
Oak Ridge Operations Office	5,027	8,809	10,930
Oak Ridge Reservation	290,340	275,957	310,987
Paducah Gaseous Diffusion Plant	39,582	35,983	37,500
Portsmouth Gaseous Diffusion Plant	43,053	35,119	37,500
Weldon Spring [1]	66,686	63,500	52,000
Subtotal	547,258	501,561	530,561
Rocky Flats field office:			
Rocky Flats Environmental Tech Site	611,303	638,397	637,132

TABLE 2.—ENVIRONMENTAL MANAGEMENT FISCAL YEAR 2000 BUDGET REQUEST—FUNDING BY SITE—Continued

[In thousands of dollars]

	Fiscal year		
	1998 appropriation total	1999 appropriation total	2000 congressional request total
Rocky Flats Field Office	20,797	18,803	20,078
Subtotal	632,100	657,200	657,210
Richland operations office:			
Hanford	906,861	953,001	1,028,280
Richland Operations Office	44,536	45,491	36,831
Subtotal	951,397	998,492	1,065,111
Savannah River operations office:			
Savannah River Ops Office	28,117	33,157	30,280
Savannah River Site	1,099,806	1,181,789	1,192,220
Subtotal	1,127,923	1,214,946	1,222,500
Other:			
Multi-Site Programs	113,053	85,542	77,098
Program Direction	345,000	337,073	349,409
Science & Technology	269,213	243,156	230,500
Ur/Th Reimbursement	40,000	30,000	30,000
Subtotal	767,266	695,771	687,007
EM Subtotal:	5,632,367	5,610,437	5,700,000
FFTF (trans to NE in fiscal year 1999)	41,727	.....	.....
Y2K Supplemental Appropriation	.....	13,840	.....
Use of Uncosted Balances	(11,253)	(20,658)	.....
Total, traditional budget authority	5,662,841	5,603,619	5,700,000
Privatization	200,000	228,357	228,000
EM total	5,862,841	5,831,976	5,928,000

[1] It is the intent of the Environmental Management Program to fund the Weldon Spring Site Remedial Action Project at a program level of $63.5 million. The Program will work to identify sources for this important activity.

Savannah River Site, South Carolina Fiscal Year 2000 Request

[In thousands]

Defense, Site/Project Completion	$397,636
Defense, Post-2006	824,864
Total	1,222,500

The Savannah River Site continues its work to stabilize legacy nuclear materials and spent fuel from both the Savannah River Site and other sites across the complex, including plutonium residues and other plutonium-bearing materials from the Rocky Flats Site in Colorado. This work is critical both in resolving health and safety concerns about these radioactive materials, now in liquid or unstable forms unsuitable for long-term storage, and in supporting closure goals at Rocky Flats. In July 1997, the Secretary approved the operation of both the F-Canyon and H-Canyon, for the stabilization of "at-risk" nuclear materials. By the end of fiscal year 1998, these canyons had stabilized 3,500 gallon of Pu-242 solutions, 80,000 gallons of Pu-239 solutions, 16,000 corroding targets, and 144 canisters of failed or declad spent nuclear fuel. We expect to complete activities in the F-Canyon by fiscal year 2002 and in the H-Canyon in fiscal year 2005.

We are not requesting funding for the Actinide Packaging and Storage Facility (APSF) in fiscal year 2000. In light of the recent decision by the Department identifying Savannah River Site as the preferred location for new missions related to ex-

cess plutonium disposition, we have decided to temporarily suspend work on this facility until we can reevaluate the facility's overall requirements to ensure, for example, that the facility is properly sized and integrated with other facilities, given these new missions. We are, however, continuing modification of facilities in the K-Area and, pending completion of the appropriate NEPA analysis, will be ready to receive surplus plutonium-bearing materials from Rocky Flats in January 2000, supporting the accelerated closure of that site.

Much of the EM work at the Savannah River Site that will be completed after fiscal year 2006 involves management of approximately 34 million gallons of high-level waste in tanks, including vitrifying waste for final disposal and removing waste from storage tanks so the tanks can be closed. While this is a long-term project, we have made significant progress. In fiscal year 1998, the Savannah River Site workers closed another storage tank in the tank farm, removing waste and backfilling with grout, and produced 250 canisters of vitrified waste in the Defense Waste Processing Facility (DWPF), 50 canisters above their fiscal year 1998 target goal. As of first of March, we had a total of 588 canisters of vitrified waste in storage, or 11 percent of the total amount that needs to be produced.

Our goal for production of canisters in fiscal year 2000, however, is lower. The budget request supports production of only 100 canisters at DWPF, primarily because of the need to devote resources to developing an alternative to the In-Tank Precipitation (ITP) facility that was to pre-treat certain wastes. ITP operations were terminated in January 1998 because we were unable to successfully pre-treat the waste and limit the levels of benzene generation in the tanks to a safe and manageable levels. We undertook a systems engineering analysis to evaluate all possible alternatives, which was reviewed by a panel of independent experts. Based on the review, we are pursuing three options, with a final selection of a technical approach expected in late fiscal year 2000.

The fiscal year 2000 budget request continues support for receipt and storage at the Savannah River Site of spent nuclear fuel from domestic and foreign research reactors in support of national and international non-proliferation goals. In fiscal year 2000, we expected to receive 67 casks of spent nuclear fuel from foreign and domestic sources and safely store them at the Savannah River Site's basins. We will also continue to treat and reduce our legacy of mixed and low-level waste at the site through continued operation of the Consolidated Incinerator Facility.

We will also continue the cleanup of contaminated release sites and contaminated ground water plumes at the Savannah River Site. In fiscal year 2000, we will complete remediation of six release sites and operate eight ground water remediation systems.

Finally, scientists and engineers at the Savannah River Site have been collaborating to develop a cost-effective path forward for some of the spent fuel through research and development of new technologies. This work is helping to address one of our most daunting problems: how to manage spent nuclear fuel and other nuclear materials without chemical separations. Our investments in the Alternative Technology Program has shown progress. An Environmental Impact Statement identifying the "melt-and-dilute" process as the preferred alternative to prepare aluminum-based spent nuclear fuel for geologic disposal was issued in December 1998, and a final decision is expected in April 1999. The fiscal year 2000 budget contains funds for the design of a new facility to implement this treatment process. As other countries begin to address similar problems, these new U.S.-born technologies will be available to help.

Hanford Site, Washington Fiscal Year 2000 Request

[In thousands]

Defense, Site/Project Completion	$376,296
Defense, Post-2006	687,397
Non-defense, Site/Project Completion	1,418
Defense, Privatization	106,000
Total	1,171,111

The Hanford Site in Washington remains perhaps our greatest cleanup challenge. Originally carved out of 560-square mile site in a broad curve in the Columbia River during World War II, the Hanford site is home to the largest variety of environmental hazards in the former nuclear weapons complex, including large amounts of spent nuclear fuel, unstable weapons-grade plutonium, 177 underground high level radioactive waste tanks, and more than a hundred square miles of contaminated ground water. It is important not to lose site of the successes and accomplishments that have occurred despite the serious remaining challenges. We believe that our

fiscal year 2000 budget request for Hanford addresses the requirements for continued cleanup progress. The Hanford budget is requested largely (65 percent) through the Post-2006 Completion Account and the Project/Site Completion Account (35 percent).

One of the extraordinary success stories at Hanford during the past year was the success deactivation of the N-reactor complex, resulting in an annual mortgage cost reduction from $20 million to $500,000. This required:

—deactivation of 86 facilities in the N-reactor area;

—removal and treatment of more than a million gallons of contaminated water;

—removal of nearly 5,000 cubic feet of contaminated sediment; and

—retrieval and repackaging of 350 pounds of fuel fragments.

The reactor complex is now in a low-cost "surveillance and maintenance" mode, pending final disposition, perhaps decades from now.

In fiscal year 1998, we also completed the deactivation of the B Plant, one of Hanford's original World War II plutonium processing facilities, 4 years ahead of schedule and $100 million under budget. The deactivation reduced surveillance and maintenance costs at the Plant from $20 million to less than $1 million a year. Deactivation involved the disposal of 45,000 gallons of bulk hazardous chemicals, the transfer of 23,000 gallon of neutralized acid waste to the tank farms, and the removal and disposal of 10,000 ft^3 of radioactive waste and equipment. The B plant deactivation also required the successful decoupling of the adjoining Waste Encapsulation and Storage Facility (WESF), which shared operating systems with B Plant. WESF stores highly radioactive cesium and strontium capsules and must continue to operate until the capsules can be dispositioned.

The 177 underground tanks storing over 54 million gallons of highly radioactive waste remains one of the biggest challenges at the Hanford site. We have made significant progress in reducing the hazard of leaks from single-shelled tanks: to date, we have stabilized 64 tanks that have or are suspected of leaking by transferring free liquids to non-leaking double shelled tanks. Only three "potential leakers" remain to be stabilized, which will be completed following a mutually-agreed upon schedule negotiated with the State in fiscal year 1999.

The Department is pursuing a privatization approach for obtaining treatment for the tank waste which, in Phase I, would provide treatment for at least 10 percent of the waste and 20 to 25 percent of the radioactivity in the tanks. In August 1998, we signed a contract with BNFL, Inc. that allowed for an initial 24-month period to enable the contractor to develop more of the design for the treatment facility and to obtain financing and submit a fixed price bid. In fiscal year 2000, the Department will decide whether to authorize BNFL to proceed to construction and operation, based on an evaluation of whether the proposal represents the best value for the taxpayer.

Following Congressional direction in the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999,* the Department has established the Office of River Protection which will manage all aspects of our efforts to store, retrieve, treat, immobilize, and dispose of the high level waste from the tank farms. The Department has prepared an Integrated Management Plan, provided to Congress in January 1999, which includes 27 new positions out of total of 109 positions that will staff the Office. The 27 positions have been advertised. In addition, we are proceeding expeditiously with the appointment of a manager for the Office of River Protection.

We are continuing to dispose of contaminated soil and debris from environmental restoration operations at Hanford in the Environmental Restoration Disposal Facility (ERDF). Since opening two year ago, the Department has disposed of more than a million cubic meters of waste in the ERDF.

We recently restarted stabilization operations for surplus plutonium stored in the Plutonium Finishing Plant. This is a critical step in the deactivation of the Plutonium Finishing Plant, which will substantially reduce risk and mortgage costs at Hanford.

The Department also completed "cocooning" the C-reactor, one of the eight original reactor along the Columbia River. By deactivating and stabilizing the reactors in this manner, the department will be able to maintain the reactor in a safe and low cost status until final disposition is performed in 75 years.

Despite some setbacks, we are moving forward with the long-term goal of cleaning up the Hanford site and making it available for community reuse or conservation based on a community involvement process appropriate to the large scale of the operation. For example, we are now evaluating issues associated with transferring the Wahluke Slope along the Columbia River in a manner that is protective of the river and responsive to community needs.

Our fiscal year 2000 budget request supports a number of commitments, including:

—A total of 14 waste site remediations are scheduled for completion in the 100 Area, and 2 more in the 300 Area, with 228,252 m^3 (302,366 tons) of soil removed, in addition to the completion of backfill of 10 waste sites.
—Complete closure of cells 1 and 2 in Environmental Restoration Disposal Facility. Additionally 142,181 m^3 (314,400 tons) of soil will be disposed.
—Implement Integrated Groundwater/Vadose Zone science and technology roadmap to support site assessment and remediation and system assessment capability development.
—Waste Management activities include preparing about 130 m^3 of transuranic waste for shipment to WIPP; initiating disposal of about 2,500 m^3 of mixed low-level waste; disposing of 3,800 m^3 of low-level waste; and reducing about one million gallons of liquids in the high level waste tanks through the Evaporator.
—Complete fuel retrieval, drying, transport and storage system testing to support commencement of fuel removal from the K-West basin in early fiscal year 2001.
—Continue stabilization of 160 liters of plutonium bearing solutions, and about 238 containers of plutonium metals and oxides. Commence stabilization of about 600 kilograms of plutonium bearing residues and plutonium bearing polycube materials.

Rocky Flats Environmental Technology Site, Colorado Fiscal Year 2000 Request

[In thousands]

Defense Site Closure	$657,210

Almost two-thirds (62 percent) of the Defense Closure Account request supports accelerated cleanup at the Rocky Flats Site, a facility located 16 miles northwest of Denver, Colorado. The site was used to shape plutonium and uranium weapons components and for other defense-related production work. The cleanup poses significant challenges because of the large amounts of plutonium and other compounds remaining in tanks and production lines in facilities, the significant volumes of hazardous and radioactive wastes stored throughout the site, and widespread contamination of soils, sediments, and groundwater.

The Rocky Flats Site is one of the featured prototypes, and certainly the largest site, for our goal of accelerating site cleanup and closure by 2006. There are many challenges facing this project, but we are confident that by remaining focused on our goal we can produce substantial savings and provide dramatic risk reduction sooner then previously expected. Our current baseline is to complete cleanup and closure by 2010. The General Accounting Office is now assessing the status and obstacles to accelerated closure and is expected to report its results this Spring. The site contractor is still developing its baseline for accelerated closure. The accelerated closure baseline will be submitted to DOE in May 1999, and DOE is expected to complete its validation of the baseline in December 1999. Based on that revised and validated baseline, we expect to be able to describe in detail what is required to close the site by 2006 and provide our level of confidence in our ability to close by 2006. Whatever the result, we have clearly come a long way since the previous contractor estimated a few years ago that it would take $30 billion and 30 years to complete cleanup at Rocky Flats.

The key ingredient for closing Rocky Flats is being able to move nuclear materials and waste off of the site. Making progress in this critical area requires not only preparing the materials and waste for shipment, but also making sure that the receiving sites are ready. For example, there are approximately 40,000 kilograms of plutonium residues that need to be packaged and sent to WIPP. We are currently modifying a facility to provide temporary storage. However, unless WIPP opens soon, we will need to provide further alternative storage for those residues; the fiscal year 2000 budget request for Rocky Flats does not include funds to construct such a storage facility. In sum, there are six sites in six states to which we need to ship waste and materials from Rocky Flats. In some cases we have already begun shipments, such as the dozens of truckloads of waste that have been already been shipped to Envirocare in Utah.

The Department has clearly made enormous progress both in reducing risks at the site, and in greatly improving our management plans for cleanup and closure. Approximately 5 metric tons of plutonium residues were stabilized and/or repackaged in fiscal year 1998, and we expect to stabilize or repackage 32 metric tons in fiscal year 1999. By the end of fiscal year 1999, all pits and weapons-grade uranium will be shipped from Rocky Flats to other receiver sites, and about 99 percent of the residues are projected to be ready for shipment to WIPP or to Savannah River Site. We are making progress on demolishing buildings at Rocky Flats, not only reducing risks but also reducing mortgage costs required to maintain those excess buildings: all remaining glove boxes will be removed from Building 779 by the end

of fiscal year 1999, and Building 729—part of the Building 779 cluster—will be completely demolished.

The fiscal year 1999 appropriation and fiscal year 2000 budget request for Rocky Flats ($657 million each year) fund the activities we have already identified as necessary for accelerated closure. If our fiscal year 2000 request for Rocky Flats is fully funded, we are committed to producing the following results:

—Demolishing the B–779 cluster of buildings, the first plutonium operations buildings in the world decontaminated and turned to rubble.
—Ship more than 14,000 cubic meters of radioactive waste off site for disposal.
—Process more than 60 metric tons of plutonium residues preparing for safe disposition.
—Bring on-line a new plutonium packaging system and package 500 cans of plutonium.
—Ship plutonium metals and oxides to the K-Area at the Savannah River Site beginning in January 2000, pending completion of NEPA requirements.

The progress at Rocky Flats is also demonstrating the success of the Department's performance-based, integrating contractor strategy. Because award fees are based on meeting specific performance and safety goals, the contractor has a strong incentive to make progress on cleanup.

We understand the importance of continuing to seek ways to accelerate cleanup at Rocky Flats to reduce risk and long-term costs. We also understand the vital role of accelerated site closure to the community where commercial and residential development along the Denver-Boulder corridor has reached nearly to the fence line of Rocky Flats.

Idaho National Engineering and Environment Laboratory, Idaho Fiscal Year 2000 Request

[In thousands]

Defense, Site/Project Completion	$108,961
Defense, Post-2006	291,253
Non-defense, Site/Project Completion	9,208
Defense, Privatization	115,000
Total	524,422

The fiscal year 2000 budget request for the Idaho National Engineering and Environmental Laboratory (INEEL) supports the receipt and safe interim storage of spent nuclear fuel, including Navy fuel and domestic and foreign research fuel; the storage and treatment of high level waste in 11 underground tanks; the cleanup of 43 "release sites", or contaminated areas, and 11 surplus facilities; and the management of legacy waste, including transuranic waste to be shipped to WIPP. Many of the critical activities at the site are subject to the Settlement Agreement signed with the Governor of Idaho in 1995, which would result in the suspension of shipments of spent nuclear fuel to INEEL if milestones are not met.

One of the most complex challenges at INEEL is the remediation of buried wastes, such as remediation of the Radioactive Waste Management Complex, of which the Pit 9 site, a burial pit containing about 250,000 cubic feet of radioactive waste, is a part. The Pit 9 project is now being conducted by the Management and Operating (M&O) contractor under an alternative approach supported by the state and EPA regulators following termination of the previous subcontractor. We began stage 1, the subsurface investigation, in October 1998, and have met all regulatory milestones to date. The Pit 9 cleanup was one of our first attempts at fixed-price contracting for a large and technically complex project, and both the Department and the contractor learned hard lessons from the experience. We are applying those lessons in other projects at the site and across the DOE complex.

INEEL plays a key role in providing safe storage and management of spent nuclear fuel, in support of the Administration's non-proliferation goals. INEEL received its first shipment of foreign research reactor fuel in fiscal year 1998 and will continue to receive shipments in fiscal year 1999 and 2000. INEEL is actively improving storage conditions at the site, transferring fuel from wet to dry storage, or from aging facilities to modern, state-of-the-art facilities. For example, we are storing spent nuclear fuel and core debris from the Three Mile Island incident at the INEEL Test Area North and will begin moving the fuel from wet storage into dry storage at the end of this month. The Department has issued a request-for-proposal in a privatization initiative to procure a new facility for dry storage of other fuel, which will be licensed by the Nuclear Regulatory Commission. The fiscal year 2000 budget request includes $5 million for this project in the privatization account.

A significant portion of the INEEL budget request supports the management of high level waste. INEEL has about 1.4 million gallons of liquid sodium-bearing waste stored in 11 underground tanks, and about 135,000 cubic feet of calcined waste in temporary storage. In the near-term, we will continue to calcine the liquid, a process that converts the liquid waste into dry, granular material resembling laundry detergent; calcined waste is easier to store and is greatly reduced in volume. However, the calcining facility will be placed in standby mode on April 30, 1999, as required by the State, until an environmentally safe and economic path forward for the liquid and calcined waste can be identified. Development of an Environmental Impact Statement for the high-level waste alternatives is underway and expected to be finalized in fiscal year 2000.

We continue our efforts to characterize and prepare transuranic waste for shipment to WIPP and to develop the Advanced Mixed Waste Treatment Project, a privatization project that will provide treatment for transuranic and alpha mixed low-level waste (waste that contains long-lived radionuclides at levels below those of transuranic waste). We are, however, in jeopardy of missing a milestone in the Settlement Agreement that requires that we initiate shipment of INEEL transuranic waste out of Idaho by April 30, 1999, because of the delay in opening WIPP. The Department considers compliance with the Agreement a top priority and is working to resolve this issue.

INEEL now operates under the sponsorship of the EM program. As part of the long-range effort both to further the development of and capitalize on INEEL's core competencies, INEEL leads a major integration effort that uses a systems engineering approach to refine EM waste, spent nuclear fuel, and nuclear disposition baselines. The EM integration initiative evaluates cross-site and cross-program opportunities for efficiencies and cost reductions to streamline cleanup.

Finally, the M&O contract for INEEL expires at the end of September of this year. Contract proposals are due in this month and the contract will be awarded in June 1999, providing for a three-month transition period. The current contractor, Lockheed Martin Idaho Technologies Company, has decided not to compete for the contract, so there will be a new contractor at the site in October. We will work to ensure a smooth transition that maintains continuity of the projects and schedules.

Oak Ridge Reservation, Tennessee Fiscal Year 2000 Request

[In thousands]

Defense, Post-2006	$264,561
Non-defense, Post-2006	3,802
UE D&D Fund	135,198
Defense, Privatization	32,000
Total	435,561

The Oak Ridge Reservation is comprised of three facilities—the Y–12 Plant, the East Tennessee Technology Park (ETTP) (formerly the K–25 uranium enrichment facility), and the Oak Ridge National Laboratory (ORNL). Funding for almost all environmental management activities at Oak Ridge is included in the Defense, Post-2006 Completion Account, with funding for the cleanup of ETTP coming from both this account and the Uranium Enrichment Decontamination and Decommissioning Fund. In the fiscal year 2000, we are requesting that funding for some projects previously funded in the Non-Defense Account be provided in the Defense Account. We believe that consolidating funding under one account will provide more managerial integrity and may reduce indirect and overhead charges compared to funding these projects from multiple accounts.

The Department continues its efforts to reindustrialize facilities in Oak Ridge, particularly at ETTP. The primary goal is to clean up ETTP as quickly and as safely as possible so that the presence of DOE and its contractors can essentially end, and the site can be reborn as an industrial park. As of November 1998, about 790,000 cubic feet of space has been leased to 43 private companies. In some cases, the Department has conducted cleanup of the building and, in other cases, the private company is undertaking the cleanup. Overall, we estimate $179 million in savings in life-cycle costs the Department would otherwise have to spend cleaning up or maintaining these surplus facilities. The Department is now in the process of developing a consistent DOE-wide policy for assuring that the health and safety of private industry workers at ETTP and other leased facilities are protected. In this way we will be better able to move ahead with more confidence in our path forward for this important program.

The fiscal year 2000 request continues support for the decommissioning of the Molten Salt Reactor Experiment at ORNL. This experimental nuclear reactor was

designed to use a fuel of highly-reactive uranium–233 blended with a molten salt coolant. After 4½ years of operation, the reactor was shut down in December 1969. The EM program has begun to make substantial progress, with input from the National Academy of Sciences, in stabilizing this reactor. For example, the EM program has installed and continues operation of a system to remove reactive gases from the reactor tanks until the fuel salt can be removed. In fiscal year 2000, we plan to complete fabrication and testing of the uranium conversion equipment and complete planning and design of the fuel salt removal process.

We have completed cleanup of the fourth of eight highly radioactive waste storage tanks, called the "Gunite Tanks," at ORNL and have started work on the next tank, expected to be completed six months ahead of schedule. The tanks were built in 1943 and were used for waste from chemical separations (reprocessing) operations until the late 1970's. The tanks vary in size, with some having a capacity of 170,000 gallons (approximately the size of a 4-bedroom house). The estimated cost of the project is now $80 million, less than half the original estimate of $200 million. A key factor in the accelerated schedule has been the development of a variety of remote technologies, such as the "Houdini" vehicle and a robotic arm that provide access to the tank interior, which have allowed work to proceed on two tanks simultaneously, rather than sequentially as initially planned.

The Toxic Substances Control Act (TSCA) incinerator at Oak Ridge, permitted by the State to treat mixed radioactive and hazardous wastes regulated by the Resource Conservation and Recovery Act and by EPA to treat PCB-contaminated wastes regulated under TSCA, offers unique capability within the DOE system. In addition to treating wastes generated by Oak Ridge facilities, the TSCA incinerator has also been used to treat wastes from other sites in the DOE complex, providing a cost-effective and integrated approach to managing these wastes. However, in February 1998 and again in February 1999, the Governor of Tennessee rejected the annual burn plans for the incinerator proposed by the Department, shutting off use of the incinerator for wastes generated at DOE sites other than those managed by the Oak Ridge Operations Office. The Governor cited equity concerns, including the lack of DOE sites available for disposal of waste from Oak Ridge and the adequacy of funding levels for environmental management at Oak Ridge, as well as the overall commitment of the Federal Government to the Oak Ridge site. The Department has assured the State leaders of our firm commitment to the site and is working to resolve State concerns.

Fernald Environmental Management Project, Ohio Fiscal Year 2000 Request

[In thousands]

Defense Site Closure	$280,589

The cleanup activities at Fernald Environmental Management Project account for more than $280 million, or 27 percent of the funding in the Defense Site Closure Account. The Fernald te, encompassing approximately 1,050 acres near Cincinnati, produced uranium for nuclear weapons from 1951 to the end of Cold War in 1989. Nearly forty years of uranium production for nuclear weapons left the Fernald Site with soil and groundwater contamination, a large backlog of wastes, including some unstable liquids, as well as stored nuclear materials such as depleted and enriched uranium. Several years of cleanup progress have included stabilization of liquid uranium solutions, off-site shipment of low-level waste, and deactivation, decontamination and demolition of several large industrial buildings at Fernald. The current baseline calls for cleanup to be completed by fiscal year 2008, but the Department is seeking enhanced efficiencies to complete work by fiscal year 2006. Groundwater remediation and long-term institutional controls will be necessary after active cleanup is completed.

Last year we reported to you that we were beginning to dispose of waste in an on-site disposal cell. Site personnel realized that such a disposal cell would be required for some waste to keep disposal costs attainable, and the community realized constructing it at the Fernald site would be more equitable than demanding that all wastes be disposed of off-site in other states. I am pleased to report that we are successfully filling the first and second section of this disposal cell. We are now constructing a liner for section three. The availability of this on-site disposal cell is enabling us to accelerate disposal of contaminated soil and debris resulting from cleanup and building demolition.

We also reported last year that we were expecting to begin excavating, treating, and shipping radioactive residue from the Waste Pits to an off-site disposal facility. We began excavation and loading of that material into railcars in February of this year and expect to begin shipments by rail for disposal in the April/May time frame.

Finally, Fernald personnel have continued the process of razing deactivated and decontaminated industrial buildings. They completed demolition of 5 of the 11 major facility complexes (Plants 1, 4, 7, 9 and the Boiler Plant), resulting in outyear reductions in mortgage and landlord costs.

Waste Isolation Pilot Plant, New Mexico Fiscal Year 2000 Request

[In thousands]

Defense, Post 2006 Completion	$186,404

The Department is requesting funding at essentially the same funding level as appropriated in fiscal year 1999 for the Waste Isolation Pilot Plant (WIPP) in New Mexico.

Opening and operating WIPP is a key element of the Department's strategy to provide for the permanent disposal of a portion of the Department's stored long-lived radioactive waste. Currently a large amount of transuranic waste (more than 100,000 cubic meters) is being stored at more than two dozen sites around the United States. In many cases, this waste has been stored for decades. By shipping this waste to WIPP for disposal, the Department will be able to reduce the number of sites where this type of waste is stored, reducing the costs of storing this waste and the long-term risks to the public and the environment. Opening WIPP for disposal is critical to the closure of sites such as Rocky Flats, where the site cleanup plan relies on disposal of the transuranic waste.

Many of the schedules and requirements in the Federal Facility Compliance Act orders between the States or EPA, and DOE at the transuranic waste sites (e.g., INEEL and Rocky Flats) are based on the assumption that WIPP will open and begin accepting waste in the immediate future. In May of 1998, EPA certified WIPP for disposal of radioactive waste, and the Department declared WIPP ready to begin operations. We hope to make our first shipments this year, if pending litigation is resolved favorably. The Department is developing the necessary transportation capacity to move transuranic waste from sites where it is stored to WIPP to meet compliance agreement requirements. The Department continues to do everything possible to open WIPP and meet its legal obligations. The fiscal year 2000 budget will allow WIPP to continue disposal operations. The Department expects to ramp up the receipt rate of contact-handled transuranic waste shipments to 14 shipments per week by the end of fiscal year 2000 and to 17 shipments by December 31, 2000.

The WIPP program also funds a variety of institutional programs that provide economic assistance and operational oversight for affected governments and stakeholder groups. The funding request for fiscal year 2000 includes $20.9 million for New Mexico Impact Assistance, as required by the WIPP Land Withdrawal Act Amendments of 1996, and additional funds for cooperative agreements with New Mexico Emergency Response, Indian Tribes, Southern States Energy Board, and others.

The Department is relying on privatization to obtain the capital equipment for transuranic waste transportation to reduce costs. The fiscal year 1999 budget included $19,605,000 in the Defense Privatization account to transport remote-handled transuranic waste from generator sites to WIPP. Because this contract is not expected to be awarded until late fiscal year 1999 or early fiscal year 2000, the Department is not requesting additional funding in fiscal year 2000.

Los Alamos National Laboratory, New Mexico Fiscal Year 2000 Request

[In thousands]

Defense, Post-2006 Completion	$104,834
Non-Defense, Post-2006 Completion	6,000
Total	110, 834

Our goal at Los Alamos National Laboratory is to complete cleanup work by 2006 except for a few complex contaminated sites and disposition of legacy transuranic waste, and to complete all EM cleanup projects at Los Alamos by 2015. Through fiscal year 1998, the Department completed remediation of 1,395 release sites and decommissioning of 41 facilities, out of a total of more than 2,000 release sites and 130 facilities. We plan to complete 9 additional release sites and one facility in fiscal year 1999, and 28 release sites and two facilities in fiscal year 2000.

The fiscal year 2000 EM budget request for Los Alamos of $110 million is nearly $30 million more than our fiscal year 1999 budget. Much of this increase (86 percent) is devoted to environmental restoration work, such as drilling new regional ground water wells to characterize the hydrogeology and work required to complete cleanup in anticipation transferring land to the community. Pursuant to the require-

ments of Public Laws 105–119 and 105–245, DOE has identified ten parcels totaling about 4600 acres for potential transfer to the County of Los Alamos and the Pueblos, has published a draft Environmental Impact Statement on the land transfers and supporting Environmental Restoration Report, and will submit a detailed project plan for cleanup of a land parcel, referred to as "TA–21", to Congress by late March 1999. DOE intends to follow a phased approach in accomplishing the land transfers, starting with the transfer of the relatively simple, uncontaminated parcels in 2000 and continuing with the transfer of the more complex sites in the outyears.

Another significant increase in the Los Alamos budget is attributable to the need to manage wastes recently-retrieved buried transuranic waste and to characterize, certify, and ship the waste to WIPP for disposal. Los Alamos was the first site to have waste certified by DOE for disposal at WIPP. In fact, the WIPP certification rule that EPA promulgated in fiscal year 1998 specifically includes EPA approval of the characterization program at Los Alamos for certain transuranic wastes.

The fiscal year 2000 request for EM does not include funds for management of on-going waste generation; the Department transferred this waste management responsibility at Los Alamos, along with funding responsibility, from EM to the Office of Defense Programs in fiscal year 1999.

The Department recently designated Los Alamos as the lead laboratory for research and development efforts to support the Department's response to Defense Nuclear Facilities Safety Board Recommendation 94–1 on nuclear materials safety. In this capacity, Los Alamos provides solutions to complex-wide technical and operational issues associated with stabilization and storage of plutonium and other nuclear materials.

West Valley Demonstration Plant, New York Fiscal Year 2000 Request

[In thousands]

Non-Defense, Site Closure Account	$107,353

Cleanup of the West Valley Demonstration Project (WVDP), located in upstate New York less than 40 miles from Buffalo, is being conducted at the site of the only nuclear fuel reprocessing facility to operate in the U.S. The private company processed commercial spent nuclear fuel to extract plutonium and uranium from 1966 to 1972, generating 2,200 cubic meters of liquid high-level waste.

The principal operation at West Valley is the solidification of the liquid high-level waste into borosilicate glass using a process called vitrification. The primary vitrification campaign began in June 1996 and was completed ahead of schedule in June 1998. Vitrification of the high-level waste tank heels is currently underway and will continue through fiscal year 2001.

Following the vitrification of the high-level waste, the equipment and facilities used in carrying out the project will be decontaminated and decommissioned, based on the results of an Environmental Impact Statement (EIS) and Record of Decision (ROD) for the completion of the project. This phase of the cleanup project is expected to begin in late fiscal year 2000.

The New York State Energy Research and Development Authority and DOE are working together and with stakeholders, including a Citizens' Task Force, to formulate a preferred alternative for closure or long-term management of the site. Selection of a preferred alternative and subsequent ROD will determine the outyear scope of work for the project and final disposition of the waste. The EIS and ROD process is scheduled to be completed in May 2000. The estimated completion date for WVDP may extend through 2015, reflecting the uncertainty related to the future EIS ROD.

Another critical element of the EM program at West Valley is the safe management of 125 spent nuclear fuel elements stored at the site. EM will continue surveillance and maintenance of the spent fuel facility to ensure safe storage until the spent fuel can be shipped to the Idaho National Engineering and Environmental Laboratory (currently planned for 2001).

In fiscal year 1999, major activities include continuation of vitrification of the HLW tank heels (producing approximately 15 canisters of solidified HLW), development of an EIS Preferred Alternative for project completion, progress towards resolution of responsibility issues with the State of New York, and continuation of preparations for shipment of spent nuclear fuel.

In fiscal year 2000, major activities include continuation of vitrification of the HLW tank heels (producing approximately 5 canisters of solidified HLW), issuance of a Final EIS and ROD for project completion, and continuation of preparations for shipment of spent nuclear fuel.

Miamisburg Environmental Management Project (Mound Site) Fiscal Year 2000 Request

[In thousands]

Defense Site Closure	$92,353
Non-Defense, Site Closure	1,000
Total	93,353

The Miamisburg Environmental Management Project, a 306-acre facility near Dayton Ohio used for tritium and plutonium–238 operations, consists of 416 release sites and 111 facilities. We have a goal of completing cleanup of the site by 2005 or earlier. We are making good progress—all legacy bulk tritium has been shipped off-site, and a consolidated treatment processing facility and a radioactive wastewater treatment facility have been constructed and are in use. In fiscal year 1998, we completed remediation of the Miami-Erie Canal, allowing re-establishment of a park for the local community. In fiscal year 1998, we demolished or removed 25 buildings out of an initial inventory of 106 buildings scheduled for demolition or removal and will complete another 5 in fiscal year 1999, adding to the 17 buildings that had been demolished or removed before fiscal year 1998.

We have negotiated an agreement to transfer the ownership of the site to the Miamisburg Mound Community Improvement Corporation as cleanup is completed. Currently 28 private businesses employing more than 250 workers are leasing facilities at the Mound Site. Within the next few months, we plan to transfer ownership to the community of the first parcel of land, consisting of two buildings currently occupied by private businesses. This transition process will allow the Department to eventually leave the site without creating an economic void in the community.

Nevada Test Site and Operations Office, Nevada Fiscal Year 2000 Request

[In thousands]

Defense, Post 2006 Completion	$85,307

The Post–2006 Completion Account includes $85 million for cleanup and waste management activities at the Nevada Test Site, as well as funds to remediate eight other inactive sites contaminated by past DOE nuclear testing in five other states (Alaska, Colorado, Mississippi, Nevada, and New Mexico). The Nevada Test Site (NTS) is located 65 miles from Las Vegas and encompasses 1,350 square miles, an area roughly the size of Rhode Island. In addition to the cleanup of radioactive contamination resulting from above- and below-ground testing of nuclear weapons and management of its on-site waste, the Nevada Test Site plays a crucial role for other DOE sites as one of the major low-level waste disposal facilities in the DOE complex. By fiscal year 2006, the Department expects to complete restoration of the surface area of off-site locations and complete shipments of transuranic waste to WIPP, while continuing to operate low-level disposal facilities at NTS for the DOE complex. institutional controls and to maintain groundwater monitoring.

In fiscal year 1999, the Department expects to meet its commitment to dispose of more than 37,000 cubic meters of low-level waste, more than half of which is from other DOE sites, and to complete cleanup of 446, or 32 percent of the contaminated release sites. In fiscal year 2000, the Department is committing to disposing of 64,000 cubic meters of low level radioactive waste at NTS—a 70 percent increase over fiscal year 1999. Based on new scientific findings about transport of plutonium and other actinides in ground water, the Department is increasing it efforts to monitor ground water at NTS to improve our understanding of this complex issue. We also plan to continue treating transuranic waste in fiscal year 2000 for shipment and disposal WIPP.

Weldon Spring Remedial Action Project, Missouri Fiscal Year 2000 Request

[In thousands]

Non-Defense, Site Closure Account	$52,000

The Weldon Spring Site Remedial Action Project (WSSRAP) in Missouri includes a decommissioned uranium processing plant, an abandoned quarry used as a dump site, as well as numerous vicinity properties that were contaminated by uranium processing operations conducted for nuclear weapons support in the 1950's and 1960's, similar to the Fernald Site in Ohio. The Oak Ridge Operations Office in Tennessee is managing the cleanup, which includes about one million cubic yards of waste at the 229-acre site.

Cleanup of the Weldon Spring Site is expected to be completed as early as 2002. All contaminated material will be placed in an on-site, above-grade cell for permanent disposal. Long-term surveillance and monitoring for the disposal facility will be conducted after project completion, and the remaining land will be released for unrestricted use.

Our progress in fiscal year 1998 and fiscal year 1999 puts us on track for completing cleanup in 2002. Fiscal year 1998 marked the start of the waste placement in the 1.4 million cubic yard capacity disposal facility, with about 640,000 cubic yards of material being placed in the facility in fiscal year 1998. The construction of the Chemical Stabilization and Solidification Facility was completed and treatment of waste pit sludge begun in fiscal year 1998, with treatment of sludge completed in fiscal year 1999. Cleanup of all vicinity properties but one were completed. The site Groundwater Record of Decision will be signed, and Quarry restoration activities will begin in fiscal year 1999.

In fiscal year 2000, the waste placement activity will be nearly completed, and the construction of the disposal facility cap will begin. Quarry restoration will continue, and the chemical plant site restoration and waste pit remediation will begin. Although the fiscal year 2000 budget targets $52 million for Weldon Spring, it is the intent of the Department to fund this program at a level of $63.5 million, the level of funding of fiscal year 1999, to ensure the 2002 completion date can be attained.

Brookhaven National Laboratory, New York Fiscal Year 2000 Request

[In thousands]

Non-Defense, Site/Project Completion Account	$29,553

At the Brookhaven National Laboratory, we are treating contaminated groundwater at several on-site locations and will start the first off-site groundwater treatment system by the end of this fiscal year. Over 1,500 homes have been hooked up to the municipal water supply to ensure that the residents' drinking water supply remains unaffected during long-term ground-water cleanup. To eliminate sources of potential future contamination, we have removed buried waste as well as a number of underground storage tanks and cesspools, and have capped on-site landfills. In fiscal year 1999, the Department expects the regulatory and stakeholder review process for proposed cleanup remedies to be completed, and the final remedies to be identified for contaminated soils, sediments and groundwater. We will begin implementing the final remedies in fiscal year 2000.

A site-wide review in fiscal year 1997 highlighted concerns with the Brookhaven Graphite Research Reactor, due in part to the radioactively contaminated water collecting in underground air ducts associated with the facility. I am pleased to report substantial progress in addressing this concern through the combined efforts of this office and the Office of Science. The contaminated water has been removed, and sources of potential further water intrusion have been sealed off. Moreover, the Offices of Science and Environmental Management have reached agreement on managing the remaining characterization, stabilization, and decommissioning of the Research Reactor, and both offices have committed funding in fiscal year 1999 and fiscal year 2000 to maintain the momentum on this project. Final decommissioning of this facility is scheduled to begin in fiscal year 2001.

The EM Program will continue its activities in fiscal year 2000 to dispose of legacy wastes and will also continue to compliantly store, treat, and dispose of wastes generated by on-going Brookhaven operations, with the transfer of waste management responsibilities to the generating program expected in fiscal year 2001.

Sites in the State of California Fiscal Year 2000 Request

[In thousands]

Defense, Site/Project Completion Account:	
Lawrence Livermore National Laboratory	$49,891
Oakland Operations Office	800
Non-Defense, Site/Project Completion Account:	
Energy Engineering Technology Center	17,398
Lawrence Berkeley National Laboratory	11,098
General Atomics	1,100
Laboratory for Energy-Related Health Research	3,863
Stanford Linear Accelerator Center	1,400
General Electric	500
Oakland Operations Office	300

A total fiscal year 2000 request of $86,350,000 supports activities at the seven sites in California. The funds will support the characterization, remediation, decontamination and decommissioning of contaminated release sites and facilities; waste minimization efforts; and management of hazardous and radioactive wastes generated at sites. We are committed to completing cleanup at all sites by 2006, including shipping legacy waste off-site, ending EM responsibilities. For those sites with on-going Departmental missions, we plan to transfer responsibility for managing newly generated wastes to the waste generating programs by fiscal year 2003, and transfer responsibility for long-term maintenance of completed remedial actions (e.g., pump and treat facilities) and surveillance and monitoring by fiscal year 2006.

The major accomplishments expected for fiscal year 2000 include:

Lawrence Livermore National Laboratory.—LLNL consists of two sites—the Main site and Site 300. We will complete the Site-Wide Proposed Plan for the Interim Record of Decision at Site 300. At the Main site, EM will activate and start operational testing of the Decontamination and Waste Treatment Facility at the Lawrence Livermore National Laboratory Site and complete deployment of electro-osmosis innovative technology in source area contaminant remediation, for a potential life cycle savings of over $50M and reduction in time for cleanup of over 40 years compared to conventional pump and treat technology. We plan to complete cleanup at the LLNL sites by 2006.

General Atomics.—EM will finish all cleanup activities in fiscal year 2000 with the completion of decontamination and decommissioning activities at the Hot Cell Facility, formerly used by DOE for nuclear research and development.

Laboratory for Energy-Related Health Research.—We will complete soil excavation at the western dog pen and Strontium-90/Radium-226 Areas in fiscal year 2000, keeping us on schedule for completing overall site cleanup, including off-site waste disposal, by fiscal year 2002.

Energy Technology Engineering Center.—The Department signed a contract in December 1998 with Boeing North America, the owner of this facility, to complete cleanup by 2006. The contract calls for transfer of all facilities and land to the owner, who will take responsibility for any long-term stewardship needed for the completed remedies. In fiscal year 2000, we will complete the decontamination and decommissioning of the SNAP–8 facility and the H–1 Heater Facility.

Stanford Linear Accelerator Center.—We will complete excavation of PCB-contaminated soils in the Lower Salvage Yard. Responsibilities for on-going waste management were transferred to the generator in fiscal year 1997. We expect to complete EM's cleanup responsibilities by 2002.

Lawrence Berkeley National Laboratory.—Excavation of contaminated soils at several on-site locations at Lawrence Berkeley National Laboratory will continue, as will storage, treatment and disposal activities to reduce legacy waste, with a goal of completing EM responsibilities by 2003.

STATEMENT OF LAKE H. BARRETT

Senator DOMENICI. We will proceed now with Mr. Barrett, and then we will ask questions.

I note the presence of Senator Wayne Allard, from Colorado. Would you like to comment now before we proceed with the witness?

Senator ALLARD. Well, I have a statement I would like to make, if that is okay with the Chairman, if it is appropriate for your agenda this morning.

Senator DOMENICI. What is your time schedule for this morning?

Senator ALLARD. Well, I need to preside at 11:00 o'clock, and I want to thank the Chairman for letting me sit here on your subcommittee.

Senator DOMENICI. You are welcome. Let me proceed with the witnesses, and I will give you a chance here shortly.

Senator ALLARD. Thank you.

Senator DOMENICI. Mr. Barrett.

Mr. BARRETT. Thank you very much, Mr. Chairman, and members of the committee.

VIABILITY ASSESSMENT

We, in the Civilian Waste Radioactive Waste Management Program, have made significant progress in the last year. Specifically, we completed the Viability Assessment, which was sent to this committee and the President, and the rest of the Congress.

The Viability Assessment found that there were no showstoppers and that work should proceed in characterizing the Yucca Mountain site. This Administration continues to move forward with the scientific characterization of Yucca Mountain, progressing toward a national decision whether the site is suitable to be a geologic repository. We are now nearing the conclusion of our scientific site characterization effort.

The President's fiscal year 2000 budget request supports the Viability Assessment's findings. It is important to note that we still have work to do. The budget request, building on the scope of work identified in the Viability Assessment, spells out what we plan to do in fiscal year 2000 to support the decision process in the coming years.

YUCCA MOUNTAIN SCHEDULE

The overall schedule for the Yucca Mountain activities is shown on this chart to your right. We are on target for a decision in 2001 whether Yucca Mountain is suitable to be the location of a geologic repository, and if the site is suitable, to submit a License Application to the Nuclear Regulatory Commission in 2002.

Meeting those milestones will maintain a schedule for the start of waste emplacement in 2010, if the site is suitable and licensed.

Your continued support for this program is essential. This program is essential to our national policy for the management of commercial spent nuclear fuel, the cleanup of our defense nuclear facilities, the disposition of our naval nuclear spent fuel, and the disposition of surplus plutonium to support the nation's nuclear nonproliferation goals in this post-Cold War period.

RECENT ACCOMPLISHMENTS

Before I discuss the 2000 fiscal year budget request, I would like to give you a brief summary of our recent accomplishments. We are focusing on the work products to support the milestones on this chart.

They are specifically the Draft Environmental Impact Statement in the summer of this year, the Final Environmental Impact Statement in 2000, a determination if the site is suitable for a recommendation to the President in 2001, and a License Application, if the site is suitable in 2002.

Last year, as I noted, we completed the Viability Assessment. That assessment served to identify the critical issues that must be addressed before a decision may be made by the Secretary whether to recommend the Yucca Mountain site for development as the nation's first repository. Our fiscal year 2000 budget request implements the work plan to address those issues to allow a final national decision.

At Yucca Mountain, we are working to understand the key scientific issues, including the flow of water through the repository,

and the effect of heat from waste packages on the geology and the hydrology.

We are investigating design alternatives to enhance performance. Our understanding of those issues will help reduce the uncertainties related to the performance of a repository. Now I would like to turn specifically to the fiscal year 2000 budget request.

FISCAL YEAR 2000 BUDGET REQUEST

We are requesting $370 million in new budget authority and the release of $39 million from the funds appropriated in fiscal year 1996 in the Defense Nuclear Waste Disposal Appropriation, for a total funding of $409 million. We have proposed allocating $332 million to continue the scientific and engineering work at the Yucca Mountain site characterization program, $6 million for waste acceptance, storage, and transportation, and $71 million for program management, which includes our nuclear quality assurance and regulatory and National Environmental Policy Act responsibilities.

The $332 million devoted to the Yucca Mountain site characterization will be used to continue the necessary cutting-edge scientific and engineering work to implement the characterization of the Yucca Mountain site; to reduce the remaining uncertainties about the site's performance, by developing models that predict the geophysical and engineering performance; to further refine our repository and waste package designs; to assist in the assessment of the repository safety strategy and total system performance. This includes the flexibility to incorporate emerging new technologies, such as accelerator transmutation of waste, which could supplement and improve the performance of a repository in Yucca Mountain. We also are working to finish the environmental impact statements.

In addition to the hard science and engineering technical activities under way at Yucca Mountain, we believe that the financial support envisioned by the Nuclear Waste Policy Act to the state and units of local government is important in enabling these governments and citizens directly adjacent to the Yucca Mountain project to remain informed and to participate in a meaningful way in the day-to-day program actions that may affect them. To that end we seek your approval of our request for such funding.

The budget request for the waste acceptance storage and transportation program is $6 million. This request will support our continuing long-lead work that must proceed transporting spent fuel to a federal receiving facility, and continue interactions with the standard contract holders to discuss how best to accommodate the delay in the acceptance of spent fuel from commercial utilities.

In the program management area the $71 million requested will support the Nuclear Regulatory Commission mandated nuclear quality assurance activities, regulatory compliance, program control and management activities. The funding requested also provides core support for the Nuclear Waste Policy Act mandated EIS's, the planning and program management, and the extensive records management systems that we must have.

CONCLUDING REMARKS

As I noted in my opening remarks, we have made substantial progress and we are appropriately positioned to finish the site characterization effort. The Viability Assessment found that there were no "showstoppers" with respect to the site at Yucca Mountain.

They also identified the necessary remaining scientific and technical work we have to complete, and provided the funding profile required, which our fiscal year 2000 budget request is based upon.

Funding at our request level will give us the resources required to address the last remaining questions about the suitability of the Yucca Mountain site. We are committed to determining the suitability of the site, and we seek your support in our efforts toward moving through this critical national decision.

PREPARED STATEMENT

Thank you for your support, and I would like to answer any questions that you may have.

Senator DOMENICI. Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF LAKE H. BARRETT

Mr. Chairman and members of the Committee, I am Lake H. Barrett, Acting Director of the Department of Energy's Office of Civilian Radioactive Waste Management. I appreciate the opportunity to present our fiscal year 2000 budget request to you and discuss our plans for continuing to move forward with the scientific and technical program activities at the Yucca Mountain site in Nevada.

The fiscal year 2000 budget request of $409 million is devoted to supporting principally those activities that may lead to a decision to recommend the site currently being characterized at Yucca Mountain, Nevada for development of a repository for the Nation's spent nuclear fuel and high-level radioactive waste.

BACKGROUND

The Civilian Radioactive Waste Management Program and, in particular, the Yucca Mountain Site Characterization Project being implemented is the cornerstone of the national policy for the management of spent nuclear fuel produced by nuclear power reactors for the generation of electricity and the clean-up of the high-level radioactive waste currently stored at sites that were key facilities of the nuclear weapons complex. The Civilian Radioactive Waste Management Program also directly supports the requirement to dispose of the Department of Energy's spent nuclear fuel including naval nuclear spent fuel. The disposition of surplus plutonium and other nuclear weapons materials in a permanent geologic repository is a key factor in maintaining the United States' international leadership position regarding nuclear nonproliferation.

Since the enactment of the Nuclear Waste Policy Act in 1982, we have made significant progress. We have designed and are implementing a program that is leading the developed countries in planning for geologic disposal of spent nuclear fuel and high level waste. Despite the progress made, the implementation of this program continues to be one of the most daunting public policy challenges before us. The Department, is however, getting closer to being able to make a decision regarding the recommendation of the site to the President for development as a repository, if it proves to be suitable.

VIABILITY ASSESSMENT

Since I last appeared before you, the Department completed, and submitted to the President, the Congress, and the public, the *Viability Assessment of a Repository at Yucca Mountain* and its companion documents. The Viability Assessment is comprised of four major elements: (1) a preliminary design concept for a repository and waste package; (2) a total system performance assessment that describes the probable behavior of a repository in the Yucca Mountain geologic setting; (3) a plan and cost estimate for the remaining work required to complete and submit a License Ap-

plication to the Nuclear Regulatory Commission; and (4) an estimate of the costs to construct and operate a repository.

The Viability Assessment is the compilation of over fifteen years of scientific and engineering work at the Yucca Mountain site. It provided Congress, the President, and the public with information on the progress of the Yucca Mountain Site Characterization Project. The Viability Assessment serves as an important management tool for the Program to guide the completion of site characterization by identifying critical issues that need to be addressed before a decision can be made by the Secretary on whether to recommend the Yucca Mountain site for a repository.

The key conclusion of the Viability Assessment is that there are no "show stoppers" with respect to the Yucca Mountain site and that work should proceed to support a decision in 2001 on whether to recommend the site. The President's fiscal year 2000 budget request supports that conclusion and I seek your support as well. It is important to note that we still have work to do. The budget request, building off of the scope of work identified in the Viability Assessment, spells out, in some detail, what we plan to do in fiscal year 2000 to support the decision process in the coming years.

The Civilian Radioactive Waste Management Program, in accordance with the guidance provided by the Fiscal Year 1997 Energy and Water Development Appropriations Act, applied the majority of our funding and two years of focused, concentrated effort to the development of the Viability Assessment. The Viability Assessment having been issued only three months ago, now provides both the short-term and long-term planning basis for the Program. It lays out the scope of work and the cost profile for the remaining work that must be accomplished to not only reach the decision point regarding the recommendation of the site to the President, if the site is found to be suitable, but also the work that must be accomplished and costs associated with it to construct a repository subsequent to receiving a License from the Nuclear Regulatory Commission. It is being used by the Program as a point of departure for developing and implementing the planning baseline against which Congress and outside observers may measure our progress in the future.

We have also made the Viability Assessment widely available by putting it and its companion documents *The Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, December 1998 (Total System Life Cycle Cost Report) and the statutorily required Nuclear Waste Fund Fee Adequacy: An Assessment, December 1998 (Fee Adequacy Report)*, and all the supporting technical studies—on our Internet home page.

LITIGATION

Before I discuss the fiscal year 2000 budget request and some of the accomplishments in fiscal year 1998 and fiscal year 1999, I would like to touch briefly on the ongoing litigation with State agencies and utilities regarding the Department's delay in accepting commercial spent fuel.

As you know, the Department is in litigation over our inability to meet our contractual obligation to accept spent fuel from the nuclear utility companies by January 31, 1998. The Court of Appeals for the District of Columbia Circuit found that the Department has an obligation to commence spent fuel disposal by January 31, 1998. The Court denied the utilities' and States' request for a move-fuel order, finding that the Standard Disposal Contract provides a potentially adequate remedy. The Court stated that the Department may not rely on the "unavoidable delays" clause to excuse its delay in performance and suggested the "avoidable delays" clause of the Standard Contract as the potentially adequate remedy. This clause provides for an equitable adjustment of schedules and contract charges to reflect any estimated additional costs incurred by the contract holder.

Pursuant to the ruling of the Court of Appeals for the District of Columbia Circuit, the Department will process claims presented to it under the standard disposal contract. Although we have held settlement discussions with several utilities, only one utility has proposed a bilateral modification and request for equitable adjustment of the contract, and no formal claims have been filed.

To date, ten utilities have filed claims for monetary damages in the U.S. Court of Federal Claims. In the first three cases decided by the Court, the Department was found to have breached its contracts with three utilities, each with only one shutdown reactor, and the Department is now engaged in discovery to determine the amount of damages the Government must pay these utilities. Other cases, most involving utilities with operating reactors paying ongoing fees to the Department, are currently pending.

QUALITY ASSURANCE

Our Quality Assurance Program, working as it should, has detected certain deficiencies in the execution of the Yucca Mountain Site Characterization effort, which has resulted in a redirection of work to respond to these deficiencies. Corrective Action Plans approved by our Office of Quality Assurance are being implemented. Process improvements have been identified, procedures have been revised, training is underway, and managers have increased their self-assessments. Although these efforts are causing us to refocus and redefine some of our currently planned work, we anticipate that we can accommodate this effort with minimal impact on cost and schedule. We expect some of the analyses, however, may have to be based on less data than previously planned but we are confident that the analyses will support the Site Recommendation Report and License Application.

PAYMENTS TO THE STATE AND AFFECTED UNITS OF LOCAL GOVERNMENT

We believe that the support envisioned by Section 116(c) of the Nuclear Waste Policy Act of 1982, as amended, to the State and units of local government affected by site characterization activities is important in enabling local governments and the citizens most directly impacted by the Yucca Mountain Project to remain informed and to participate in a meaningful way in the day to day program actions that affect them. Financial support is particularly important for the rural counties' programs where financial resources are severely limited and I would urge that you support the funding requested.

SUMMARY OF FISCAL YEAR 2000 REQUEST

With respect to fiscal year 2000, we are requesting $370 million in new budget authority and the release of $39 million from funds appropriated in fiscal year 1996 in the Defense Nuclear Waste Disposal Appropriation (currently in a Congressional Reserve) for total funding of $409 million. This request level fully supports the funding profile for the scientific and engineering activities planned for the Yucca Mountain Project as described in the Viability Assessment.

We have proposed allocating $332 million to continue the scientific and engineering work at the Yucca Mountain Site Characterization Office; $6 million for the activities directed by the Office of Waste Acceptance, Storage and Transportation; $10 million for the Program's Nuclear Quality Assurance program; and $61 million to carry out the Program's Management and Integration functions.

Before I review with you how we are proposing to use the funds provided for in the fiscal year 2000 budget request, I would like to briefly highlight, in summary fashion, some of the fiscal year 1998 and projected fiscal year 1999 accomplishments.

FISCAL YEAR 1998—FISCAL YEAR 1999 ACCOMPLISHMENTS

YUCCA MOUNTAIN

At the Yucca Mountain Site Characterization Project Office, we are continuing the transition from a project whose principal focus was on the collection of scientific data to a project that is increasingly focused on activities that support the remaining key near-term requirements described in the Nuclear Waste Policy Act of 1982, as amended. Those key activities will provide the remaining technical documentation (collectively these materials are referred to as the "Site Recommendation Report"), to support whether the Secretary should recommend to the President the site currently being characterized at Yucca Mountain, Nevada, if the site is found to be suitable, as a repository for the Nation's spent nuclear fuel and high-level radioactive waste.

In fiscal year 1999, the Program applied $282 million to the site characterization effort at Yucca Mountain. That was almost 80 percent of the Program's total appropriation.

The Project is focusing their activities on scientific and engineering investigations related to the remaining key uncertainties about the Yucca Mountain site. Those uncertainties were discussed in the Viability Assessment. They include the presence and movement of water through the repository block; the effects of water movement on the waste package; and the effects of heat from the decay of radioactive materials inside the waste packages on the site's geologic and hydrologic behavior.

The focus at Yucca Mountain during fiscal year 1998 was on completing the Viability Assessment, completing excavation of, and starting testing in, the Exploratory Studies Facility Cross Drift that extends to the west side of the repository block, and on starting one major thermal test and completing two others.

Development of the Viability Assessment represented many "firsts" for us. It was the first time we have articulated our integrated understanding about the whole Yucca Mountain Site since the 1986 Environmental Assessment supporting the decision to carry out site characterization. It was the first time an integrated technical review of one of our major technical reports included members of the Department of Energy complex who currently have responsibility for waste forms planned for geologic disposal. It was the first time we have used the Internet as an important part of our process for distributing major technical reports to the public. Lessons we have learned from these activities are being implemented as we start developing the Site Recommendation Report and the License Application. In addition to the Viability Assessment, we produced key supporting documents such as the *Total System Performance AssessmentViability Assessment Analysis Technical Basis Document* and the *Yucca Mountain Site Description.*

In December 1997, we started excavation of the 16.5-foot diameter cross drift in the Exploratory Studies Facility to better understand the geologic and hydrologic conditions of the west side of the repository block. By the close of fiscal year 1998, we completed excavation of over 2578 meters. The remaining 103 meters were completed in October 1998. Geologic mapping of the cross drift has been completed. Model predictions of the stratigraphy of the cross drift were verified to be within a few meters in elevation of the actual stratigraphic contacts. The eastern splay of the Solitario Canyon fault was mapped, and showed the actual offset to 220 to 230 meters matched the predicted offset of 230 meters.

Long duration tests are providing critical input for validating models we use to predict performance of a repository. We designed three different thermal tests to evaluate how the high temperatures in a repository (from heat generated by radioactive decay of the emplaced waste) can affect the natural barriers (i.e., the rock surrounding the emplacement drifts) and the engineered barriers (i.e. the waste package and the emplacement drift openings). Our thermal testing program is well underway.

—The single heater test, which began in August 1996, was completed in fiscal year 1998. The final results from this test are generally consistent with model predictions of temperature, rock displacement, and moisture movement. Data were obtained on heat transfer, thermal conductivity, thermal expansion, thermal chemistry, air permeability, and hydrology of the heated rock. The test also allowed us to refine the design and instrumentation of the drift scale heater test.

—The large-block heater test, which began in February 1997 in a fourteen foot high section of an outcrop at Fran Ridge, an area adjacent to Yucca Mountain in a portion of the potential repository host rock exposed at the surface, was completed in fiscal year 1998. The use of an isolated block allowed us to measure the moisture movement caused by heat in a controlled environment. Core samples obtained from the block are now being analyzed to look for changes in rock fractures due to heating.

—The drift scale heater test is a long-term test to obtain data on the mechanical and thermohydrologic properties of a repository host rock. The test, which began in fiscal year 1998, nearly 1000 feet below the surface of Yucca Mountain inside the Exploratory Studies Facility, is in the heat-up cycle. On December 3, 1997, a series of electric heaters were turned on, initiating the flow of heat into a section of the mountain. Designed to simulate the heat from actual waste packages, the drift scale test is the largest of the three heater tests at Yucca Mountain, and for that matter, is the largest underground thermal test ever conducted in the world. During fiscal year 1998, we increased the temperature in the test drift from ambient 86 degrees Fahrenheit to 275 degrees Fahrenheit. The goal is to maintain the drift wall rock temperature at 392 degrees Fahrenheit for two years before the cool down cycle begins. The total duration of this test will be eight years: four to heat-up and four to cool down.

Testing in an underground facility at Busted Butte near Yucca Mountain began in fiscal year 1998 and is still ongoing. Test results in the Calico Hills rock unit will provide an analog to expected conditions in the same type of rock that lies below the potential repository horizon. Tests are being conducted to validate laboratory data and conceptual numerical transport models. These tests are intended to reduce uncertainties in assessments of the potential transport of key radionuclides from the repository area, through the unsaturated zone, and into the water table underlying Yucca Mountain. Tests also will address the importance of colloid-facilitated transport of radionuclides, especially plutonium. Observations at Busted Butte are important to understanding transport in the unsaturated zone, beneath the emplacement drifts, because additional sorption of radionuclides is expected even in a scenario dominated by fracture flow. Future work will quantify the fracture-matrix

coupling that will be incorporated into the updated site-scale models to support the total system performance assessment for the Site Recommendation Report and the License Application.

Under the agreement with Nye County, eight wells have been completed along Highway 95 south of Yucca Mountain. We have collected cutting samples and are reviewing the geologic logs. We are in the process of analyzing water samples from these wells. This data will be used in updating the geologic framework model.

Thus far, our repository performance assessments have shown that the rate and amount of seepage of water into the emplacement drifts is very important to repository performance. Since the effects of tunnel ventilation may well mask the detection of any seepage, in 1998 we isolated individual niches in the Exploratory Studies Facility from ventilation to see whether any seepage can be detected. To date, no seepage has been observed in these test niches.

One alcove in the Exploratory Studies Facility has been isolated from ventilation effects to monitor humidity and seepage during the higher rainfall caused by El Nino. This alcove is within the vicinity of the potential repository block area near to and within the Ghost Dance fault exposure. To date, no seepage has been observed.

The focus at Yucca Mountain during fiscal year 1999 will be on issuing the Draft Environmental Impact Statement; completing the last phase of the peer review of the Total System Performance Assessment that supported the Viability Assessment; and updating repository and waste package designs to support updating the Total System Performance Assessment for the Site Recommendation Report. Those activities are also the Program's Government Performance and Results Act commitments.

In fiscal year 1999, to date, we have made the following progress:

—In support of the Environmental Impact Statement, we began the Department-wide review of the Draft Environmental Impact Statement. We are on schedule for meeting the July 1999 date for publishing the Draft Environmental Impact Statement and starting the public hearings.

—Completed a topical report on the methods we plan to use to model and evaluate the potential for a nuclear criticality event (sustained chain reaction). The report was transmitted to the NRC in January 1999.

—Completed License Application Design Selection workshops aimed at assuring validity and transparency of the process for selecting repository designs and options that will be modeled for the Site Recommendation Report and License Application.

—Completed management plans to guide writing both the Site Recommendation Report and the License Application and began developing the first drafts of both these documents.

—Completed phase one of the Busted Butte radionuclide transport test. The preliminary results provided significant information on flow partitioning between fracture and matrix of the rocks beneath the potential repository.

—Continued National Environmental Policy Act consultation and coordination activities with numerous federal, state, and local agencies and Native American tribal organizations. Status briefings on the Environmental Impact Statement's development, as well as coordination of any Environmental Impact Statement data needs, were conducted with the U.S. Nuclear Regulatory Commission, Nuclear Waste Technical Review Board, U.S. Bureau of Land Management, U.S. Air Force, State of Nevada and affected counties, and Native American tribes.

WASTE ACCEPTANCE, STORAGE, AND TRANSPORTATION

The Department's acceptance of commercial spent nuclear fuel remains a critical objective of the Program and, in the Office of Waste Acceptance, Storage, and Transportation (OWAST) area, that is where we focused our efforts. However, in recognition of the hardships associated with the Department's delay in waste acceptance, we have offered to make equitable adjustments with the contract holders to address those issues.

In fiscal year 1998, we developed a generic, non-site specific topical safety analysis report for a centralized interim storage facility. The report was submitted to the Nuclear Regulatory Commission and contained the required analyses and evaluations necessary to show that the operation of such a facility would meet the Commission's requirements for the protection of the environment, public safety, and health. We have continued interactions with the Commission and expect their approval this year.

In fiscal year 1999, the Program utilized just under $2 million to conduct activities that are the responsibility of the Office of Waste Acceptance, Storage, and Transportation. Several of the sub-elements of the OWAST function were de-empha-

sized in fiscal year 1998 and fiscal year 1999 to apply resources to the Yucca Mountain Site Characterization activity rather than on transportation activities.

We continued to refine a competitive procurement strategy for acquiring waste acceptance and transportation services utilizing private industry. We issued a revised draft Request for Proposals (RFP) in December 1997, that embodies a market-driven approach relying on the maximum use of private industry capabilities, expertise and experience to acquire contractor services to accept and transport commercial spent nuclear fuel to a Federal facility. In September 1998, the draft RFP was revised to address public/industry comments, and a *Notice of Availability* was published in the *Federal Register*. Work on the RFP was subsequently deferred until a repository siting decision process is completed. When that process is completed, activities related to the acquisition of waste acceptance and transportation services will be reinitiated.

PROGRAM MANAGEMENT AND INTEGRATION

In fiscal year 1999, we continued to ensure that the integration requirements between the various components of the waste management system were adequately addressed and alternative system designs and proposals were evaluated with careful attention paid to their effects on system operations and costs. We completed a *Total System Life Cycle Cost Report* and a statutorily required *Fee Adequacy Report*. Those two documents accompanied the Viability Assessment at the time of its issuance.

The Program also concluded and is implementing Memoranda of Agreement's with the Office of Environmental Management and the Naval Nuclear Propulsion Program that specify each Office's technical, programmatic, and financial responsibilities with respect to spent nuclear fuel and high-level radioactive waste.

In an effort to utilize our resources more efficiently, we streamlined our operations. The program reduced headquarters staff in 1998 through a significant reduction-in-force. With reductions-in-force and staff reassignments, the Program reduced Headquarters staffing by 39 percent. Since fiscal year 1992, the Program has significantly shifted the balance of staffing from headquarters to Nevada, with a reduction at headquarters of 50 percent and an increase in Nevada of 40 percent.

In fiscal year 1999, responding to the Congressional direction regarding the use of its support service contractors, the Program reduced, by over 10 percent, funding for "* * * management and administrative support service contractors at the Yucca Mountain Site Characterization Project Office and Headquarters." No reductions were made in other support service contracts that provide support for Nuclear Regulatory Commission-required quality assurance verification and support for preparation and publication of the required Environmental Impact Statement.

The attachment to my statement provides a more detailed treatment regarding the objectives of work and progress made in fiscal year 1998 and fiscal year 1999.

APPLICATION OF THE FISCAL YEAR 2000 BUDGET REQUEST

OVERVIEW

The President's fiscal year 2000 Budget Request for the Office of Civilian Radioactive Waste Management is consistent with the policy direction provided by Congress in the last several Energy and Water Development Appropriations Acts. The Program's Budget Request focuses principally on the activities being conducted by the Yucca Mountain Site Characterization Project. The Budget Request will fund activities necessary to complete the final years of the site characterization program, including:

—Completion of the Final Environmental Impact Statement in 2000; and
—The decision, by the Secretary, whether to recommend the site to the President in 2001 for development of a repository, if the site is found to be suitable.

Should the President and Congress accept the site recommendation, the work to be completed in fiscal year 2000 is critical to the development and submission of a License Application for repository construction to the Nuclear Regulatory Commission in 2002.

YUCCA MOUNTAIN

In fiscal year 2000, the funds that will be allocated to the Yucca Mountain Site Characterization Project will be used to move us beyond the Viability Assessment, specifically to:

—Continue the necessary scientific and engineering work to complete the characterization of the Yucca Mountain site;

—Address the remaining uncertainties about the site's ability to contain and isolate nuclear waste, including completion of some of the design analyses for the engineered barrier that will serve, in part, as the basis for the Site Recommendation Report and License Application (such as structural, shielding, thermal, criticality, cost, and design basis event aspects);
—Further refine our repository and waste package designs to assist in the assessment of a repository safety strategy and total system performance, including updated reports on waste package materials and waste form characteristics;
—Continue to strengthen our understanding of the expected performance of the proposed repository's natural and engineered barriers;
—Evaluate total system performance using updated models to support development of the Site Recommendation Report and License Application;
—Complete the public hearings on the draft Environmental Impact Statement and develop a Comment Response Document that will be included in the final Environmental Impact Statement;
—Prepare, and issue, the *final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-level Radioactive Waste at Yucca Mountain; Nye, County Nevada*. Incorporate public comments, as appropriate, on the draft Environmental Impact Statement; and
—Continue efforts to support the preparation of a high quality, complete, and defensible Site Recommendation Report and, if the site recommendation is approved, a License Application.

The plan for fiscal year 2000 and beyond reflects the transition of the project activities from scientific investigations to data synthesis, model validation, repository and waste package design, and safety analysis. Those activities are essential inputs to: (1) the decision by the Secretary whether to recommend the site to the President, if the site is found to be suitable; and (2) the submission of a License Application to the Nuclear Regulatory Commission, if the site is approved for repository development. Near-term priorities will be on enhanced characterization efforts to develop the remaining information required to support the Site Recommendation Report and the License Application. Specific activities for fiscal year 2000 will focus on:

Core Science.—Core Science includes collection of site characterization and performance confirmation data from the surface and subsurface, and testing in the laboratory; environmental data collection, monitoring, and requirements compliance; site and materials performance testing; scientific test planning and design; formulation of scientific hypotheses; modeling and hypothesis testing; development of scientific information for technical data bases; and completion of models and synthesis reports that serve as the basis for scientific descriptions and analyses used in the documentation supporting remaining major program milestones, including the Site Recommendation Report and License Application.

Our planned activities in the Core Science area are focused on data synthesis and documentation, model updating and validation and continuing performance confirmation efforts to advance our overall knowledge for the Site Recommendation Report and the License Application. Specific activities will focus on testing in the Exploratory Studies Facility, including the Cross-Drift and the drift scale test; confirmatory field-scale tests; modeling; environmental, safety and health compliance; and environmental monitoring and mitigation activities.

Within the Exploratory Studies Facility, we will continue the long-term drift-scale thermal test that began in December 1997. This test will allow us to explore how the rock and fluids in a repository system will behave in the long-term presence of heat generated by radioactive decay of the emplaced waste. Testing in the Cross-Drift will continue to collect data on hydrologic properties of the repository horizon (i.e., fracture-matrix interaction, and fracture flow properties, particularly of the lower lythopysal unit where approximately 65 percent of the emplacement drifts are expected to be located).

We will refine the geologic process models that underlie the total system performance assessment models that will support both the Site Recommendation Report and License Application. Conceptual and numerical models of flow and transport, the near-field environment, and repository thermohydrology used in the Viability Assessment will be updated to reflect scientific data that have been collected since mid-1998. Saturated zone and unsaturated zone models for flow and radionuclide transport will be validated for use in the Site Recommendation Report and License Application. Confirmatory data collection and long-duration testing will continue.

Confirmatory field-scale tests will continue to support refinement of near-field environment models. These models involve coupled thermal, chemical, mechanical, and hydrologic processes and describe how water could enter emplacement drifts, interact with waste packages, and transport radionuclides through the engineered barrier system. These tests support the evaluation of near-field process models that will

directly support the total system performance assessment for the Site Recommendation Report by reducing and quantifying uncertainty in calculations of radionuclide releases from the engineered barrier system. These tests will also confirm predictions of coupled process behavior in the repository near-field associated with repository heating.

We will continue to monitor transient seismicity and meteorological events and moisture movement in the Exploratory Studies Facility and we will conduct hydrographic monitoring in boreholes. Meteorological data for use in radiological dose assessments and biosphere modeling will be collected and airborne transport characteristics monitoring at Yucca Mountain will continue.

The fiscal year 2000 budget includes $10 million for a cooperative agreement between the Department and the University and Community College System of Nevada (UCCSN). The agreement started in fiscal year 1999 and will continue into fiscal year 2002. The principal purpose of the cooperative agreement is to develop and continue providing the public and the Yucca Mountain project with an independently derived body of scientific and engineering data concerning the study of Yucca Mountain as a potential high level waste repository in support of the Site Recommendation Report and License Application. Under this agreement, UCCSN will perform scientific or engineering research, and develop and foster collaborative working relationships between government and academic researchers.

In fiscal year 2000, work will focus primarily on research and evaluation in the areas of seismology and hydrology and improvement of data retrieval systems to support Program goals. Geodetic measurements and studies with respect to the strain rate of the earth's crust in the Yucca Mountain region will be conducted to help determine the probability of the occurrence and magnitude of seismic events. The UCCSN will conduct studies related to fluid inclusions with respect to potential rising of hydrothermal fluids at Yucca Mountain. Under this task, UCCSN will collect and analyze data and share the results with federal and State of Nevada scientists. Continuing work on improving data retrieval systems will explore and enhance record indexing techniques to provide a better method of tracking and retrieving data in the records management system in support of the licensing support system. In addition many smaller tasks will be conducted by UCCSN such as saturated zone data analysis, long term performance confirmation monitoring, microbiologically influenced corrosion research and hydrogen embrittlement testing.

Nye County is drilling a network of boreholes to be used to monitor the movement of groundwater south of the proposed repository, off the Nevada Test Site. The county's researchers are establishing the conditions that exist before repository construction and will use the network as an Early Warning Monitoring System. We are coordinating with Nye County to obtain water measurements and water and rock samples from their drilling program. Cooperative planning has produced a program of scientific activities that complement the Nye County objectives. We will conduct chemistry and isotopic analysis of the water; and paleohydrologic, Eh/redox potential, rare earth and trace element analysis; and geophysical log interpretations.

Environmental monitoring and compliance activities will continue. These activities include monitoring air quality and meteorology, water resources studies, archeological and radiological studies, and monitoring of ecosystem and socioeconomic indicators. We will maintain and acquire requisite permits so that uninterrupted site activities may continue, and we will conduct surveillances, audits and assessments of site activities to ensure regulatory compliance. Many of these activities are regulated by statutes and regulations such as the Endangered Species Act, Comprehensive Environmental response, Compensation, and Liability Act, and the Clean Water Act.

Design and Engineering.—The Design and Engineering includes three major areas—Waste Package Development, Repository Design, and Systems Engineering. Waste Package Development includes two very distinct areas of engineering activity—waste package design and waste forms and waste package materials testing. Repository design also includes two distinct areas—subsurface facilities design and surface facilities design. Systems Engineering integrates all aspects of design and ensures that the Monitored Geologic Repository can be constructed as designed, and will perform safely and efficiently.

The fiscal year 2000 performance measure, associated with the Government Performance and Results Act, involves deciding on the reference design that will be presented in the Site Recommendation Report and License Application. The License Application Design Selection evaluation now underway, will result in technical recommendations for repository/waste package designs and options. The design will, most likely, result in additional features that will require detailed design analyses prior to the design selection in fiscal year 2000.

The reference design for the Site Recommendation Report and License Application will be documented. Design documentation will include safety and accident analyses and will describe the design in sufficient detail to show that a repository can be operated safely during waste emplacement at Yucca Mountain and after all waste packages have been emplaced (i.e., preclosure period).

Important areas of ongoing design emphasis include: waste package materials; waste form testing and analyses; waste handling system and emplacement operations; (i.e., repository concept of operations); a demonstration of design compliance with codes, standards, and regulatory requirements (i.e., design verification); assurance that the technical work being performed within the individual engineering specialties is integrated (i.e., interface control); and detailed engineering for these elements of a repository system that show no similarities to systems licensed previously in commercial nuclear power plants.

Nuclear waste forms that will be placed in a repository include spent nuclear fuel from commercial nuclear power plants, spent nuclear fuel and high-level waste from the Department of Energy, Naval nuclear spent fuel, and immobilized plutonium. A repository will be designed to accommodate the varied size, weight, radioactivity, and heat characteristics of these materials in the repository. Development of repository acceptance criteria (e.g., disposal interface specifications) for noncommercial spent fuel will continue.

Licensing/Suitability/Performance Assessment.—The primary focus in fiscal year 2000 is to compile the technical documentation that will comprise the Site Recommendation Report. A draft Site Recommendation Report will be developed and will be available at the hearings planned for early fiscal year 2001 to notify the public that the Secretary of Energy is considering whether to recommend the site to the President. The final Site Recommendation Report, together with the final Environmental Impact Statement, and other information required by the Nuclear Waste Policy Act of 1982, as amended, including the views of the Nuclear Regulatory Commission, and the State of Nevada, will be considered by the Secretary of Energy in deciding, in early fiscal year 2002, whether to recommend the site to the President.

Development of the License Application for repository construction, which would be submitted to the Nuclear Regulatory Commission by the Secretary of Energy, will continue. Before the License Application would be submitted, we would continue to work with the Nuclear Regulatory Commission to resolve procedural and technical issues. Interactions with the Nuclear Waste Technical Review Board, and other external organizations will continue.

The focus of performance assessment activities will be to update the total system performance assessment models used in the Viability Assessment, and use them to support development of the Site Recommendation Report and License Application. The total system performance assessment models will be refined based on site characterization information, design information, and feedback from external organizations (e.g., Nuclear Waste Technical Review Board, Nuclear Regulatory Commission, Performance Assessment Peer Review Panel) acquired during fiscal year 1998 and 1999.

All technical data used for a repository and waste package design, total system performance assessment, and models for site processes and conditions must be traceable and electronically retrievable in accordance with 10 CFR Part 2, Subpart J. The latest web-based technologies will continue to be utilized to ensure that program data and records are quickly and easily retrievable at the time that the Secretary of Energy may decide to recommend the site to the President.

NEPA.—The primary focus will be on National Environmental Policy Act compliance. Activities include completing the public hearings on the draft Environmental Impact Statement, which will be held nationally, completing the final Environmental Impact Statement, including the Comment Response Document, and issuing it in August 2000.

Operations/Construction.—To support collection of scientific data, we will construct one large test area (alcove) and one smaller test area (niche) in the Cross-Drift tunnel. We will continue to provide support services necessary for continued testing in the Exploratory Studies Facility, the Cross-Drift, and the Busted Butte Test Facility. These services include providing test set-up, training, and test facility modification; maintaining and upgrading the ventilation, electric, and other utility systems; aligning the underground rail system; providing site and underground security; and providing other services designed to protect worker health and safety and protect the environment. We also will support surface based testing by providing any necessary drilling/coring and well work-over. We will continue to maintain underground and surface test facilities, vehicles, and equipment consistent with programmatic and asset management requirements.

External Oversight and Payments Equal to Taxes (PETT).—We will continue to support external oversight activities and payments equal to taxes. External oversight activities consist of financial and technical assistance to the State of Nevada and affected units of local government (i.e., Churchill, Clark, Esmeralda, Eureka, Lander, Lincoln, Mineral, Nye, and White Pine Counties in Nevada and Inyo County in California). Payments-Equal-to-Taxes are made to the State of Nevada and Nye, Clark, and Inyo Counties. Payments-Equal-to-Taxes will increase in fiscal year 2000 due to the increased value of facilities at the Yucca Mountain site.

Yucca Mountain Project Management.—We will continue to enhance our critical project management and project control activities, including planning, budgeting, and scheduling. This will include activities to ensure that staff are qualified to perform their approved activities, and trained to perform them safely, and that performing organizations are provided with the facilities, equipment, information systems, and support services needed to perform their approved activities.

Project management also includes conducting public information and outreach programs to ensure open and informative interactions with the public, technical review organizations, and other program managers. We will maintain records and ensure technical information is broadly disseminated to these groups.

International Conference.—In September 1998, Secretary Richardson announced at the International Atomic Energy Agency's General Conference that, in 1999, DOE would host a conference on global efforts to dispose of nuclear materials in geological repositories. The "DOE International Conference on Geologic Repositories" will be held October 31-November 3, 1999. The purpose is to share results of our experience and progress and welcome the input of others. Tours of the Yucca Mountain site and the Waste Isolation Pilot Plant (WIPP) in New Mexico will be on October 31 and November 3, with the conference taking place on November 1 and 2, 1999.

WASTE ACCEPTANCE, STORAGE, AND TRANSPORTATION

In fiscal year 2000, the budget request for the Waste Acceptance, Storage, and Transportation program area is $6 million. The request will support the following set of functions:

—Interactions with standard contract holders to discuss how best to accommodate the delay in the acceptance of spent fuel from commercial utilities;
—Activities related to generic and non-site specific long-lead time activities that must precede the removal of spent nuclear fuel from reactor sites once a federal facility becomes available;
—Interactions with potentially affected parties to plan for the provision of technical and financial assistance, as required by Section 180(c) of the NWPA, as amended, to States and Indian Tribes for emergency response training for public safety officials through whose jurisdiction shipments of spent nuclear fuel and high-level radioactive waste will be transported; and
—Preparation of acquisition documents and technical specifications to facilitate issuance of an RFP for acquisition of waste acceptance and transportation services from private industry.

PROGRAM MANAGEMENT AND INTEGRATION

The $71 million that we request will support Nuclear Quality Assurance, Regulatory Compliance, Program Control, and Management activities.

—$17 million for Regulatory Compliance related activities that include Nuclear Quality Assurance/Quality Control, the Yucca Mountain Environmental Impact Statement, and independent technical validation and verification;
—$18 million for Program Control that includes planning, program management and control functions, *Total System Life Cycle Cost Report* and *Fee Adequacy Report* preparation, systems engineering and integration; and
—$36 million for Management functions that include federal salaries, information technology applications, audits, records management, and public information.

As noted, the budget request of $71 million supports the fundamental base program, which support crosscutting programmatic activities such as strategic and contingency planning; program monitoring and control; quality assurance; technical oversight, systems integration; regulatory compliance and integration; human resources and administration; information resource management; and federal salaries.

Nuclear Quality Assurance.—Our Nuclear Quality Assurance activities ensure the adequate and appropriate implementation of federally-mandated Nuclear Quality Assurance requirements related to radiological health and safety and waste isolation. In fiscal year 2000, we will conduct audits and surveillances on activities performed by the Yucca Mountain Site Characterization Project and the Waste Acceptance, Storage, and Transportation Program; provide support for the disposition of

the Department's nuclear materials (including naval nuclear spent fuel); and continue to document our compliance with quality assurance requirements. These activities will support the development and eventual licensing of nuclear waste storage and disposal facilities.

Regulatory Compliance.—The Program's Regulatory Compliance activities focus on ensuring that the activities leading to the implementation of the waste management system are consistent with the regulatory guidance and provisions of the Program's governing authorities. In fiscal year 2000, we will continue to interact on a proactive basis with the Nuclear Regulatory Commission and the Nuclear Waste Technical Review Board to address key technical issues. We will continue to transition our focus from the issue of how individual features of the site perform in isolation, toward the goal of achieving a common understanding of the issues important to overall repository performance and the adequacy of proposed methodologies and approaches to resolution of important technical issues.

These activities are critical to the success of the overall program as they directly affect the Commission's licensing process. We intend to continue our dialogue with the Commission on these issues. Following the issuance of the Viability Assessment, we will continue to engage in more frequent interactions to address key technical issues.

Program Control/Systems Engineering.—The overall objective of our systems integration effort is to ensure that the various components of the federal waste management system (such as transportation services and procurement activities, and repository and waste package design activities) are integrated into a single system that is safe, efficient, reliable, and cost-effective. In fiscal year 2000 we will ensure that those integration requirements between the various components of the waste management system will be adequately addressed and, if necessary, alternative system designs and proposals will be evaluated with careful attention paid to their effects on system operations and costs. We have just completed a *Total System Life Cycle Cost Report* and *Fee Adequacy Report* and we will work within the Department to address a wide range of issues associated with the acceptance of Department-owned spent nuclear fuel, high-level radioactive waste, and Naval nuclear spent fuel.

Program Management.—The program is continuing to implement the Civilian Radioactive Waste Management Strategic System Management Policy. The policy clarifies accountability, responsibility, and authority. It codifies management policies and requirements. Further, it provides for a performance-based approach that promotes accountability across federal and contractor organizations. The implementation will focus management attention on the identification and consolidation of overlapping, duplicative, and redundant management system requirements, processes, and practices necessary to manage the program.

We will continue to use our information management technology to improve the productivity of the Program's human resources, drive process improvements, and reduce overall program costs. We are also responding to increased demand from Program stakeholders and the public for easy and timely access to a wide range of information about the Program. As an example, we made available, through our Internet Home Page, the Viability Assessment, its companion documents, and all relevant technical studies/analyses supporting the Viability Assessment. Interest in these documents has been high. We have received comments or requests for additional information related to the Viability Assessment via e-mail from as far away as Australia, Germany, and the Philippines. Internet access will also be provided to program documents supporting the Site Recommendation and License Application. We expect even greater demands for information systems, support, and services as we move to licensing.

CONCLUDING REMARKS

As I noted in my opening remarks, we have made substantial progress in the last year and we are appropriately positioned to continue. The Viability Assessment, as you know, found that there were no "show stoppers" with respect to the site at Yucca Mountain. It laid out the path forward for the Program. It identified the necessary remaining scientific and technical work we have to complete and it laid out the funding profile we require.

We are almost at the end of site characterization. Funding at our request level will give us the resources required to address the last remaining questions about the suitability of Yucca Mountain on the schedule we have laid out. If the site if found suitable, the Secretary will be in a position then to make a decision about recommending the site to the President for development as the Nation's repository for spent nuclear fuel and high-level radioactive waste.

I urge your favorable consideration of our appropriation request.

Thank you. I would be pleased to answer any questions you may have.

FISCAL YEAR 1998-FISCAL YEAR 1999 MAJOR PROGRAM ACCOMPLISHMENTS

YUCCA MOUNTAIN

During the past year, the Program focused its efforts on the transition from conducting scientific investigations to data synthesis, model validation, repository and waste package design, and safety analysis necessary to develop the Site Recommendation Report, and License Application. Specifically, we focused on: (1) completing the Viability Assessment and; (2) completing design and scientific and performance assessment models to support development of the draft Environmental Impact Statement.

During the balance of fiscal year 1999, we will see the completion of several activities and continuation of longer-term efforts. Our major emphasis will continue to be on implementing the Viability Assessment Volume 4, *License Application Plan and Costs* to guide technical work that will address the remaining uncertainties in support of a site suitability determination, Site Recommendation Report and License Application.

Emphasis will be on completing those activities and analyses that contribute to developing the Site Recommendation Report and drafting the License Application. These activities and analyses are grouped into the broad categories of Core Science, Design and Engineering, Suitability/Licensing, Performance Assessment, NEPA, Operations and Construction, and the supporting category of Project Management. Each of these categories plays an important role in assembling a comprehensive picture of the viability of a repository at the Yucca Mountain site.

The Viability Assessment.—The Viability Assessment, completed on schedule in fiscal year 1998, was submitted to the President and Congress on December 18, 1998. Even before it was released, it was used as a management tool to focus future work needed to support the decision on a site recommendation.

Core Science.—The majority of the surface-based testing needed for licensing has been completed. With completion of the Cross-Drift in the Exploratory Studies Facility, the focus of underground work will shift to investigations of the Solitario Canyon fault and to hydrologic and thermal studies of the upper and lower portions of the repository rock unit. Testing in the cross drift will provide additional insight into fracture patterns, potential faults, distinct rock layers, and hydrologic characteristics of the repository, and the Solitario Canyon fault. This testing will further reduce uncertainties about the site and help us better understand processes that are critical to site suitability and repository construction.

Two additional boreholes (SD–6 and WT–24), to the west and north, respectively, of the proposed repository block are providing information on rock properties, deep stratigraphy, and the saturated zone to support three-dimensional geologic and hydrologic modeling efforts.

Three tests using electric heaters to simulate heat generated by radioactive decay of the emplaced waste were designed to yield important information on how heat affects rock chemistry, rock mechanics, and site hydrology—and thus repository performance. The first study, a large-scale underground test, used a single heater to heat a 25-cubic-meter volume of rock to 212 degrees Fahrenheit (100 degrees Celsius). The second study involved heating a large, discrete, aboveground block of rock that permitted us to more closely control and monitor test parameters. The third study approximates an actual waste emplacement drift—an underground alcove about 50 meters long—will be heated over several years 392 degrees Fahrenheit (200 degrees Celsius).

In mid-fiscal year 1998, a controlled experiment was initiated to determine the infiltration rate and travel time through the Tiva Canyon welded tuff. The test involved a surface infiltration network and a collection system located in Exploratory Studies Facility Alcove 1 directly below the surface infiltration plot. Monitoring of this experiment is planned to determine the relationship between infiltration and drift seepage.

The drift seepage testing program was expanded during fiscal year 1998 and 1999. Pre- and post-excavation air permeability tests were completed at two niches in the Exploratory Studies Facility. Concurrently, 40 liquid-release tests were performed in 16 test intervals to determine the drift seepage threshold flux, which is defined as the liquid-release rate at or below the level where water will no longer seep into the drift. These experiments directly feed the unsaturated zone, drift seepage, and near field models, and are a critical input to performance assessment simulations.

Matrix and fault flow tests are underway in the Paintbrush Tuff exposed in Exploratory Studies Facility Alcove 4 to determine how the presence of a structural break, such as a fault, affects the movement of water in this medium. Similarly, pneumatic and liquid-release testing of the densely welded repository unit has been conducted in support of the Alcove 6 fracture-matrix interaction experiment. Results from these two experiments will be incorporated into the unsaturated zone process model and used in the performance assessment.

Hydraulic and transport testing using conservative and reactive tracers has been completed in the Prow Pass hydrogeologic unit at the C-Hole complex. Test results from this low-flow zone near the water table are important because any radionuclides released from a breached waste package would first encounter this hydrogeologic unit.

Sample collection and analysis of the oxidation-reduction potential of saturated zone were performed for boreholes WT–17 and WT–3 south and east of Yucca Mountain. Measurement of this parameter is important to performance assessment because reducing conditions in the saturated zone can render radionuclides immobile due to strong sorption potential.

During the remainder of fiscal year 1999, we will continue documenting our present understanding of the geologic conditions and processes at Yucca Mountain, and completing models of geologic and hydrologic processes in the saturated and unsaturated zones, sufficient to support the Site Recommendation Report and working draft License Application. We will continue with the four-year heat-up phase of the drift-scale heater test. We will continue to collect meteorological, and other environmental data to support the Environmental Impact Statement, Site Recommendation Report, and the License Application.

Nye County is drilling a network of boreholes to be used to monitor the movement of groundwater south of the proposed repository, off the Nevada Test Site. They are establishing the conditions that exist before repository construction and will use the network as an Early Warning Monitoring System. We are coordinating with Nye County to obtain water measurements and water and rock samples from their drilling program. Cooperative planning has produced a program of scientific activities that complement the Nye County objectives. We will conduct chemistry and isotopic analysis of the water; and paleohydrologic, Eh and redox potential, rare earth and trace element analysis; and geophysical log interpretations.

We implemented a cooperative agreement with the University and Community College System of Nevada to perform scientific and engineering research, and develop and foster collaborative working relationships between the government and academic researchers.

Design and Engineering.—We continued to develop and refine repository design requirements. To this end, several analyses to substantiate or resolve assumptions related to requirements and criteria were completed or revised.

A study of design features and design alternatives that will be a basis for selecting the License Application reference design will be completed. Features are design enhancements that can be easily incorporated within multiple alternative designs. Alternatives involve significant changes to the fundamental design concepts on which the Viability Assessment was based. Each has the potential for improving repository performance, simplifying the safety strategy, or both.

The waste package nondestructive examination and weld development program proceeded with demonstrations of remote welding and successful nondestructive examinations. A full-diameter mockup of the waste package made from alloy C–22 and carbon steel (VA Design) was achieved by shrink-fitting the carbonated barrier around the alloy C–22. Ultrasonic inspection revealed 100 percent contact between the two surfaces.

Corrosion testing of candidate waste package materials continued. Additional specimens were acquired and installed for exposure in the large chambers maintained under controlled temperatures and humidity levels. The Project initiated an experimental study for measuring the composition of the ionic salts as they concentrate on heated metal surfaces. Testing started on alloy C–22 and titanium specimens under controlled slow-strain rates. Revision 1, Version 1.3, of the Waste Form Characteristics Report was completed. This report describes preliminary degradation process models for use in the site recommendation and license application performance assessments. The update for the Engineered Materials Characterization Report was also completed. This report documents all of the test results and performance models generated in the past two years.

For the remainder of fiscal year 1999, design and engineering activities will include the coordination and planning of waste package and repository surface and subsurface designs; the design and acquisition of services and equipment for the Cross-Drift in the Exploratory Studies Facility; preparation and maintenance of de-

sign requirements and design control documents; performance testing; and development of modeling programs for waste forms and waste packages.

Suitability/Licensing.—Our investigations of the Yucca Mountain Site have resulted in a substantial understanding of the site, a preliminary reference repository design, and assessments of the performance of a repository system. However, additional work is needed to complete the postclosure safety case, support the preclosure safety case and support remaining design decisions. The primary focus in fiscal year 1999 and fiscal year 2000 is to compile the technical documentation that will support the Site Recommendation Report.

We significantly refined our analysis for a repository safety strategy. The strategy relies on engineered barriers, geologic features, and natural processes to retard movement and prevent releases of radionuclides to the natural environment and to reduce exposure to the public.

We completed management plans for both the Site Recommendation Report and License Application. Our focus for the remainder of fiscal year 1999 will be to complete development of the working draft License Application and start a comprehensive review of the draft. We will also develop a draft of the Site Recommendation Report that will be available for public review at the consideration hearings. Those hearings are planned for early fiscal year 2001.

Interactions with the Nuclear Regulatory Commission staff will continue to focus on two objectives. The first is to reach a common understanding regarding the issues that are significant to overall repository performance. The second objective is to reach agreement on the adequacy of proposed methodologies and approaches to address important technical issues, such as criticality control and seismic design. The goal is to reach a mutual understanding of a repository concept as it develops. This understanding will provide bases for Nuclear Regulatory Commission preliminary comments on the sufficiency of site characterization and design information for inclusion in a License Application.

Performance Assessment.—During fiscal year 1998, we completed development of the Total System Performance Assessment for the Viability Assessment's (TSPA–VA) supporting technical volume "Total System Performance Assessment-Viability Assessment Analysis Technical Basis Document." Site characterization data, design information, process level modeling results, and opinions elicited from various experts provided the basis for abstracted component models used in TSPA–VA. The second and third interim reports from the Performance Assessment Peer Review Panel were issued in fiscal year 1999. Recommendations from this panel and those from external organizations (e.g., the Nuclear Waste Technical Review Board and the Nuclear Regulatory Commission) were factored into the development of the TSPA–VA model.

The TSPA–VA model is being used in fiscal year 1999 as one of the tools to evaluate various design alternatives and options currently under consideration. The TSPA–VA model is also being used during the remainder of fiscal year 1999 to support development of the draft Environmental Impact Statement. Concurrent with this, activities are underway to begin refining the abstracted total system performance assessment component models that will be used to support the final Environmental Impact Statement, Site Recommendation Report, and License Application. We have begun to hold a series of workshops where open issues are identified, discussed, and prioritized. Specific work activities will be defined based on the outcome of these workshops to ensure that the issues are addressed in future performance assessment analyses.

Following completion of these workshops, refinement of the total system performance assessment abstracted models will commence. The Performance Assessment Peer Review Panel issued its final report in February of 1999. Their recommendations and those of the Nuclear Regulatory Commission, Nuclear Waste Technical Review Board, and other external groups will be used in the development of refined total system performance assessment models. The methodology and assumptions that will be used in future total system performance assessment iterations will be documented in a report to be issued in July 1999.

NEPA.—In fiscal year 1998, in compliance with the National Environmental Policy Act, we began to prepare the draft Environmental Impact Statement. A management council, which includes representatives of the Office of Environmental Management, the Office of Environment, Safety and Health, and the Office of General Counsel, is helping us provide guidance for developing the draft Environmental Impact Statement ensuring coordination within the Department of Energy. A preliminary draft Environmental Impact Statement is undergoing Departmental review.

In fiscal year 1999, we will complete and issue the draft Environmental Impact Statement and hold hearings across the nation to receive public comments.

Operations and Construction.—In fiscal year 1998, the Busted Butte test facility construction was completed. This facility will enable scientists to conduct field-scale observations of the Calico Hills formation. This is the same rock stratum that is located below the repository.

Also, in early fiscal year 1999, we completed the excavation of the Cross-Drift in the Exploratory Studies Facility. This drift will give us access to more of the area near the location where waste might be emplaced.

In fiscal year 1999, we will continue to support the operation and maintenance of the Exploratory Studies Facility, including test set up and training, alcove modification, maintenance and upgrades to ventilation, electric, and other utility systems, security, and the protection of health, safety, and the environment. We recently completed transition to the Integrated Safety Management System. The Exploratory Studies Facility continues to be monitored for occupational health compliance with ventilation and air quality requirements for dust abatement and silica exposure mitigation.

WASTE ACCEPTANCE, STORAGE, AND TRANSPORTATION

In the Waste Acceptance area, we performed fee verification for commercial spent nuclear fuel; interacted with other Departmental offices, the Nuclear Regulatory Commission, utilities, and others concerning nuclear materials safeguards.

A non-site specific centralized interim storage facility Topical Safety Analysis Report was completed and submitted to the Nuclear Regulatory Commission in fiscal year 1998. That report is currently under staff review. We have continued interactions with the Commission staff during the review process. A cold demonstration program of a prototype spent fuel dry transfer system was initiated in June 1998. This demonstration program is sponsored jointly by the Office of Civilian Radioactive Waste Management and the Office of Environmental Management with industry participation. This system can be used by nuclear utilities with reactors that have limited crane capacities and are incapable of handling large storage casks. And, we continue to maintain and update our data base on industry development of storage and transportation technologies. We continued interaction with the Nuclear Regulatory Commission regarding review of the dry transfer system topical safety analysis report that had been submitted previously for Commission consideration.

The Program issued a revised draft RFP to obtain additional comments on the planned acquisition of waste acceptance and transportation services, including canisters, transport casks, and storage modules. The RFP, to address the public/industry comments, was updated and a notice of availability was published in the *Federal Register* in September 1998.

In recognition of our obligations under Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended, which provides for financial and technical assistance to States and Indian Tribes through whose jurisdictions the Department plans to ship spent nuclear fuel, the Program issued, in April 1998, a Notice of Revised Proposed Policy and Procedures in the *Federal Register*. The Notice reflected our consideration of input from the States, local public safety officials and other interested parties on the proposed implementation procedures. In fiscal year 1998, we also continued to provide funds through cooperative agreements to national and regional groups to address transportation related issues.

PROGRAM MANAGEMENT AND INTEGRATION

Over the past year the Program Management and Integration area continued to support the activities of the two Business Centers—the Yucca Mountain Site Characterization Office and the Office of Waste Acceptance, Storage, and Transportation.

Nuclear Quality Assurance.—The Office of Quality Assurance completed the transition and consolidation of the Program's quality assurance activities in fiscal year 1998. This resulted in more effective execution of quality assurance activities and provided cost reductions in implementation. The Office of Quality Assurance supported the development of the Viability Assessment in fiscal year 1998, and is providing assistance to Site Recommendation Report activities in fiscal year 1999. The Office of Quality Assurance is continuing to support the Civilian Radioactive Waste Management System Management and Operating contractor staff in fiscal year 1999 in the Process Validation and Re-engineering efforts, which will result in procedural enhancements and consolidation. The Office of Quality Assurance continues to provide quality assurance guidance for the Yucca Mountain Site Characterization Project and the Office of Waste Acceptance, Storage and Transportation.

Program Control/Systems Engineering.—We provided program- and project-level systems engineering and integration support for the ongoing Yucca Mountain site

characterization, waste package, and repository design activities and the waste acceptance, storage, and transportation efforts. We implemented the *Interface Management Process* to allow the Yucca Mountain Site Characterization Office and the Office of Waste Acceptance, Storage and Transportation and their design and procurement contractors to effectively control system-level design interfaces. We worked extensively with Departmental elements responsible for the government's spent fuel and high-level radioactive waste to develop waste acceptance criteria that are compatible with the radioactive waste management system design requirements. We defined roles and responsibilities concerning the acceptance of Department-owned spent nuclear fuel and high-level radioactive waste and we completed Memoranda of Agreements with Office of Environmental Management and the Naval Nuclear Propulsion Program. We incorporated immobilized plutonium waste forms into the technical baseline.

We coordinated and integrated the Program's activities with other Departmental elements regarding the Department's spent nuclear fuel and high-level radioactive waste. We continued to develop and implement an integrated schedule for the Monitored Geologic Repository system, the Office of Environmental Management, and the Office of Fissile Materials Disposition.

We continued to conduct systems engineering studies and analyses and completed a number of studies, including the effects of early receipt of spent nuclear fuel on the program; impacts of early reactor shutdown, options for the disposal of site-generated wastes; dual purpose canister disposability benefit analyses; and the impacts of all legal-weight truck transportation. We completed work on analyses for the *Total System Life Cycle Cost Report* as well as the *Fee Adequacy Report*. Those reports were issued as companion documents to the Viability Assessment. We completed Revision 1 of the Civilian Radioactive Waste Management Total System Description of the waste management system as currently envisioned. We have also been actively working on developing a cooperative agreement with the Russian Federation to work together on geologic repository issues.

Regulatory Compliance.—We continued to interact regularly with the Nuclear Regulatory Commission staff and Commissioners to address management and technical issues (e.g., quality assurance, total system performance assessment, repository and waste package design) and participated in numerous Nuclear Waste Technical Review Board and panel meetings. We renegotiated the prelicensing agreement that provides guidelines for communications between the staffs and management organizations of the Department and the Nuclear Regulatory Commission. We supported interagency discussions on the development of the Environmental Protection Agency radiation protection standard for Yucca Mountain. In addition, we coordinated and integrated program-related National Environmental Policy Act, environmental, safety, and health activities to ensure compliance with Federal and State requirements and Departmental directives.

Program Management.—We issued Revision 2 of the OCRWM Program Plan in July 1998. Revision 2 essentially continues the thrust of the draft 1996 revised plan, and identifies strategic objectives for fiscal year 1998—fiscal year 2003, states the assumptions that the plan rests on, defines measures of success, and provides for contingency planning. It is intended to serve not only as the foundation of program management, but as a common framework that all parties can use to evaluate our progress and shape their own participation in the Program.

We continued the development and implementation of a program wide information architecture to provide the foundation for the definition, development, organization, and management of, and access to, all program data, records, and information systems. Regarding our external communications, we continued to use our World Wide Web presence to distribute a variety of program information to interested stakeholders. Our address is http://www.rw.doe.gov/

Many of the Program's policy and technical documents, including the Viability Assessment and all of its relevant companion and supporting documents, are available to the public through our electronic databases.

During fiscal year 1998, we continued our Y2K compliance efforts by initiating the assessment and testing of all software applications. We validated for Y2K compliance and implemented all mission-critical systems ahead of the Department's stretch goal of January 31,1999. Assessment of non-mission critical systems is in progress, and we expect to validate and implement all non-mission critical systems later in fiscal year 1999.

YUCCA MOUNTAIN WATER MIGRATION

Senator DOMENICI. Senator Reid, do you have any questions?

Senator REID. Yes, Mr. Chairman.

Mr. Barrett, I have some questions, but because of the press of the time of the committee and my time, if you would just respond yes or no, that would be appreciated.

I understand that water poses a risk to long-term containment of spent nuclear fuel and other high-level radioactive waste. Do you agree?

Mr. BARRETT. Yes.

Senator REID. I also understand that early on in the Yucca Mountain project it was thought that it would take more than 1,000 years for surface water to penetrate to repository depths, is that right?

Mr. BARRETT. Some theories say that.

Senator REID. If no, then how long would those that disagree say it would take?

Mr. BARRETT. It is a physical distribution of how the water moves, so it is a complex issue. Some of the water can move very fast, but the majority of the water moves very slowly.

Senator REID. Okay. Do you agree that scientific evidence now exists that proves that surface water penetrated to repository depths in about 40 years?

Mr. BARRETT. We have indication that some water has.

Senator REID. Please, yes or no.

Mr. BARRETT. Yes.

Senator REID. Mr. Barrett, I understand that the water moves so rapidly to the repository depths, because of what is called high-speed pathways, is that correct?

Mr. BARRETT. I have never heard the words high-speed pathways.

ROCK FRACTURES

Senator REID. Okay. Would you say they are just cracks in the rocks then?

Mr. BARRETT. There are natural fractures in all rock, including Yucca Mountain, and there are analyses that say water has been present in some of those fractures in the last 50 years.

Senator REID. The question is: Why is the rock cracked, and what are possible things that could generate cracks in massive rock formations?

Here is the question: Earthquakes are thought to generate massive deep fissures in the ground, and I suppose then that it is possible that earthquakes could generate cracks in the rock around Yucca Mountain. Would you agree to this supposition?

Mr. BARRETT. Most of the cracks——

Senator REID. Can you answer that yes or no?

Mr. BARRETT. I cannot, sir.

Senator REID. Okay. You cannot. Then you would disagree with my supposition that earthquakes generate cracks in rocks around Yucca Mountain.

Mr. BARRETT. No, I do not disagree with that.

Senator REID. Okay. You are aware that there is evidence that the earth around Yucca Mountain is stretching and that the program there is funding further study of this area, is that true?

Mr. BARRETT. That is true.

Senator REID. Could stretching like this also generate cracks in the rock around Yucca Mountain?

Mr. BARRETT. Yes.

Senator REID. Is it true that earthquakes are normally proceeded by stretching and distortion of the earth?

Mr. BARRETT. Yes.

EARTHQUAKE THREATS

Senator REID. Because the Yucca Mountain region experiences the third highest frequency of earthquakes in the United States, I suppose that it is not surprising to see that significant stretching and distortion of the earth is there, would you agree, yes or no?

Mr. BARRETT. I cannot. There is some. It is a relative thing. Yes, there is stretching at Yucca Mountain——

Senator REID. Okay. That is the question.

Mr. BARRETT [continuing]. But we do not believe that stretching is causing any of the fractures that have to do with the water infiltration.

Senator REID. That is your opinion.

Mr. BARRETT. Yes, sir.

Senator REID. Okay. So we have agreed on a number of things here this morning. What I cannot understand, and what I believe you should not tolerate, is the dismissal of the threat of earthquakes to the performance of the repository. Water is the worst threat to containment.

It is reaching repository depths many times faster than expected, because of cracks in the rock. There may be some dispute as to how the cracks got there, but everyone acknowledges that water is getting there quicker and quicker.

Earthquakes and their associated distortion can proliferate these cracks, leading to greater amounts of water reaching the repository faster. So I would say that the cracks, however they get there, would pose a threat to the repository performance, is this true or false?

Mr. BARRETT. The way that question was put together, I would say that is false.

Senator REID. Okay. Can you extend this argument to the rate at which uncontained radioactivity reaches the groundwater?

Mr. BARRETT. Could you say that again?

Senator REID. Yes. If there is an argument that the water can reach where the containment is, would you agree that radioactivity would follow the path of water?

Mr. BARRETT. Radioactivity will go with the water. There are different layers from the surface to the Yucca Mountain repository horizon and from that the horizon down to the saturated zone below it. There are different scenarios.

Senator REID. Thank you, Mr. Chairman.

Senator DOMENICI. It seems to me, since I have 20 minutes before I have to leave, that I can still yield to you for a couple of questions.

Senator Campbell.

STORAGE OF WASTE AT ROCKY FLATS

Senator CAMPBELL. Thank you, Mr. Chairman. In my opening statement I did mention this rumor I had heard that DOE was talking about putting temporary tent storage at Rocky Flats, and I appreciated Mr. Owendoff's commitment that we are going to finish that up and get it cleaned up by 2006. We have kind of pushed that date back a few times, as you know.

But I also mentioned that our communities are just going to rebel at that thought of temporary storage, and I wanted to tell you that my reaction will also be somewhat near nuclear. I would like your comment on that, if that is true or not, that they intend to store any hazardous or radioactive material in tents.

Mr. OWENDOFF. Senator Campbell, I think your concern and your angst are also shared by Secretary Richardson, which he has testified on——

Senator CAMPBELL. He will be testifying before another committee this afternoon, Interior Appropriations, and I will——

Mr. OWENDOFF. So you will hear firsthand——

Senator CAMPBELL. You bet.

PLUTONIUM OXIDE STABILIZATION

Mr. OWENDOFF [continuing]. Senator. We are in a box. We believe that it is necessary to continue the stabilization of the plutonium oxides that are at Rocky Flats. An option for us is to not stabilize those oxides that ultimately will go down to WIPP.

So the approach that we are taking is, we want to continue the progress on stabilizing those oxides and putting them in containers. These are very robust containers that are used to transport waste to WIPP. Then what we are looking at are options that, if for some reason WIPP does not open in a timely fashion this year, that we will have places to put those containers.

Now, one option that we are looking at is putting those containers in an existing facility. If we put them in an existing facility, then that would delay when we would be able to decontaminate and demolish that existing facility.

Another option would be some temporary storage—I know they are referred to as tents, but they are not like the tents my boy is in over in Saudi Arabia right now. They are fabric structures, with a concrete or paved floor in them.

We believe that can be an appropriate option, at a very, very low-dollar cost. We realize, though, that the message that that can send is that we are temporarily storing the waste, but it is not concrete structures or long-term storage. In the balance, though, Senator, we believe that is an appropriate approach.

ADDITIONAL WORKLOAD AT ROCKY FLATS

Senator CAMPBELL. Well then, I just have to tell you, Mr. Chairman, as a member of this committee or the full committee, I intend to try and put language in our appropriations bill that prevents that from being stored in anything that I would describe as a tent or temporary storage.

Let me also ask you this, if we are committed to trying to get that cleaned up by 2006, why are we adding more work to it? It

is my understanding that the Department has asked Savannah River, as an example, to develop plutonium canisters, and now Rocky Flats has been told that they will have to do that.

If we are going to close it up by 2006, why are we adding to the workload, which would tend to push the closure back further?

Mr. OWENDOFF. I think if we look at the whole picture with Rocky Flats, we are asking many of the other sites to accept material from Rocky Flats, so we have asked Savannah River to accelerate when they would receive these plutonium oxides. There are certainly some increased costs that Savannah River has experienced as a result.

Senator CAMPBELL. I know very simply this, that you are going to add to the workload. Can we get a commitment that it is not going to add to the time frame by which it will be closed?

Mr. OWENDOFF. That is our commitment, Senator, and what my disappointment is, whatever information that your staff may have gotten from the contractor was, that they did not relate to you the reductions in cost that we have been achieving. So all you have been seeing is more and more, but we have been receiving significant reductions in costs, which we are going to continue some $70 million——

Senator CAMPBELL. Well, it is not only the money, I am concerned about time frame, too.

Mr. OWENDOFF. I am going out this evening, Senator Campbell, to Rocky Flats to talk about this.

TRANSURANIC WASTE

Senator CAMPBELL. All right. One last question, do you agree with New Mexico, there is one type of waste called transuranic waste, and it is my understanding that we have asked for—the President's budget is a pretty healthy commitment, but there is only one place where that waste is developed, and that happens to be at Rocky Flats, and there are different kinds, some radioactive, some not hazardous, and so on, that will eventually go to WIPP, but does that mean that there will be any additional parts of that monies that will be going to Rocky Flats, since that is the only place where this stuff called TRU is developed?

Mr. OWENDOFF. Senator, Rocky is not the only place that has——

Senator CAMPBELL. Oh, it is not.

Mr. OWENDOFF [continuing]. TRU waste. Los Alamos, Savannah River, Hanford, Oak Ridge have TRU waste.

LAWSUIT AT WIPP

Senator CAMPBELL. Well, that takes care of that question. The last thing is that in the State of New Mexico we have this ongoing lawsuit. What is your agency doing to try and help the state resolve the outstanding problem so it can be opened?

Mr. OWENDOFF. Well, the key date is next Tuesday, when Judge Penn here in the District Court is going to rule on the injunction, and I believe at that time we will have a clearer picture, Senator.

Senator CAMPBELL. Okay. Thank you, Mr. Chairman, I appreciate you allowing me to ask those questions.

Senator DOMENICI. Thank you. Senators Murray and Craig, could I just impose on you? I have not asked any questions yet, and I

must go up to the sixth floor and finish the budget markup in 15 minutes.

I would like to ask a few questions, and then if one of you want to stay beyond that for your questions, you are free to do that.

Senator Craig, of course, you are on the committee. It would be good if you could maintain the committee functioning for a while. Senator Murray has to leave when I leave, right?

Senator MURRAY. Yes.

Senator DOMENICI. So why don't you take a minute or two right now. You said you needed two.

HANFORD SITE BUDGET

Senator MURRAY. Just a couple of quick questions, Mr. Chairman. Thank you.

Obviously, the Hanford budget is critical for those of us in Washington State, and I was pleased to see the President's budget with an additional $100 million. I hope this committee can support it. Mr. Owendoff, can you just quickly tell us what that additional funding will be for?

Mr. OWENDOFF. Yes, ma'am. The portion of that additional money going to Hanford will be used to support tank waste operations, the Plutonium Finishing Plant operations, and work at K Basins.

TANK WASTE REMEDIATION SYSTEM PRIVATIZATION

Senator MURRAY. Now, let me ask you about the TWRS, or the tank waste remediation system privatization request. This is something I have worked hard on, and Congress has been reluctant in the past to fully fund that. Can you tell us what will happen if Congress does not fund that?

Mr. OWENDOFF. There are two things, Senator Murray. One is the $106 million for the 2000 budget request, and the other is the funds that we are requesting for the advanced appropriation.

The reason that we are requesting advanced appropriation is we believe that that will add to the confidence of the commercial lenders, as we go through the next 24 months of developing the design and the financing package for TWRS. This will give confidence to the lenders that we are serious about this project and in support of this project.

As you well know, in the past our record has been somewhat spotty as far as large projects having support, continued support, so we use this as a method to get that continued support and drive down those costs.

HANFORD SITE MANAGER

Senator MURRAY. Thank you. Finally, we have to get an experienced innovative site manager at Hanford. Can you tell me when the Department is going to appoint somebody?

Mr. OWENDOFF. The Secretary indicated that it was his goal to try to get a manager by the end of this month for Hanford. I know that is difficult and challenging, but that is——

Senator MURRAY. We are waiting for it. Thank you.

Mr. OWENDOFF. Thank you, Senator.

Senator DOMENICI. Thank you very much. Well, I have a very, very long series of questions. I obviously will not get them done, but I will submit them to both of you.

Senator REID. Mr. Chairman, because of the time I did not ask questions of James Owendoff. I would ask permission to be able to submit those in writing to him.

Senator DOMENICI. Without objection.

ESTIMATED COST OF CLEANUP

Senator DOMENICI. Maybe 2 weeks to respond, is that fair enough for you-all? Okay. What is the current estimate, Mr. Owendoff, to clean up the waste generated by nuclear weapons activities in the past years, and how long will it take to complete the cleanup.

Mr. OWENDOFF. Our estimate, based on analysis that came in last June, Senator, is $147 billion, and that is our projection through year 2070. We will have an update to that this summer, where we will update those numbers. The good news of that effort that we see, is we go down by each site, project by project at each site, and understand the scope and the costs.

Senator DOMENICI. How does this estimate, even though you are going to update it, how does it compare to previous estimates, and what is the reason for the difference, if there is one?

Mr. OWENDOFF. We have had in the past, where the estimates have been $200 billion, $300 billion.

The difference is that I think we have looked at some realistic cleanup goals, what needs to be cleaned up, what material needs to be disposed of, and what are those technologies that do that. So there is a whole series of things that we can certainly share for the record on those.

[The information follows:]

COMPARISON OF COST OF DOE CLEANUP WITH PREVIOUS ESTIMATES

In 1995 and 1996, as requested by Congress, the Department developed its first estimates of life-cycle cost and schedule for the remaining EM cleanup effort. These Baseline Environmental Management Reports (BEMRs) described the estimated scope of the EM program. The 1996 report stated that, as a mid-range estimate, the program would cost approximately $230 billion (constant 1996 dollars) spent over a 70-year period, using certain assumptions about funding levels, productivity, and land use in developing the estimate.

The *Accelerating Cleanup: Paths to Closure* report issued in June 1998 reported a life-cycle cost estimate of $147 billion. The $147 billion life-cycle estimate was adjusted to form the basis of EM's portion in the Department's fiscal year 1998 Annual Financial Report for fiscal year 1998 estimate, which was determined to be about $145 billion.

The primary reasons for the difference between BEMR and *Paths to Closure* can be attributed to the fact that BEMR: (1) included costs for both "legacy" waste associated with historical nuclear weapons production and nuclear related activities, and newly generated wastes; (2) included costs for the eventual transfer of DOE facilities not currently in the Environmental Management program; and (3) in some cases, used different end-state assumptions than *Paths to Closure.*

Paths to Closure addresses a somewhat different scope. For example, *Paths to Closure* includes costs for legacy waste cleanup but not newly generated wastes, and excludes costs for any facilities not currently in the Environmental Management program. Additionally, *Paths to Closure* reflects improved estimates for a number of projects and improvements in efficiency in accomplishing the same or comparable activities, thereby lowering total life-cycle costs of the program. In addition, $145 billion representing EM's portion of the fiscal year 1998 environmental liability

statement reflects future estimated costs starting in fiscal year 1999, while the 1996 BEMR estimates costs beginning in fiscal year 1996.

LEVEL OF CLEANUP

Senator DOMENICI. All right. What level of cleanup is assumed in the 2006 plan? Is the Department assuming a mid-level cleanup or maximum cleanup in this plan?

Mr. OWENDOFF. Mr. Chairman, we look at each site individually. The key is what is the land use. In the case of the Mound facility in Ohio, we are looking at industrial standards. For the Fernald site in Ohio, it is open space. For Rocky Flats, it is also open space. So there is a difference between the industrial, open space, versus residential standards.

Senator DOMENICI. Is there any contention by anyone in litigation or at the local level that says that approach is not valid?

Mr. OWENDOFF. I think we will always see some concern and some discussion back and forth on what the appropriate future land use should be. Certainly, there are local governments and communities that are concerned, just as there are on Superfund sites, that if you do not clean them up to background levels, that that might encumber the use in the future. But we believe there is a reasonable tradeoff that needs to be discussed.

Senator DOMENICI. Well, I, for one, want to make my observations part of the record at this point. I am convinced that we are going to have to do some work on better defining the risks of radioactive levels, and that we will not be able to meet our cleanup goals if we leave the standards as they are.

They are all based on some linear extraction. There is no real research, although we just started now with some real research on that aspect of the danger of low-level radioactivity. I want you to know we will try to support you with reference to its different—the standard could be different, if you have industrial sites or if you have open space, as compared with residential, otherwise, we are never going to get some of these sites cleaned up. We will just sit there and spend money forever.

FUSRAP SITES

There is a little known program, it has kind of a funny set of letters, F–U–S–R–A–P, FUSRAP. Now, Congress gave the program to the Corps of Engineers with an assignment to take on a few of these cleanup sites and see if they could make better progress than we have been doing. Do you have a report or something to tell us about how they are doing?

Mr. OWENDOFF. The Corps of Engineers, Mr. Chairman, to my understanding, has submitted a report. It has not been our task, nor has the Congress asked us to oversee the——

Senator DOMENICI. No. I am certainly not asking you to do that. You have enough to oversee.

Mr. OWENDOFF. In answer to your question, Mr. Chairman, I do not.

Senator DOMENICI. Okay. I would like the committee to know that while this is a small program, it very well might point to some approaches where the Corps of Engineers might be able to come along, and rather than take as long as the Department of Energy

takes, for some reason, whatever they are, they seem to be making some headway and they are happy with their assignment. So, we will get a report from the Corps.

Mr. OWENDOFF. Mr. Chairman, if I could just comment just on that. As we have seen, certainly on Rocky Flats and the others, there is a necessary integration across the complex for materials, and to make things happen. FUSRAP was very straightforward—get material from one place and dispose of it.

Senator DOMENICI. Well, nonetheless, it appears that you were not able to get it done as quickly as they have.

Mr. OWENDOFF. I think we can demonstrate that we are doing that.

TWRS PRIVATIZATION PROJECT

Senator DOMENICI. Good. I hope so. I understand that the requirement for budget authority for the TWRS privatization project increases from $106 million this year, to $600 million in 2001, and $660 million in 2002. Am I correct, and if so, what will the impact be on the project, if the committee is unable to provide the additional budget authority? What options do you have?

Mr. OWENDOFF. I believe, Mr. Chairman, that we will have a limited number of options, because trying to stretch this project out is really going to be very difficult. We have had to make commitments in the past down at Savannah River in building a high-level waste vitrification plant, and I believe we need to do the same thing in Hanford.

Let me state, though, Mr. Chairman, quickly, we are looking at a range of alternatives of financing and approaches, so we will be coming back to the committee over the next 2 years and sharing with you that range. So we are not going to give you just one price.

FUNDING REQUIREMENTS FOR FISCAL YEAR 2001

Senator DOMENICI. For all the programs, how much is your 2001 over baseline assumptions?

Mr. OWENDOFF. We do have a significant problem. Those estimates will be coming in to us in May, Mr. Chairman, but I know we have some challenges in 2001.

Senator DOMENICI. So, your funding requirement is going to be up substantially, right, is that what you are saying?

Mr. OWENDOFF. That is what I am hearing from the field, but I do not have dollars. I would normally anticipate that that is what the field——

Senator DOMENICI. I would very much appreciate it if in your response to questions you would try to give us a better handle on what that might be.

Mr. OWENDOFF. I understand.

EPA GROUNDWATER STANDARD

Senator DOMENICI. Let me just ask two questions about Yucca Mountain, please. As we understand, there is not just one standard you are trying to meet, there is an EPA standard for Yucca Mountain, and it includes a separate groundwater standard, is that not correct, Mr. Barrett?

Mr. BARRETT. EPA is still developing their standard, and they have not yet submitted one for agency review, but they are considering including a groundwater standard, as well as an all pathway standard.

Senator DOMENICI. Well, whether it is final or not, you are certainly part of the mix that is looking at what standard they are thinking of setting, are you not?

Mr. BARRETT. We would have to demonstrate through science and technology that we could meet whatever the legally promulgated standard would be, and that would be the EPA standard which goes to the Nuclear Regulatory Commission, who would then oversee us. So yes, we would have to meet whatever it is.

Senator DOMENICI. Well, are you participants in trying to help decide what the right standard is? Does DOE just sit on the sideline and watch that occur?

Mr. BARRETT. No, sir. DOE provides technical information on what we know about Yucca Mountain. The EPA will do the judgment, as to what should be the appropriate environmental safety standard for the country under the statute, but we provide scientific information on what science can and cannot do.

Senator DOMENICI. Mr. Barrett, it seems to me when you were testifying, although you were not using a lot of words, because the questioner wanted you to be brief, you do not have to be quite so brief to me when I ask you a question. How could you give the estimates that you were giving of the possible success of Yucca when you must admit that whether we could meet the standards at all will depend upon what standard the EPA determines to be the appropriate standard with reference to groundwater. They could set a standard, could they not, that would make it impossible for Yucca to proceed?

Mr. BARRETT. That is correct, sir.

Senator DOMENICI. From what you hear, they are moving in the direction that may very well have that standard, is that correct?

Mr. BARRETT. I expect that there will be a range of requirements for an EPA standard. Some of those may not be achievable, some of those may be achievable.

GROUNDWATER CONTAMINATION

Senator DOMENICI. Now, whether I like the standard or not, it just does not make any difference. They are charged with doing it, and that then yields to a very serious question, what do your models tell you about when and how much radioactive material, whatever the contaminant level is, will reach the groundwater under Yucca Mountain, and are these levels of concern to you?

Mr. BARRETT. In our viability assessment report, which was the reference at the time last year, we had estimates to when that would be. We did not expect to see any contamination off-site at Yucca Mountain for several thousand years.

Nominally, at 10,000 years we expected to see, based on our probabilistic projections, around .1 millirem per year to a person who drank the water, had a garden, had cows; essentially was exposed to all pathways. We believe that that is not an unreasonable exposure to the person, and that is what we had there.

Now, we do not know what the standard is. The standard will be duly promulgated, and we will compare the performance of Yucca Mountain against that standard, and that will be the criteria of——

Senator DOMENICI. Could you tell us just quickly, how much does that .1 millirem—how do you compare that with what an average person gets daily in the United States?

Mr. BARRETT. It is a small fraction of the annual background. It is a small percentage, very small.

Senator DOMENICI. I am going to leave now, but I would like to do this, since Senator Allard has been here so long, I would like to—Senator Gorton, did you have some comment you would like to make?

Senator GORTON. Could I ask one very brief question——

Senator DOMENICI. Yes.

HANFORD SITE BUDGET

Senator GORTON. Mr. Owendoff, the Administration, it seems to me, has come up with a much better and realistic Hanford budget this year. Our note, however, is that even at over a billion dollars it is a relatively modest $23 million short of the legal requirements of the Tri-Party Agreement. Is that the case, in your view, and if so, how do you propose to keep to the legal requirements of that agreement?

Mr. OWENDOFF. Senator Gorton, certainly, if one looks at what the estimated funding needs are for all the various projects, there is some dollar amount on some projects, but I think, as you pointed out, when one looks at a billion dollars, there are some abilities to defer some things. But these we need to discuss with the regulators and the stakeholders, because everybody is engaged with the budget.

So, I think there are some things that are not legally required that we could defer to accomplish, legally required activities. There's also the ability for us to get some prices, some lower prices than what we anticipated, so I think as one works through the year, that's where these——

Senator GORTON. But you are committed to meeting all of the legal requirements of that agreement.

Mr. OWENDOFF. Yes, Senator.

Senator GORTON. Okay. That is all I have. Thank you very much, Mr. Chairman.

WASTE ISOLATION PILOT PLANT

Senator DOMENICI. I would like to make one last comment. I note the presence of Senator Craig. He has a genuine interest in the status of WIPP, because of transuranic waste that is in his state.

I would just say, we have a governor, he is elected by the people, he was elected by a very huge majority last time, and he is insisting that the environmental department of the State of New Mexico issue a permit before any materials are moved to our state.

In addition, New Mexico cannot proceed any faster when there is a temporary injunction placed against them by a court, so everyone has their version of what they will not do. However, I think the reality is that New Mexico and WIPP may not be able to be

open, because of one or other of these issues that I have just raised, I hope not, and I think that everybody will have to sit down and talk sensibly about that in the event that that is the case.

I do believe that we are not far away from an opening date, but we have said that before; although, this judge is going to decide this coming Tuesday. Senator Craig.

Senator CRAIG. Mr. Chairman, I hope we are not far away from the opening date. There is another date that is important, the legal commitment date created by a court between DOE and the State of Idaho to begin to move transuranic waste out of Idaho. That date is April 30 of this year, so I will be pursuing that question in a few moments. There are time lines out there, and the governor of the State of Idaho will act, no question about it, if that agreement is violated.

He will have to act, for all the political reasons that Senator Reid, and I, and others become so exorcized about nuclear materials. The new governor of Idaho will have to respond, so I will pursue that question. There are time lines out there. The governor of New Mexico has an obligation to his people, but so does the governor of Idaho.

Senator DOMENICI. I understand. I do not know that anybody is going to violate a Federal district court order, that is all I am saying. The judge will decide on Tuesday, and I am very hopeful that he decides that we have done everything that we were supposed to do. I have every reason, having been briefed, that that will happen.

Senator CRAIG. Good.

ROCKY FLATS SITE

Senator DOMENICI. My final comment is, Rocky Flats is doing so well. I think it would be interesting for you, if you can, to do an absolute analysis of what it is doing better than the other sites.

There are certain characteristics about what is going on there that seem to me are not going on in some of the other sites, both as to local communities efforts and agreements with the states, and also with reference to management and the company doing the work. I mean everything seems to be just perfect. The match seems very, very good. It is not so elsewhere.

Mr. OWENDOFF. If I could, just as a second, I think if you look at Weldon Springs, in Missouri, Fernald, in Ohio, Mound, in Ohio, I think you will see that those are preceding Rocky Flats, and we are making progress, they are closing.

If you look at Weldon Springs, all the buildings are down. The pads are gone. The disposal cells should be finished up in 2 years. Mound will be 2 years behind it. We are using those experiences to help us with the integration work at Rocky, so I believe we are not just waiting for Rocky to happen all at once.

I think we are demonstrating that we are making progress at these sites, as well as making progress at the larger sites, like I mentioned at Hanford, taking the projects that were costing us $20 million down to $1 million by taking out the nuclear materials, getting the cost of the monitoring that is required down. So I believe, Mr. Chairman, that we are making demonstrable progress.

Senator DOMENICI. Thank you. Maybe we can spend a little less money if you are being so successful.

Senator Craig.

Senator CRAIG [presiding]. Thank you very much, Mr. Chairman.

I will proceed with the hearing, and in doing so, I will turn to my colleague from Colorado, who has waited here patiently. Do you wish to make any comments or ask questions before I make my comments and follow-up with questions?

ROCKY FLATS FUNDING

Senator ALLARD. I again want to thank the chairman of this committee for his support in my efforts to get Rocky Flats cleaned up as soon as possible. The target date right now is 2006. I also want to recognize the efforts of your Secretary and my secretary for working to make sure that we have extra dollars in there, in this year's budget. I do recognize that. I personally thank him for that.

I realize there are a lot of challenges, and I am heartened to hear that there is some optimism about the way the project is moving along. But there are a few things that I think I must raise just as a concern, because this is a number one priority, as far as I am concerned, for Colorado.

I think it has gone on entirely too long, and I know that you do have interests in other states that have similar concerns, but my bottom line is that we could sure hold this out as an example of how sites could be cleaned up, and I think really by doing that could help your program and your assurances to other Americans who have similar problems that these things can happen.

I do have a couple of follow-up questions that my colleague, Senator Ben Campbell, asked you, and I want to recognize his efforts and help also in a public way in helping to get Rocky Flats cleared up.

ADDITIONAL WORK REQUIREMENTS

But recently you suggested that the Rocky Flat site team might be crying wolf about the effects of added scope requirements on its budget, and you further inferred that Rocky Flats failed to acknowledge benefits and/or additional funding somehow obtained from other sites, and my colleague, Senator Campbell, was coming up to that question and did not quite ask it directly like I have. I wonder if you might explain where these additional funds came from, and if you could be specific, I would appreciate it.

Mr. OWENDOFF. Let me just take a step back, Senator Allard, if I may. If we look at where we were 3 years ago, we were in a situation at Rocky where we did not know where much of the spent nuclear materials would go—where the plutonium materials that were there would go. There was some general ideas, but we did not have a pathway.

Senator ALLARD. Yes.

Mr. OWENDOFF. It was at that time that we said, within the Environmental Management budget, let us take on a man-on-the-moon goal, what can we do in 10 years for the whole complex, not just Rocky. I'll get to Rocky specifically, but we said, what can we do across the complex.

We were very sensitive that both the Congress as well as the American people are not going to be satisifed with $6 billion a year for the next 70 years. That just will not happen.

Now, by taking that goal on we could not demonstrate what are all the activities that we are going to have to put in place to meet the 2006 goal, just like we did in the man-on-the-moon program, but we said, if we do not challenge ourselves there, then for sure we will never get there. Some of the things since then that have taken place are, we have moved highly enriched uranium to Oak Ridge, we have moved plutonium pits, the useable material, to Pantex, and there will be some materials that will be utilized at Los Alamos.

Also, we have accelerated removal of one material which will go to Savannah River to be processed, some of the higher-grade oxides. In fact, we have even modified an existing facility. Instead of waiting for a brand new facility, we looked and we modified a current facility for the storage of those materials that allowed us to have that acceleration.

Now, when we looked at Rocky Flats, we said the biggest thing that is costing us in the way of, let us say steady-state expenses, is the amount that it takes to keep it running as well as the safeguards and——

Senator ALLARD. Securities.

Mr. OWENDOFF [continuing]. Securities. Exactly right. So the quicker we can get those down, then the greater savings that—I mean more money can go into cleanup, the less money has to go into the safeguards and securities.

By the way, I have a very cooperative working relationship with Jesse Roberson and with Bob Carr, so we are not in an adversarial relationship. In fact, as I mentioned to Senator Campbell, I am going out this evening and will spend all day tomorrow at Rocky Flats, and one of the things that we are looking at is the contractor, Kaiser Hill, who has submitted a baseline for closing Rocky in 2010.

We know that there are opportunities then to then pull that closure date to 2006, and what we want to do is to strategize to ensure that there are not other opportunities for us to have higher confidence to bring those costs down—and bring that project in.

Senator ALLARD. So your bottom line is, by facilitating the disposal of some of the more radioactive material there earlier on, that is where the cost savings comes down——

Mr. OWENDOFF. Yes.

Senator ALLARD [continuing]. And then consequently, you are asking for additional responsibilities for Rocky Flats to assume. I think my colleague mentioned the containers. So you are saying, well, we have that, we expect to absorb those other costs, is that what you are saying?

Mr. OWENDOFF. Well, let me state this. The one reason that Kaiser Hill requested that they be allowed to have the contract to purchase the containers is, they were going to be purchased by Savannah River, the receiving site——

Senator ALLARD. I see.

Mr. OWENDOFF [continuing]. But Kaiser Hill said, we believe that is an integral part in the mechanics of our business. When would Rocky Flats receive them, would the containers be on spec, and things like that. So what they have asked is that they be able to take over the procurement responsibility.

Now, I certainly realize that from a funding standpoint, I am the one that has to make some balances across the complex and to understand where we are. I believe that we held flat funding, our request had been $625 million, as you mentioned. It was "plussed up" within the Congress.

Even though we had some small increases, we held to that amount, and we had some tough choices across the complex. So we believe that by requesting at the higher level in the 2000 budget request, doing that, that we had provided some increases from where our plan was last year.

Senator ALLARD. There is some disagreement, I think, between Kaiser Hill, maybe, on this, and maybe we can get to the bottom of that. We will work on that. We will work with you and we will work with them and see just exactly what is happening there.

ALTERNATIVES FOR STORAGE AT ROCKY FLATS

The scope changes have started eating into some of these efficiency savings for some money that would be spent on accelerated closure into funding. Scope changes, for example, the accelerated demolition of buildings 771 and 779 is being put in danger, because money for the demolition of these sites is instead of being used for the purchase of the—that is what we talked about, was the 997—and the building of the tents now. Are you aware of how much money would be saved yearly if we could get these buildings down?

Mr. OWENDOFF. I do not have in my head, Senator Allard——

Senator ALLARD. Does $60 million sound okay to you or close to range?

Mr. OWENDOFF. Well, that is a lot of things. If we look at the construction of facilities, we are talking in the $3 million to $4 million for potentially additional temporary storage, but I think what is key there is, how much would we build, what would it look like.

My preference is that we would continue on with the demolition of a facility and not try to use it as temporary storage, because I believe that the other alternatives are a very cheap way to go. The fabric structures are very cheap, Senator.

COSTS ASSOCIATED WITH DELAY IN OPENING WIPP

Senator ALLARD. Could you tell me the hidden costs of WIPP not opening on time, as they would apply to Rocky Flats?

Mr. OWENDOFF. We are working on what those costs are. I do not believe that they are significant through this year. As long as we can get WIPP open within this year, they are not significant costs, but once we go beyond this fall, that is when we have to start making the commitments on some additional temporary storage, because we believe that it is prudent to continue stabilizing the oxides, and we need to have some place to store those containers.

SHIPPING NON-MIXED WASTE TO WIPP

Senator ALLARD. Well, I think my colleague shares the concern, the Idaho delegation and Colorado delegation have the same concern about the WIPP. We spent over $2.1 billion, and then we are not putting anything in there. It seems crazy, to me, to ask the tax-

payers to do that, and I think that it is important that we get that open as soon as possible, and try to work on this.

We have reviewed some of the law, and whatnot, and I would appreciate a yes or no answer on this. Does DOE have the authority to ship straight, non-mixed, that's the transuranic waste, to WIPP, without the State of New Mexico approval?

Mr. OWENDOFF. Let me submit that, because I want to make sure we have the current injunction. You did not refer to the injunction——

Senator ALLARD. No, I did refer to the——

Mr. OWENDOFF [continuing]. You referred to the State of New Mexico.

Senator ALLARD [continuing]. Because I am going to cite you a specific reference in law, that reads like this, and it is my reading of RCRA, and as long as you are not mixing stuff with it you do not have to go for a RCRA permit. It is 42 USCA, 6903(27), that states, "Solid waste does not include special nuclear or by-product material, as defined in the Atomic Energy Act of 1954." If, in fact, the material at Rocky Flats falls within the definition of this, then it would not require a state RCRA permit, would it not?

Mr. OWENDOFF. It should not, if there are not hazardous materials.

Senator ALLARD. Right. If it is just straight material, it goes out. If it is not mixed, it can go right to the State of New Mexico, and there should not be any ability for the State to prevent it from going there, should there?

Mr. OWENDOFF. I am not trying to defend the State, but let me tell you that from what the State has said is, we need to ensure that that, indeed, is non-mixed, that there are no hazardous contaminants in it. So even though we would say it is non-mixed, New Mexico has indicated we need to have some assurances on why it is non-mixed.

Senator REID. Would the gentleman yield?

Mr. OWENDOFF. Yes, I would be glad to.

Senator REID. If the reasoning of New Mexico is right, Nevada ears' should be perked up real loud, because if New Mexico can keep it out on that basis, by having the environmental agency of the state say it cannot come in, Nevada should be able to do the same thing.

Senator ALLARD. A reasonable argument.

Mr. OWENDOFF. Yes.

Senator ALLARD. It just seems to me that we are letting some unnecessary delays occur here, and I just wanted to press that point in a public way, because I think it is an important point.

Mr. OWENDOFF. Senator Allard, if I may, I think this is, as we were talking about, in general, how do we accelerate things, and the ideas—several years ago we would look at and felt we were going to have a RCRA permit for WIPP, and that there would be no need to have to try to send just non-mixed, or straight radioactive material, without any hazardous constituents.

However, one of the things that we looked at to be able to accelerate activities is, let us go through and only ship non-mixed waste, rather than waiting until we did have the RCRA permit, so

that we could continue with shipment of the material. So we looked at—that was not on our initial baseline.

Senator ALLARD. My understanding is that we have non-mixed waste, and we would like to get it out, get it moving.

Mr. OWENDOFF. That is correct. That is correct.

Senator ALLARD. I want to thank the committee and the chairman for his indulgence. I have some other questions, but I would like to submit those to you, and if they would fall under the deadline of the committee for response, I would appreciate it.

I wanted to make my major points here, and Mr. Chairman, you graciously allowed me to do that, and I thank you very much. We continue to look forward to working with you, and we are going to continue to push for the closing of 2006. Thank you.

Mr. OWENDOFF. Thank you, Senator Allard.

Senator CRAIG. Senator, thank you very much. We share some common interests, and I am pleased you could be here this morning to ask those questions. Gentlemen, thank you very much.

SHIPMENT OF TRANSURANIC WASTE OUT OF IDAHO

Assistant Secretary Owendoff, you heard me lead up to the ultimate question that I will ask. Today is March 18. The Department of Energy has a deadline of April 30 to begin moving transuranic waste out of the State of Idaho.

When Secretary Richardson appeared before the Senate Energy Committee last month he testified that the State of New Mexico had repeatedly pushed back the date of issuing the hazardous waste permit for WIPP, and as a result he has withdrawn $10 million from the WIPP budget to provide funding for alternatives to WIPP, which will still meet DOE's deadline of April 30 to the State of Idaho.

What alternatives are in the works? Will your plan "B," if you have one, still meet the April deadline?

Mr. OWENDOFF. Senator Craig, we are looking at alternatives. I think as you can appreciate, because that can involve other entities, that those can be very sensitive, certainly.

Senator CRAIG. We are all very sensitive about this issue.

Mr. OWENDOFF. I appreciate that. But I want to say that we are going to certainly abide by what was in the settlement agreement, that indicated if material is not—if TRU waste shipments do not start by April 30, then that holds up foreign research reactor fuel from coming into the State. Now, we do not take that lightly.

Our commitment is continued, and I can assure you that a lot of my time is spent on this issue of looking at a number of alternatives which would allow us to begin that shipment. So this is not a casual date to us——

Senator CRAIG. No. That is what I wanted——

Mr. OWENDOFF [continuing]. As the end of March date is for the TMI fuel to move out of wet storage. So I have those dates right in front of me, Senator Craig.

Senator CRAIG. Well, Senator Allard had mentioned the type of waste—non-mixed waste—that we think under the law can move and should move to WIPP now. I think we have some 50-odd barrels of the nearly half-million—let me repeat that—nearly half-million drums of mixed transuranic waste in Idaho.

So we are kind of the waste king when it comes to the transuranic materials, but we believe those 50 drums could move, should move, and it is important that our country demonstrate they will move them, that there is a will to move waste, and to handle it appropriately.

I think it also demonstrates to the states involved that they cannot play the politics of waste when there is no science to back it up. That is very important.

PIT-9 AT INEL

On Pit-9, when Secretary Richardson appeared before the Energy and Natural Resource Committee to testify on the DOE budget, I had a series of questions for him regarding DOE's intent to proceed on Pit-9.

Secretary Richardson replied that due to pending litigation, Pit-9 was the topic he needed to discuss with me privately. We are working to get that meeting together. I have been in touch with his office. I hope we can put that together right quickly.

Would you convey to the Secretary my eagerness to discuss this issue? I think it is important that it get handled appropriately and in a timely fashion. It potentially has impact on new contracts, new contractors, as it relates to how the site gets managed, and it is just one of those things that is incumbent upon all of us that—attorneys love to sue, and they love to play legal games, but sometimes we are well ahead if we all sit down at a table and resolve issues and do so in a straightaway fashion.

Have you received any new direction from the Secretary regarding the use of alternative dispute resolution for Pit-9?

Mr. OWENDOFF. I have not, Senator.

THREE MILE ISLAND FUEL STORAGE

Senator CRAIG. Okay. Another milestone in the DOE settlement agreement with the State of Idaho, calls for moving Three-Mile Island fuel stored in Idaho from wet storage to dry, as we have discussed, by June 1, 2001. Fuel movement must be started by March 31 of this year.

Mr. OWENDOFF. That is correct.

Senator CRAIG. Is that project on track?

Mr. OWENDOFF. It is, Senator Craig. In fact, Warren Bergholtz, the acting manager, this morning is with the NRC. We should be receiving that license from the NRC. We have some other activities that we need to accomplish before the March 31 date, but we are proceeding with those, and we do anticipate that we will be able to start fuel movement. We do not see that there is a showstopper problem. It is just working through, as you can appreciate——

Senator CRAIG. Sure.

Mr. OWENDOFF [continuing]. With the events that took place last summer. We will probably err on the very cautious side, but anyway, we expect to meet that date.

SPENT NUCLEAR FUEL PROGRAMS

Senator CRAIG. That is good news. DOE's national spent fuel program and its integrated spent fuel program are managed by the

INEEL. The work is actually carried out at a number of DOE labs, including Argonne and Sandia. The programs were funded at $35.5 million in fiscal year 1999. In the year 2000, DOE has requested $22 million. I find that very disappointing.

These spent fuel programs are responsible for making sure the information is available to include DOE spent nuclear fuel in the Yucca Mountain repository environmental impact statement and license application, which we all know is a critical last step in DOE's cleanup program.

It is my understanding that DOE is managing about 250 different spent fuel types, and that the DOE license application for Yucca Mountain must include information on the specific fuel types to be disposed of in the repository.

Will the proposed funding level allow DOE to obtain the information needed to include all DOE spent fuels in the license application?

Mr. OWENDOFF. Senator Craig, we believe that the budget is sufficient to do that. The folks within Environmental Management are working with Lake Barrett's people, we believe that we have that appropriate information that is there.

I must state there are some small amounts of what is often referred to as cats and dogs, very unique fuels that we know we are going to have to do some additional work on.

There had been some shifting of activities in looking into the out years, based on some near-term things, some other things we needed to get done at Idaho, and also in looking at the schedule for the repository and the needed information. But we believe that the budget is appropriate, Senator Craig.

Senator CRAIG. Well, the proposal to reduce spending for these programs by nearly 40 percent I think does call into question the department's commitment to ship fuel out of Idaho. I mean that is how I am looking at it through my glasses at the moment.

Can you explain how such a drastic funding reduction is consistent with meeting the commitments DOE has made to the people of my state?

Mr. OWENDOFF. Senator Craig, let me get an in-depth breakdown of those costs and that rationale, but in general, let me say that because of our commitment that I think is demonstrated, of moving the Three Mile Island fuel into dry storage, of the privatization project that we currently have on the street to move Peach Bottom fuel into dry storage, I think that we are demonstrating that we are taking those preliminary steps, demonstrable steps of stabilizing and reducing the costs for overseeing the spent fuel, and also putting it into a form that we have a confidence will be able to move into the long-term repository, without repackaging it.

[The information follows:]

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

In its National Spent Nuclear Fuel (SNF) and Integrated SNF programs, DOE is focusing the requested funding on activities needed to support development of the geologic repository license application, while deferring activities that do not have to be completed until later in the process of preparing to send DOE's spent fuel to a repository. This approach allows us to accomplish those tasks that must be completed in the near term to stay on course to fulfill our commitments to the State of Idaho. The activities that are being deferred or reduced are in PBS ID–SNF–101 and PBS ID–SNF–102, as described below:

—In fiscal year 1999, funding for repository design support was used for total system performance assessment and criticality analysis. In fiscal year 2000, further analysis of these topics is being delayed since the information provided by this activity is not needed until 2002.

—In fiscal year 1999, DOE initiated an extensive release rate testing program for DOE spent fuels to demonstrate that DOE spent fuels will not be a major contributor to the repository release rate. Follow-up work on this task is being deferred by one year (to fiscal year 2001), since accomplishing the work on this slightly delayed schedule will still allow the results to be available in time to meet the schedule for potential submittal of the geologic repository license application in 2002.

—In fiscal year 1999, DOE provided significant support to Argonne National Laboratory in development of the electrometallurgical treatment system for sodium-bonded spent nuclear fuel. This effort will be essentially completed prior to fiscal year 2000.

In fiscal year 1999, funding was required for development and procurement of hardware for the Multi-Detector Analysis System (MDAS—to conduct non-destructive assay and examinations to obtain characterization data for spent fuel). In fiscal year 2000, a reduced level of funding will be sufficient since the only remaining tasks are to demonstrate the MDAS technology.

—In fiscal year 1999, funding was required to allow completion of a NEPA analysis for a container system to be used in transporting spent fuel from Idaho to an off-site repository. This initiative was required to meet a settlement agreement milestone. The NEPA analysis has been completed.

—In fiscal year 2000, the level of funding for program support will also be reduced, consistent with the reduced level of effort overall.

Finally, DOE has also identified emerging issues which must be addressed in fiscal year 2000 concerning development of information on DOE spent fuel to support geologic repository performance assessment for the license application. To ensure that DOE/EM supports preparation of the repository license application, DOE is working internally to fund these activities within the EM program.

DEFENSE SPENT FUEL AND WASTE

Senator CRAIG. Thank you very much. Mr. Barrett, your program is in various stages of preparing both a repository environmental impact statement and the repository license application.

In accordance with President Reagan's 1985 decision to dispose of defense waste in the civilian repository, will the EIS and license application now in preparation for Yucca Mountain make provisions for defense-spent fuel and waste?

Mr. BARRETT. Yes, sir.

Senator CRAIG. Well, obviously, that is the answer I wanted to hear. I do not want us to get down the road aways and say, oops, we did not include that. Obviously, that is the mission now, and I am glad to hear that that is the case.

OUTYEAR FUNDING REQUIREMENTS FOR CLEANUP

A major issue the Department faces in Idaho and other cleanup sites is insufficient funding in the out-year budget plans to meet cleanup obligations. How do you expect to meet cleanup commitments to the states without significant growth in the out-year budgets?

Mr. OWENDOFF. Senator Craig, certainly as I mentioned to the Chairman earlier, we know that in the out-years we do have some significant challenges. One of the ways that we are looking at of accommodating that is being able to get finished with sites like Weldon Springs, Mound, Fernald, and——

Senator CRAIG. So what are we looking for, a renegotiation in cleanup schedules? Would that not be a part of it?

Mr. OWENDOFF. I do not know that it is, per se—I am not going to say to you that we now have to renegotiate everything. I think one of the things that we need to continue to do is to look at the relative risk of the activities at each installation and facility, and to ensure that we have the funds going to the highest risk and look at what are the benefits for some of the other activities.

In a balanced budget situation, as you well know, I think it is going to be very challenging for us in the out-years to have significant increases in the budget amounts, but I think at this time last year there were a lot of people crying wolf on what will happen on the 2000 budget. I think the Secretary demonstrated that he was able to have a hundred-million dollar, roughly a hundred-million dollar increase in the Administration's budget that came through the Congress. So some said at this time last year that it will never happen.

In fact, the budget request would be reduced, but I think the secretary demonstrated that he can get those monies when they are necessary.

UTILITY COMPENSATION FOR ON-SITE STORAGE

Senator CRAIG. Okay. When the Secretary was before us on February 25, I submitted a series of questions regarding his proposal to compensate utilities for the on-site storage of their spent nuclear fuel in lieu of DOE's 1998 waste acceptance obligation. I had not yet received a reply to my questions. Do you have any indication of time when I might expect that response?

Mr. BARRETT. I know those are actively being worked on within the administration, and I expect they will be sent to you soon, sir.

ON-SITE STORAGE COSTS

Senator CRAIG. All right. Mr. Barrett, the reason I ask that, and I will ask you a similar kind of question, because my guess is the Secretary drew upon the analysis done by you and your staff regarding the cost, feasibility, and any technical or legal pitfalls on such an approach.

What kind of an analysis have you and your contractor staff performed on this subject or these subjects?

Mr. BARRETT. At the Secretary's request we scoped various scenarios that could be done. There were tremendous uncertainties, because it depends upon what the utilities would wish to do to try and implement such a proposal.

For example, there is a very broad range between a utility that, for example, has space in their existing spent fuel pool, but may have an allocation, what their situation is. We would believe that the costs are very minimal for that additional burden resulting from the Department's inability to pick up that fuel.

In the middle would be utilities that have an active power production program at their site, but have dry storage. We believe it would be best that perhaps we would assume the financial aspects of that, but they would do all the active management. That is a different situation. Then there are those reactor sites where the utility no longer generates electricity, and they are in the process of decommissioning that site, where the corporate entity would like to

be able to go away. We have to consider the management of the fuel at these sites.

Senator CRAIG. I appreciate all those scenarios, Mr. Barrett. Did you attempt to estimate the cost of the variations or the various proposals versus, let us say, the cost of an interim storage facility?

Mr. BARRETT. We have done cost estimates for the various situations that we are faced with. We are costing out HR–45, and we have information that will be coming for that. We intend to do the same for S. 608.

When the Secretary said the estimated costs would range from $2 billion to $3 billion in that hearing, that was based upon a mix, as we saw the situation. Basically, we drew on generic industry numbers. We believe that to design, license, and construct the basic storage facility at a reactor plant would cost in the neighborhood of $10 million per site.

Senator CRAIG. Now, go back and repeat the $10 million per site. How did you come to that figure?

Mr. BARRETT. That is based on our understanding of what the costs are in the industry for their sites that have done this.

Senator CRAIG. Is that an annualized operation, annualized cost?

Mr. BARRETT. No, that is a one-time cost.

Senator CRAIG. A one-time cost.

Mr. BARRETT. A one-time cost to go through licensing, design, and construction of a simple basic concrete pad. Once you go through that process, we assume that nominally costs to build storage containers are a million dollars a ton, or a hundred dollars a kilogram.

That is a nominal industry cost today that utilities use. We use that number as well. Those costs are for a Nuclear Regulatory Commission-certified system.

So then we looked at the operational costs of a site of around $5 million per year. That would be for a site where there would be a lot of stand-alone costs. It might be considerably less than that.

So this is a broad range that we used. For example, we believe that there is virtually no cost of storing the fuel in the pool, if there is room in the pool. There is a very broad range of costs and there are many other circumstances that are site by site, utility by utility.

REGULATORY CONCERNS FOR ON-SITE STORAGE

Senator CRAIG. Does the proposal pose any regulatory concern? Did you look at all of the legal and the regulatory hurdles, including states and state utility commissions, and potential lawsuits? Did you factor in the cost of lawsuits and all of that? Did you run a guesstimate?

Mr. BARRETT. No, sir, we did not include costs of litigation on this. We did not, at this stage, go into any legal analysis concerning individual state laws.

This was an idea, as the secretary said to you, to explore if there was interest, and we need to have dialogue before we can really come to any more specificity on——

NUCLEAR REGULATORY COMMISSION—ON-SITE STORAGE

Senator CRAIG. Did you have any dialogue then with the Nuclear Regulatory Commission on the proposal?

Mr. BARRETT. Not in any depth, but yes, there has been some dialogue between myself and Commission staff, not with any of the Commissioners, but with senior Commission staff.

We looked at the activities in Environmental Management, for example, the Three Mile Island fuel, the fuel in Colorado, where DOE is becoming the licensee under the Nuclear Regulatory Commission. So we looked at those experiences as well.

S-608

Senator CRAIG. Okay. You already in your comments, Director Barrett, mentioned S–608, so obviously you are well aware of what Senator Murkowski and I, and Senators Grams and Crapo have done, and that is going to be a point of debate, and probably long hours on the floor between Senator Reid and myself in the near future.

I trust by your comments you are generally familiar with the provisions of the legislation.

Mr. BARRETT. I am aware of the number. I understand we have a hearing on that next week, but I have not read it, sir.

Senator CRAIG. Well, basically, in brief terms, what it says is an interim storage facility will be constructed in Nevada by 2003, and that is the date that I want to discuss with you. Your current plans, by this chart, call for a site recommendation to the President in 2001, and a repository license application by 2002.

Why is interim storage in Nevada so problematic to DOE, since our interim storage facility starts after both of these dates in the year 2003?

Mr. BARRETT. As the Secretary stated, the Administration opposes designation of interim storage in Nevada, until the scientific work on the suitability of the repository is completed.

Senator CRAIG. Is that a scientific argument or a political argument?

Mr. BARRETT. That was the Secretary's position.

LONG-RANGE PLAN AT INEEL

Senator CRAIG. Okay. And he is sticking to it. All right. DOE has made a commitment to Idaho to fund the long-range business plan in order to help assure the long-term viability of the INEEL. The commitment reached with DOE was $25 million a year for 5 years, yet this has somehow settled in at $22.5 million, and has been difficult to achieve on an annual basis.

Would you be willing to recommit to the previous level, and would you be open to potential increases in the future to address these specific needs?

Mr. OWENDOFF. Senator Craig, as you mentioned, the specific straight funding is $22.5 million; however, there is also the lab discretionary research and development fund that pulls monies in general from all programs so those come in between $8 million to $10 million, as well as there is a piece from a university consor-

tium that brings some monies in. So Senator Craig, I believe we are well above the $25 million——

Senator CRAIG. In other words, it is all in how you add it.

Mr. OWENDOFF. That is correct.

COMPLEX-WIDE INTEGRATION EFFORT

Senator CRAIG. All right. Well, we will sit down with you and see how you add it versus how we add it, and see if we can understand the differences.

I understand that the environmental management system integration work done at the INEEL may be used as a model for DOE complex-wide integration of the cleanup program. This integration will be necessary to accomplish cleanup, I think, in a cost-effective way.

Mr. Owendoff, how do you plan to utilize the INEEL systems and engineering expertise for complex-wide integration to the cleanup program?

Mr. OWENDOFF. Senator Craig, I think you can see that today, we are using the integration work in the roadmap efforts that the INEEL prepared. It is being utilized by all the sites in looking at where they are today, what their plans for treatment and/or disposal.

We are also taking those activities and looking at where do we have some shortcomings in research and development needs, so we are identifying where we have a critical path, and assessing how we can accomplish some more focused research and development on those key junctures.

But we are utilizing those integration efforts today, and it is not only on the main waste streams of high-level waste, low-level waste, and transuranic waste, but there is probably over a hundred of individual material dispositions, I mean unique type of materials, radioactive materials, that again we are using those road maps today across the other programs within DOE Headquarters and trying to get to decisions on what should the disposition be of those waste streams. So I can assure you that that is an integral part of our strategy.

JACK ASS FLATS RADIATION EXPOSURE

Senator CRAIG. One last question, and then I will turn to Senator Reid, if he has any more. Director Barrett, if I were a DOE employee or military personnel traveling across Jack Ass Flats, what kind of radiation might I be exposed to?

Mr. BARRETT. Basically, natural background in the Jack Ass Flats area. There is minimal radiation from any DOE activities in the Jack Ass Flats area, which is adjacent to Area 25.

Senator CRAIG. What are current employees out there exposed to?

Mr. BARRETT. The natural background radiation, which should be, I do not know in the Jack Ass Flats specifically, nominally 200 millirem, plus or minus.

GROUNDWATER POTENTIAL PROBLEMS

Senator CRAIG. How does that compare with the millirem analysis that you gave in relation to groundwater potential exposure in the out-years of a Yucca Mountain facility?

Mr. BARRETT. Many orders of magnitude higher.

Senator CRAIG. How about three-thousand?

Mr. BARRETT. No argument.

Senator CRAIG. It is awfully important that we keep these measurements in perspective as to what is normal and what is real, and what humans are now currently receiving versus our attempted ability to measure out 10,000 years, or a thousand years. I think your figure there was, was it not, .1 millirem.

Mr. BARRETT. Ten-thousand years, .1 millirem. Yes, sir.

Senator CRAIG. That was at 10,000 years. I think it is important that the record show those kinds of comparisons, so that there is a little bit of understanding by those of us who are novices in this area as to what these figures mean, or do not mean, for that matter. I thank you for that.

It is obvious that we are talking about a minute measurement compared to background today, and are levels that those at DOE and the Defense Department find acceptable, and are based on current medical science, as to what a workforce can be exposed to. So I thank you very much for that.

I turn to my colleague, Senator Reid.

COSTS TO SET UP ON-SITE DISPOSAL

Senator REID. The figures that we had originally were $5 million to set up an on-site disposal, but you said $10 million, so it is within that range, is that right?

Mr. BARRETT. I am sorry. Operating costs versus the capital costs to build the pad?

Senator REID. It is my understanding that you said that to construct an on-site storage facility would cost $10 million.

Mr. BARRETT. Yes, sir. A one-time up-front cost.

Senator REID. Some of the arguments we have heard before is $5 million, but in the neighborhood of $5 million to $10 million is what it would cost.

Mr. BARRETT. And some could be $5 million and some could be $25 million.

TOTAL SPENT AT THE YUCCA MOUNTAIN SITE

Senator REID. Yes. Right. Also, how much have we spent to this point in Yucca Mountain?

Mr. BARRETT. Approximately $3 billion.

Senator REID. That is construction. That does not count the overhead costs.

Mr. BARRETT. Very little of that are actual construction costs. Since we started in 1983, most of that has been scientific costs. Much of that work had been done in national laboratories. That is how much we had spent on the Yucca Mountain program. Some of that includes state monies, county monies, the whole Yucca Mountain budget allocation.

Senator CRAIG. We have appropriated more than that in this program since 1982.

Mr. BARRETT. That is correct. For example, the repositories that we looked at, potential repository sites in Texas and also the monitored retrievable storage facility that we proposed in Tennessee. So all of that other work is around $2 billion.

Senator CRAIG. In addition to the $3 billion.

Mr. BARRETT. Yes. At a cost of about $5 billion, I believe. I can check the numbers, if you want, specifically.

MAINTENANCE COSTS OF ON-SITE STORAGE

Senator CRAIG. It does not have to be exact. That is fine. Also, Mr. Barrett, it is my understanding that you had said that in addition to the costs of constructing an on-site storage facility there would be the costs of maintaining it, and they would vary from $1 million to $5 million a year, is that what you said?

Mr. BARRETT. Virtually none, zero. I mean if it is just additional fuel and—if the site has been decommissioned it is $5 million a year. There may be situations that may be more than that.

Senator REID. But we are in the ball park.

Mr. BARRETT. Yes.

COSTS OF TRANSPORTING NUCLEAR WASTE

Senator REID. We have not at all here today talked about the costs of transporting nuclear waste if, in fact, there becomes a site available in Nevada, either temporary or permanent, is that right?

Mr. BARRETT. We have described those costs in the report we released with the viability assessment, which is the Total System Life Cycle Cost report. We have those costs, sir.

Senator REID. What would you estimate the transportation costs to be?

Mr. BARRETT. In the Total System Life Cycle Cost report for the 70,000 metric tons considered it is close to $6 billion. For the period that we costed to 2010, where we established the system, and then put the infrastructure in place to be ready to start moving fuel, approximately 17,000 tons of fuel, it is around $2 billion.

Senator REID. Those are current dollars.

Mr. BARRETT. Yes, sir. Actually, that is budget authority, but it is still in that neighborhood.

ADDITIONAL COMMITTEE QUESTIONS

Senator REID. Mr. Chairman, I have no further questions, other than those we are going to submit in writing to Mr. Owendoff, which are really not on point at this time.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR DOMENICI

ON-SITE INTERIM STORAGE OF SPENT NUCLEAR FUEL

Question. Mr. Barrett, could you explain the proposal put forth by the Secretary to participate in assisting the utilities with on-site interim storage of spent nuclear fuel produced by nuclear power reactors?

Answer. The Secretary committed to work with Congress on nuclear waste issues. His objective was to begin a constructive dialogue. Taking title to utility spent fuel on site at reactors is a promising near-term solution that can address our contractual obligation to utilities. It is not intended to be a permanent solution or to alter the Administration's commitment to permanent geologic disposal. This proposal represents an alternative to years and billions of dollars of litigation. As the Secretary indicated in his testimony, the Department's proposal to take title to spent fuel at utility sites is in an early stage of development. We could take title consistent with our contract acceptance schedule. We could have utilities manage the facility or we could assume responsibility. The Department is exploring specific options, based upon individual circumstances at each utility. Such options would consider current operating status of a utility, availability of on-site dry storage, and utility financial needs. For instance, a utility with a permanently shut down reactor and no ongoing nuclear operations may want the Department to assume complete responsibility for the management of the spent fuel and storage facilities, while other utilities with operating reactors may prefer the Department only to take financial responsibility. We still have to address a range of issues, including liability, financial and operational responsibilities. In return for taking title to spent fuel the Department would expect the utilities to terminate their litigation and claims. We want to hear from the utilities and to work with Congress as this dialogue continues.

Question. What is this program expected to cost, how will it be funded, and do OMB budget profiles support this effort over the next 5 years?

Answer. The Department's preliminary estimate is that the proposal could cost up to $2 to $3 billion through 2010. The Department is willing to enter a dialogue with Congress to ensure that the repository program continues to be adequately funded, as well as address the Secretary's proposal. In exploring any funding alternatives, the Department's objectives would be: (1) that the Department impose no undue burdens on either utility ratepayers or the taxpayers; and (2) that the revenues raised by the nuclear waste fee remain available to complete the nuclear waste management system.

ACCELERATION OF YUCCA MOUNTAIN MILESTONES

Question. Mr. Barrett, I am sure that you are aware of the growing frustration and dissatisfaction by some regarding the pace at which the Department is moving to begin construction of a storage facility for spent nuclear fuel. Is there any way that the 2001 date to submit a recommendation to the President and the 2002 submission date of a license application to the NRC can be accelerated?

Answer. The Viability Assessment identified the remaining technical work which must be accomplished and the schedule that must be met before submitting a Site Recommendation and a License Application. Provided that we have the funding that meets costs in our "License Application Plan and Costs," we believe that we can complete the technical work, which includes complicated scientific testing and analysis, and evaluation of design alternatives, and accomplish a Site Recommendation and a License Application in 2001 and 2002, respectively. We believe that accelerating the schedule we proposed in the Viability Assessment would not allow us to address the remaining uncertainties that exist and must be addressed before a decision to recommend the site.

ALTERNATIVE OPTIONS TO ON-SITE STORAGE

Question. Mr. Barrett, is on-site storage of spent nuclear fuel viable for the long-term?

Answer. The U.S. Nuclear Regulatory Commission (NRC), through its regulatory and inspection processes, ensures the public health and safety for storage of spent fuel. The NRC, in its Waste Confidence ruling, 10 CFR 51.23, has indicated that spent fuel can be safely stored onsite for at least 30 years after a plant's operating license expired.

Question. What other options is the Department exploring, other than on-site storage?

Answer. The Department is committed to geologic disposal as the permanent solution for nuclear waste. The Department continues to proceed diligently to determine the suitability of the Yucca Mountain site as a permanent geologic repository. If the site is found to be suitable, the Secretary will make a decision whether to recommend it to the President for development as a repository.

Question. What are the relative risks to the public associated with on-site storage versus storage in a facility such as Yucca Mountain?

Answer. All commercial storage facilities, regardless of the location, are licensed by NRC and meet the appropriate NRC regulations to ensure safety to the public and the environment.

EXTERNAL OVERSIGHT AND PAYMENTS-EQUAL-TO-TAXES

Question. Mr. Barrett, could you explain the reason why the request for external oversight and payments-equal-to-taxes doubles from $11.7 million in fiscal year 1999 to $22.3 million in fiscal year 2000? What has changed since last year to require such a large increase in the payment to Nye County, Nevada?

Answer. The increases from fiscal year 1999 to fiscal year 2000 reflect the following: In fiscal year 1999, only $250,000 was provided to the State of Nevada for external oversight. In the fiscal year 2000 Budget Request, $4.7 million is requested for State external oversight.

For external oversight for affected counties, we have requested $108,000 less than that appropriated in fiscal year 1999.

We have requested $2.03 million in fiscal year 2000 for the potential liabilities associated with the closeout of previous contracts for work performed for Yucca Mountain in prior fiscal years. This is a $1.84 million increase over fiscal year 1999.

There is $140,000 requested for School-To-Work in fiscal year 2000. There were no funds provided for this purpose in fiscal year 1999.

We have requested $10 million for Payments Equal To Taxes (PETT) in fiscal year 2000. The increase reflects the fact that the current PETT agreement with Nye County (FYs 1994–1999) expires on September 30, 1999. The new agreement will reflect the increased value of facilities at the Yucca Mountain site and increases in work activities at the site.

The following table illustrates these changes:

[In millions of dollars]

	Fiscal year 1999	Fiscal year 2000 request	Difference
External Oversight—State of Nevada	.25	4.72	4.47
External Oversight—Affected Counties	5.54	5.43	(.11 M)
Contract Close-out from Previous Fiscal Year	.19	2.03	1.84
School-To-Work	.14	.14	
PETT	5.72	10.00	4.28
Total	11.70	22.32	10.62

COST OF DOE CLEANUP PROGRAM

Question. What is the current estimate to cleanup the wastes generated by nuclear weapons production activities in past years and how long will it take to complete this cleanup work?

Answer. As reported in the Department's Annual Financial Report, DOE's fiscal year 1998 environmental liabilities estimate was $186 billion over the next 70 years to complete the cleanup of wastes generated by nuclear weapons production and other government nuclear energy programs. Previous analyses (the 1995 *Baseline Environmental Management* Report, and the 1997 *Linking Legacies* report) indicated that about 85 percent of the cleanup work results from nuclear weapons production. The EM portion of the Department's fiscal year 1998 environmental liabilities estimate was based on data used to develop the initial *Accelerating Cleanup: Paths to Closure* report (*Paths to Closure*) issued in June 1998, which reported a life-cycle cost estimate of $147 billion. The $147 billion life-cycle estimate was adjusted (e.g., removal of fiscal year 1997 and fiscal year 1998 costs and various scope adjustments) to form the basis of EM's portion of the fiscal year 1998 environmental liability estimate, which was determined to be more than $145 billion. The balance of the Department's fiscal year 1998 environmental liability was derived from the 1995 and 1996 Baseline Environmental Management Report.

EM presently has cleanup responsibility for a total of 113 geographic sites. At the end of fiscal year 1997, 60 of the 113 contaminated sites had been cleaned up. In fiscal year 1998, EM cleaned up three geographic sites and transferred another two sites to the State for cleanup at its request, which leaves EM with 48 sites remaining to be cleaned up. By 2006, EM intends to complete cleanup at all but 10 of its 48 remaining sites.

We are currently in the process of updating the life-cycle cost and schedule estimate for cleanup of the EM program. This estimate is being updated as part of the *Paths to Closure* planning process and is presently scheduled to be released early this summer. This estimate will form the basis for determining EM's portion of the Department's fiscal year 1999 environmental liability.

Question. How does this estimate compare to the previous estimate, and what is the reason for the difference? How much money has been invested to date in the cleanup effort?

What are the major factors that have contributed to the reduction in the estimated cost of the cleanup effort?

Answer. In 1995 and 1996, as requested by Congress, the Department developed its first estimates of life-cycle cost and schedule for the remaining EM cleanup effort. These Baseline Environmental Management Reports (BEMRs) described the estimated scope of the EM program. The 1996 report stated that, as a mid-range estimate, the program would cost approximately $230 billion (constant 1996 dollars) spent over a 70-year period, using certain assumptions about funding levels, productivity, and land use in developing the estimate.

The primary reasons for the difference between BEMR and *Paths to Closure* can be attributed to the fact that BEMR: (1) included costs for both "legacy" waste associated with historical nuclear weapons production and nuclear related activities, and newly generated wastes; (2) included costs for the eventual transfer of DOE facilities not currently in the Environmental Management program; and (3) in some cases, used different end-state assumptions than *Paths to Closure*.

Paths to Closure addresses a somewhat different scope. For example, *Paths to Closure* includes costs for legacy waste cleanup but not newly generated wastes, and excludes costs for any facilities not currently in the Environmental Management program. Additionally, *Paths to Closure* reflects improved estimates for a number of projects and improvements in efficiency in accomplishing the same or comparable activities, thereby lowering total life-cycle costs of the program. In addition, $145 billion representing EM's portion of the fiscal year 1998 environmental liability statement reflects future estimated costs starting in fiscal year 1999, while the 1996 BEMR estimates costs beginning in fiscal year 1996.

Since its inception in 1989 through fiscal year 1999, the Environmental Management program has received $52.9 billion in funding. This funding covers not only "cleanup" but also other EM activities (e.g., nonproliferation, waste disposal, spent fuel storage, fissile material, security, site infrastructure maintenance). The following chart for the record displays this funding by fiscal year. (The information follows.)

[In millions of dollars]

	Fiscal year											Total
	1989[1]	1990[1]	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Traditional BA	1,657.3	2,274.1	3,601.0	4,286.9	5,520.3	6,000.0	5,809.3	6,067.3	5,661.2	5,662.8	5,603.6	52143.8
Privatization	.....	.....	.....	.....	.....	.....	.....	.....	330.0	200.0	228.4	758.4
Total, EM	1,657.3	2,274.1	3,601.0	4,286.9	5,520.3	6,000.0	5,809.3	6,067.3	5,991.2	5,862.8	5,832.0	52902.2

[1] Reflects funds managed by the newly-created Office of Environmental Management, which were appropriated under DOE programs to support cleanup work. Funds were appropriated to EM-managed accounts beginning in fiscal year 1991.

Question. What annual funding levels are assumed for the defense portion of the cleanup effort over the next 5 year planning period? How important is funding stability to the success of the program?

Answer. The Administration's outyear funding profile is dependent upon enactment of Social Security, Medicare, and Universal Savings Account proposals. The Defense funding for the Environmental Management program for fiscal year 2001 through 2004 would be as shown in the following table:

[In millions of dollars]

	Fiscal year			
	2001	2002	2003	2004
Defense Environmental Restoration & Waste Mgmt [1]	4,486	4,486	4,486	4,486
Defense Facilities Closure	1,054	1,054	1,054	1,054
Subtotal	5,540	5,540	5,540	5,540
Defense Privatization	671	659	633	594

[1] Excludes funding for EH Health Studies.

In developing the report *Accelerating Cleanup: Paths to Closure*, the Department established annual funding targets for the EM Operations Offices consistent with a stabilized $5.75 billion funding level for the EM program for the immediate future. This funding level includes both defense and non-defense appropriations, but does not include funding for the privatization account. In a number of instances, EM operations offices developed plans that were based on funding levels higher than these targets in order to accomplish accelerated closure, risk reduction, and other programmatic goals. The report stated that EM would address these funding differences by seeking productivity improvements, additional funding, as well as reprioritization of activities where necessary. The Department will work with our regulators, Congress, the Office of Management and Budget, and our stakeholders to address these issues.

The Department recognizes that under current budgetary constraints and realities any increases above the current level of funding—which has remained approximately stable for the past several years—are not likely. However, funding stability is necessary for EM to develop and successfully execute a credible plan that will accomplish our regulatory requirements and other commitments in a timely manner, assist in keeping our projects on schedule and within budget, and ultimately reduce the long-term costs of the program. Depending on the level, stable funding could provide predictability and sufficient funding to accomplish these objectives.

Question. An important element in meeting cost projections and schedules is early determination of the level to which a site is cleaned up—the end land use plan. What level of cleanup is assumed in the 2006 Plan? Is the Department assuming a mid-level cleanup or a maximum cleanup in the Plan? How can DOE provide a credible estimate of how much of the cleanup effort will cost if you do not know to what level you are cleaning up a site?

Answer. The cleanup levels identified in *Accelerating Cleanup: Paths to Closure* were determined on a site- by-site basis. The level of cleanup for some EM sites has been agreed to by EPA or State regulators in conjunction with EM field office personnel at those sites. The laws governing these cleanups require that site-specific factors be considered in deciding the level of cleanup. The agreed-to levels at these sites are reflected in *Paths to Closure*.

However, in most cases, particularly at the large sites where closure will not occur for decades, agreement has not yet been reached with regulators and stakeholders on the cleanup levels and end states. Where sites have not reached final agreement, the DOE field staff developed planning-basis end states that are being used solely for planning purposes. All end state assumptions used in *Paths to Closure* have been shared with stakeholders and regulators and are acceptable to them for planning purposes. At these sites where no final agreement has been reached, the appropriate review and consultation will occur before cleanup levels can be definitively established.

In developing the life-cycle estimate of $147 billion as reported in the June 1998 *Paths to Closure*, EM did not assume a consistent level of cleanup for all sites. As discussed above, the cleanup level agreed to, or currently assumed for each site, is unique to that site. It is clear, however, that a maximum, or "green field" approach

is being pursued at few, if any, sites. In fact, very few sites are being cleaned up to a level allowing unrestricted use for the entire site; consequently, EM is examining what long-term stewardship measures will be required after cleanup is completed.

Given the fact that each EM site will not undergo the same level of cleanup, EM developed its life-cycle estimate based on the agreed-to, or currently assumed cleanup level for each site. EM believes that this is the most meaningful and accurate approach to arriving at a credible life-cycle estimate.

Question. How many sites are there to be cleaned up and how many approved site cleanup plans are in place? Provide for the record your schedule for having an approved site cleanup plan in place for each site or major activity requiring a plan.

Answer. The Environmental Management (EM) program currently has 48 geographic sites remaining to be cleaned up. In fiscal year 1998, EM completed cleanup at three geographic sites and transferred another two to the host State (at its request) for cleanup, bringing the total completed to 65 of the 113 sites currently under EM's responsibility. In fiscal year 1999 and fiscal year 2000, EM plans to complete cleanup at three additional geographic sites each year, leaving 42 sites for cleanup in fiscal year 2001 and beyond.

Cleanup plans and site-specific strategies for all remaining EM geographic sites are captured in each site's June 1998 *Paths to Closure* report, and are compiled in the June 1998 national *Paths to Closure* report. We are currently updating this information, with release expected this summer; and we intend to update it annually. It is important to note that while each site has a cleanup strategy in place, not all assumed end-states and cleanup levels have undergone the appropriate review needed to ensure agreement between regulators and the Department. This is an ongoing process without a set schedule. Where sites have not reached final agreement, planning-basis end-states have been developed and shared with regulators, and have been found acceptable for planning purposes. As part of the *Paths to Closure* planning process, EM will provide the status of where each site is in the cleanup process, identifying, for example, whether agreements have been reached with regulators.

Question. Are there any site or activities being delayed or slowed due to lack of agreement of the end land use or level of cleanup?

Answer. The Department is working closely with its regulators and stakeholders to reach agreement on the eventual end use for its sites. Reaching agreement on the end use generally will facilitate agreement on required cleanup levels as well as allow for more expeditious cleanup. In most cases, general agreement has been reached on the desired future land use and resource uses for Department sites, including the time frames in which those land uses should be attained. The actual land uses ultimately selected, however, will be a risk management decision based on the technical feasibility, costs, and implementation risks associated with the specific remedial actions carried out to achieve a certain level of cleanup. Although future land use is always an important consideration, and substantial time may be needed for a final decision on end use or level of cleanup, typically there are several interim steps that can be taken to reduce risks that do not require a final determination on land use, and therefore necessary cleanup can proceed while final land use decisions are still being discussed. Consequently, activities at the various Department sites are not being delayed due to lack of agreement on the eventual end use or the level of cleanup required.

Question. How much additional savings can be obtained or expected if site end use land conditions were known?

Answer. The Department does not have an estimate of total life-cycle costs if "site end use land conditions were known." We believe strongly that substantial cost savings are possible if cleanups are performed to make land available for reasonably anticipated future end uses, rather than seeking to make all sites clean enough for unrestricted use everywhere. That is why we have been working closely with EPA and state regulators to negotiate cleanup agreements that result in cleanup standards that are based on reasonably anticipated future land uses. We also worked with EPA and other agencies in developing the Administration's recommendations to reform Superfund, including a provision that would make it easier to consider future land uses in remedy selection. These reforms have not yet been acted upon by Congress. Nonetheless, we believe that the administrative reforms adopted by EPA and state agencies have allowed us to negotiate remedies that adequately consider future land uses.

The life cycle costs cited in previous responses include the costs for these negotiated remedies where substantial savings were attained by considering future land uses. In fact, one of the principal findings of the 1995 and 1996 Baseline Environmental Management Reports and the 1998 *Accelerating Cleanup: Paths to Closure*

report was that, at most sites, the contamination and waste is not being moved, but is being contained in place, resulting in restricted land uses. There may be some instances in which cleanup agreements require cleanup to a level not justified by expected future land uses, but we are continuing to identify those exceptional circumstances, and do not expect significant additional savings by renegotiating cleanup agreements to account for future land use. As a result, the Department is now developing a program to provide adequate long-term stewardship (e.g., monitoring and maintenance) of the residual hazards left after cleanup is completed. We have not yet completed a technical or cost estimate for this program, but expect that it should be relatively insignificant compared to the cleanup program.

It is important to remember that much of the Department's Environmental Management program involves stabilizing extremely hazardous nuclear materials, and treatment and disposal of radioactive wastes. The costs for these elements of the cleanup program will not change based on expected land uses.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA) CLEANUP AT DOE SITES

Question. What laws set the standards for cleanup or is DOE self regulated and able to establish its own standard through negotiations with State, local and other interests?

Answer. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authorizes EPA to require responsible site owners, operators, generators and transporters to clean up releases of hazardous substances, including radioactive substances. In 1986, CERCLA was amended by the Superfund Amendments and Reauthorization Act. Under section 120(a) of CERCLA, as amended, all Federal agencies, including DOE, are subject to the same procedural and substantive requirements as private parties. In addition, section 120 requires each Federal facility listed on the National Priorities List (NPL) to enter into an interagency agreement with EPA regarding the cleanup of the facility. (States are often included as parties as well.)

DOE has entered into 17 interagency agreements with EPA and affected States for 17 of the 18 DOE facilities listed on the NPL. The agreement for the remaining facility is under negotiation, and is expected to be executed during fiscal year 1999. These agreements integrate the requirements of CERCLA with the applicable requirements of other laws and regulations such as the Resource Conservation and Recovery Act (RCRA). This is done through a process known as "ARARs"—applicable or relevant and appropriate requirements—wherein EPA establishes a process described in CERCLA section 121(d). Primarily, ARARs are requirements established under RCRA which States have been authorized by EPA to enforce. Although the ARARs process allows DOE to discuss cleanup standards with the regulatory authorities, the EPA and state environmental regulators are, in effect, the final decision-makers for cleanup work because of their regulatory approval roles. DOE's role is to comply with schedules negotiated with state and federal regulators for conducting studies, proposing recommended courses of action, and implementing actions once regulators have made decisions. The Department submits an annual report to Congress on our CERCLA cleanups, as required by CERCLA section 120. A copy of our 1997 report, the most recent available, is enclosed.

COST OF DOE CLEANUP PROGRAM

Question. What will the 2006 Plan cost on an annual basis? What can the committee expect to be completed between now and 2006 with the funds appropriated?

Answer. Based on the June 1998 *Paths to Closure* report, EM projected the cost of cleanup at $147 billion, of which $57 billion would be spent between 1997 and 2006, in roughly equal annual increments, and $90 billion would be spent after 2006. EM anticipates that all but 10 sites would be cleaned up by 2006. This includes completion of all cleanup activities at Rocky Flats, Fernald, Mound, Weldon Spring, Brookhaven National Laboratory, and Battelle Columbus Laboratories. In addition, 80 percent of all release sites, that is, specific locations or areas where contaminants may have been released to the environment, and stabilization of all nuclear materials and spent fuel and completion of all preparations for their ultimate disposition will have occurred.

EM is currently in the process of updating the life-cycle cost and schedule estimate for cleanup of the EM program. This estimate is being updated as part of the *Accelerating Cleanup: Paths to Closure* planning process and is presently scheduled to be released early this summer.

ACCOMPLISHMENTS

Question. What major accomplishments or activities were completed with the funding provided for fiscal year 1998, and what do you expect in fiscal year 1999 and fiscal year 2000?

Answer. The Environmental Management program has produced substantial cleanup results at contaminated nuclear facilities and anticipates achieving substantial results with the fiscal year 1999 appropriation and its fiscal year 2000 budget request.

Fiscal Year 1998 Accomplishments

With the cleanup of Naturita and Maybell sites in Colorado, we have completed surface cleanup of all 22 large uranium mill tailings sites, as well as more than 5,300 "vicinity properties," including elementary schools and homes. This project included remediation of over 40 million cubic yards of contaminated soil and material, and construction of 19 disposal cells. We are now monitoring low-level ground water contamination at some mill tailings sites, with active remediation planned at three sites.

We received certification from the U.S. Environmental Protection Agency in May that Waste Isolation Pilot Plant (WIPP) met disposal standards, and notification in June from the Defense Nuclear Facilities Safety Board that WIPP can be operated safely.

We completed cleanup of 290 release sites, or local areas where hazardous/radioactive releases had occurred, bringing the total number of release site cleanups to about 4,100, almost half of our inventory of about 9,700 release sites.

The Department awarded the second part of "Phase 1" of a "privatization" contract, covering the extended design of new facilities for the treatment of between 6 percent and 13 percent of the high-level waste in tanks by mass at the Hanford Site in Washington.

We closed a second high-level waste tank at Savannah River Site. After removing waste, the tank was backfilled using an innovative grout to immobilize residual radioactivity.

We successfully operated two high-level waste vitrification facilities in South Carolina and New York, where last year we converted nearly 2,500 cubic meters of waste into 331 canisters of "glass logs" ready for disposal. The first phase of the high-level waste vitrification campaign at the West Valley, New York facility was completed in fiscal year 1998, under budget and ahead of schedule, and we are now vitrifying the tank heels.

In support of non-proliferation goals, we shipped three shipments of spent nuclear fuel from foreign research reactors, bringing the total at the end of fiscal year 1998 to eight shipments from fifteen countries, including Chile, South Korea, and Colombia. Seven shipments have been received at the Savannah River Site in South Carolina and, in fiscal year 1998, we completed the first shipment to the Idaho National Engineering and Environmental Laboratory.

We finished connecting community drinking water hookups surrounding Brookhaven National Laboratory in New York. We have sponsored more than 1,500 hookups for off-site residences from fiscal year 1996 through fiscal year 1998 to ensure that residents' drinking water supply remains unaffected during long-term ground water cleanup.

To provide for state oversight of our management of low level waste, we executed a Joint Federal/State oversight agreement of the low-level waste disposal program at the Nevada Test site.

We disposed of 30,000 cubic meters of low-level waste and 10,000 cubic meters of mixed low-level waste in fiscal year 1998 alone.

At Rocky Flats, we stabilized or repackaged about 5,000 kilograms of plutonium-bearing residues in fiscal year 1998. In addition, we drained acid plutonium liquids from two 2 liquid-piping systems in Building 771 and then removed the pipes.

We completed cleanup of the fourth of eight highly radioactive waste storage tanks, called the "Gunite Tanks," at Oak Ridge National Laboratory and have started work on the next tank. The cleanup made use of several innovative remote access technologies developed through our science and technology program (i.e., a robotic arm and vehicle, and a waste dislodging and conveyance tool) that provided access to areas of tanks which were previously inaccessible.

EM has verified the first-time use of alternative technologies at a site in 108 instances at cleanup projects throughout the DOE complex in fiscal year 1998.

We also began a Technology Deployment Initiative designed to spur widespread use of available new technologies. Fourteen competitively selected projects were initiated in fiscal year 1998 that resulted in 13 deployments by the year's end.

We completed Large Scale Demonstration and Deployment Projects (LSDDP) at the Chicago Pile 5 Research Reactor facility at Argonne National Laboratory.

We continue to use pollution prevention techniques to reduce our overall costs. In fiscal year 1998 alone, DOE sites completed over 700 pollution prevention projects, avoiding the generation of 45,000 cubic meters and avoiding an estimated $155 million in waste management costs.

We completed deactivation of the N–Reactor complex and the B Plant at the Hanford Site, reducing annual surveillance and maintenance costs for each of the complex from about $20 million to less than $1 million. We also placed C–Reactor at Hanford into safe storage and completed deactivation of the ROVER facility at Idaho National Engineering and Environmental Laboratory.

Fiscal Year 1999 Commitments

On March 26, the Waste Isolation Pilot Plant received the first shipment of transuranic waste for disposal. We plan to ship wastes to WIPP from Los Alamos, Idaho National Environmental and Engineering Laboratory, and Rocky Flats.

We expect to complete cleanup at Ames Laboratory in Iowa, Sandia National Laboratory in California, and Princeton Plasma Physics Laboratory in New Jersey.

At INEEL, the new dry storage facility for spent nuclear fuel was completed, and we began transferring Three Mile Island spend nuclear fuel from wet storage in the Test Area North–607 pool to the new facility.

We will begin interim stabilization of an additional four high-level waste tanks at the Hanford Site.

We will continue stabilization of "at-risk" nuclear materials, such as plutonium-bearing materials at Rocky Flats and Savannah River and failed or declad spent nuclear fuel, in the H– and F–Canyons.

We plan to deactivate about 65 facilities, and decommission 80 facilities.

We will begin stabilizing plutonium oxide at the Plutonium Finishing Plant at Hanford.

At Rocky Flats, we will drain and remove 12 liquid systems from Building 771 and drain 10 areas in Building 371.

We will complete the removal of spent nuclear fuel from Facility 7823 on the Oak Ridge Reservation.

We plan to demonstrate another 22 innovative technologies that meet site-identified needs and make another 40 new technologies ready for implementation with cost and performance data. We also plan to use new technology in at least 60 instances in cleanup activities.

Another 32 accelerated site technology deployment projects have been initiated in fiscal year 1999.

Environmental Management Science Program grants will be awarded in the areas of biological effects of low doses of ionizing radiation and subsurface contamination/vadose zone.

Fiscal Year 2000 Commitments

We will complete cleanup at 3 sites: Argonne National Laboratory-West in Idaho, the General Atomics Site in California, and Battelle Columbus Laboratory in Ohio, bringing the number of sites completed to 71.

We expect to increase the rate of shipments of transuranic waste to the Waste Isolation Pilot Plant to about 14 per week, and will be disposing of waste from Rocky Flats, INEEL, the Hanford Site, and the Savannah River Site.

We plan to begin shipments of plutonium metals and oxides from the Rocky Flats Plant to the Savannah River Site, two years earlier than initially planned, to support accelerated closure of Rocky Flats.

We will continue our efforts to bring down the "mortgage" at Rocky Flats by demolishing Building 779 and decommissioning Building 771.

At Hanford, we will continue efforts at the K Basins to ensure we meet the November 2000 milestone to begin moving spent nuclear fuel from the basins to safe storage.

At Hanford, the extended design phase under the privatization contract for treatment of tank waste will conclude in August 2000, supporting a decision whether to proceed to construction and operation of the treatment facilities.

At INEEL, we will begin construction of the Advanced Mixed Waste Treatment Project facility under a privatization approach.

We will continue vitrification of high level waste at the Defense Waste Processing Facility at the Savannah River Site, and will select the technology and begin design work on the alternative to the In-Tank Precipitation process to pre-treat certain salt wastes.

Complex-wide we will deactivate about 60 facilities, and decommission 110 facilities, bringing the total number of facilities decommissioned to more than 600 out of a total inventory of about 3,300 facilities.

We will stabilize about 160 liters of plutonium solutions, 38,000 kilograms of bulk plutonium residues, and 238 containers of plutonium metal/oxides.

We plan to demonstrate another 30 innovative technologies that address site-identified needs and make another 30 new technologies ready for implementation with cost and performance data. We also plan to use new technology in at least 60 instances in cleanup activities.

At West Valley in New York, we expect to vitrify 50 cubic meters of high-level waste, producing 5 canisters and reducing the inventory of waste to 32 cubic meters, and will begin shipments of spent nuclear fuel to INEEL.

In addition, EM has established tangible, quantitative measures that track cleanup progress at the sites and establish annual goals for performance. These measures, found on page 45 of the Environmental Management fiscal year 2000 Budget Request, provide additional information on our accomplishments and commitments in fiscal year 1998, fiscal year 1999, and fiscal year 2000.

IMPACT OF TRANSFERRING CLEANUP PROGRAM TO CORPS OF ENGINEERS

Question. Mr. Owendoff, the committee has watched with interest the good work that the Corps of Engineers has been doing with the FUSRAP program. What would be the impact of transferring parts or the entire cleanup program to the Corps to manage?

Answer. The Department believes that there would be no benefit to transferring additional parts of the Environmental Management (EM) program, and that there would be significant downsides to such a transfer. The Department also believes the EM program has demonstrated considerable success since the Formerly Utilized Sites Remedial Action Program (FUSRAP) was transferred to the U.S. Army Corps of Engineers by the Energy and Water Appropriations Act of 1998. The Department has been working closely with the Corps of Engineers to ensure that the transfer of the program was successful and that the impacts on the various stakeholders was minimal. I believe the Department's past efforts and continued support of FUSRAP have contributed to the current progress. In the Memorandum of Understanding between the Corps of Engineers and the Department of Energy that was signed on March 17, 1999, this cooperative effort is formalized so that the program may continue to make progress.

At the time of transfer to the Corps of Engineers, the Department was completing cleanup at many FUSRAP sites and, at the remaining FUSRAP sites, was shifting its efforts from characterization to remediation of these sites and the associated vicinity properties. As part of this shift, the larger and more complex sites were ready for the start of major remediation efforts. DOE had completed cleanup at 25 of the 46 FUSRAP sites and significant progress had been achieved at the other 21 sites prior to their transfer to the Corps of Engineers. I had personally spent a lot of time working with Congressional delegations, regulators and communities to agree on cleanup levels and schedules to complete cleanup. We had also asked Congress in our fiscal year 1998 budget request to significantly increase the funding for FUSRAP to support a goal of completing the project quickly. At the time of transfer, cleanup decisions were in place. In short, I believe the Department had positioned the FUSRAP program to successfully move into the implementation phase at the large sites, so that either the Corps of Engineers or the Department could have made major progress in the last 18 months.

Considerable effort had been made in characterizing the larger FUSRAP sites and providing this information to the regulators and local communities. By early 1993, however, agreement had not been reached on the cleanup levels at these sites, the condition of the sites when the cleanup was completed, and the future ownership of many of the sites. In late 1995, the Department decided to take a dramatic step and embarked on a two-fold strategy: (1) DOE would get consensus from the regulators and communities on the cleanup approach for each site; and (2) DOE would request a nearly doubling of the FUSRAP budget with the commitment or goal of completing the cleanup in five years. This would provide incentives for the regulators and communities to reach agreement on achievable cleanup approaches, while providing the Office of Management and Budget and the Congress with a commitment to get cleanup of the FUSRAP sites completed as soon as possible.

The Department's task for 1996 was to achieve consensus on as many of the large sites as possible to provide justification for the budget increase. We knew it would be difficult to complete Records of Decisions for the cleanup approach since there was not sufficient characterization work done to be able to agree on the extent to

which soil should be removed. Rather than spend more time and money on characterization, we recommended to the regulators and communities that we proceed with "removal actions," reaching agreement on what the level of cleanup would be depending on the extent of contamination and agreed-to land use. Where we had a pile of contaminated dirt which had been stockpiled as interim storage from the cleanup of vicinity properties, we would remove the contaminated dirt which was above specific levels of contamination. We would continue the excavation until the contamination level was below acceptable levels. This would bring the site to the level appropriate to its agreed-to end use. The community and property owner could then re-develop their land as a residential or industrial site, or as a public area such as a park. In some cases, this would be a couple of feet below the surrounding ground level; in other cases, the excavation would be more extensive. Based on negotiations with the regulators, communities, and Congressional delegations during 1996 and the early part of 1997, we believed we had a winning strategy and had received support in achieving consensus on the cleanup approach and the associated funding needed to proceed.

This was the case at the Tonawanda disposal sites in New York, the Maywood interim disposal site in New Jersey, the Wayne interim disposal site in New Jersey, the St. Louis disposal sites near the airport and downtown sites in Missouri, the Middlesex interim disposal site in New Jersey, and the Colonie disposal site in New York. The Department had developed a contracting strategy at the Wayne site where we competitively bid the entire job on a fixed-priced basis for the removal and disposal of the contaminated interim disposal site with several options for the excavation below grade depending on how much contamination we found. Since this approach was successful, we were preparing contracts for each of the sites. Additionally, the Department was developing alternatives for disposal of the waste generated by the FUSRAP program. The Department had negotiated for disposal of some of the waste in a Resource Conservation and Recovery Act (RCRA) disposal site and was investigating other alternatives as well. Further, we were aggressively renegotiating our disposal contracts.

We had also changed the approach from one of doing cleanups on a cost basis, to an integrating contractor who issues a number of competitive fixed-price contracts and only conducts cleanups where the extent of the contamination is extremely difficult to quantify, such as contaminated soil along old haul roads. The integrating contractor had project managers and a health and safety staff at each site to ensure the conditions of the contract were met, and to provide ready availability to the local regulators and community. Thus we had taken steps to ensure we were integrating the sites efficiently and effectively.

I believe at the time the Congress transferred responsibility to the Corps, DOE had: (1) developed consensus on the cleanup strategy with the regulators, communities, and congressional delegations, including future land-use designations and cleanup levels; (2) prepared a contracting strategy that supported competitive fixed-price contracts, which would provide safe and cost-effective cleanups; and (3) adjusted the management approach which could focus on cleanups in a streamlined and efficient manner. We were pleased with the progress we had made from late 1995 to October 1997 in getting the FUSRAP onto a fast track for cleanup and removal of contamination from urban areas. We also believed that the two-fold strategy we embarked upon in late 1995 was the right approach and had been proven successful.

With regard to the transfer of other parts of the EM program to the Corps, I believe any such transfers would have very serious impacts on cleanup progress for several reasons. First, the other EM sites within the Department are not independent, but rather have a strong degree of interdependence that extends to all aspects of the Department's ongoing missions. Even sites within the Closure Fund account, like Rocky Flats, rely on other DOE sites with ongoing missions to accept radioactive material, whether for storage, re-use, or disposal. Some of these site activities are operated and managed by other non-EM Departmental offices, with varied missions that may include energy operations, research and development, waste management, or environmental restoration efforts. This is significantly different from the single focus of FUSRAP. The removal of cleanup portions of this matrix would interrupt site management and operations at the multi-program sites.

By contrast, the nature of the sites in the FUSRAP program has enabled the Corps to divide responsibility for the sites among its numerous and autonomous districts. Although the FUSRAP sites are connected historically, they are not interdependent. The sites were managed under a single program by DOE in order to avoid redundancy in management, even though geographically they could have been separated into site groups and been managed without central coordination.

Second, the material being handled by the FUSRAP program is also significantly lower in radioactivity than much of the material that is managed at other DOE sites. The safe management of this highly radioactive material depends upon the close coordination of the DOE management teams at the various Department sites. It is doubtful the Corps, without experience in management of significant quantities and levels of radioactive material, would enhance the cleanup mission at the sites. On the other hand, placing the Corps in charge of site cleanups could disrupt the safety and health functions at the sites.

Third, the Department believes that it has gained significant experience in managing cleanup projects and has been able to accelerate the progress being achieved at its sites. Our actions have included accelerated characterization, aggressive contracting approaches, and incorporation of new technologies that have enabled the Department to clean up sites more quickly, more efficiently, and more safely. We believe that our successes at one site can be applied to other Departmental efforts being carried out across the country and that DOE is uniquely positioned to build on these successes.

For example, a major milestone was achieved in fiscal year 1998 by the Department, which significantly contributes to the overall EM cleanup mission. All Uranium Mill Tailings Remedial Action (UMTRA) Surface Project remediation activities were completed. This brings to a close one of the Department's longest running and major environmental cleanup programs, which was authorized by Congress in 1978 and cost approximately $1.5 billion, including $100 million provided by the states involved. Under the UMTRA Surface Project, the Department completed remedial actions at 22 of the 24 originally designated sites, with two sites being delisted and their responsibility transferred to the state of North Dakota. The project involved efforts with 11 States, 2 Indian tribes, and 23 communities. Cleanup was performed at over 5,300 vicinity properties located near the 22 designated UMTRA sites, and over 40 million cubic yards of material were remediated and nineteen long-term disposal cells were constructed. The disposal cells must be permanently monitored and maintained. At most of these sites, groundwater contamination remains and is being addressed by the UMTRA Groundwater Project. The completion of the UMTRA Surface Project marks a significant milestone in the Department's efforts to remediate the environmental legacy from the production of nuclear weapons. Just as mining and milling of uranium was the first step towards the production of nuclear weapons, the completion of the UMTRA Surface Project represents the first step towards "closing the circle" of the environmental legacy from nuclear weapons production.

Overall in fiscal year 1998, EM completed cleanup at five geographic sites, bringing the total completed to 65 of the 113 sites currently under EM's responsibility. Progress was also demonstrated by cleaning up portions of the EM geographic sites, referred to as "release sites," and facilities. Cleaning up these areas ultimately leads to the completion of the entire geographic site and in fiscal year 1998, cleanup was completed at 290 release sites, and 108 facilities were decommissioned. This brings the total release sites completed to 4,124 of the total 9,700 release site inventory, and 448 facilities decommissioned out of the 3,354 facility inventory.

We have also been making significant progress at our major sites. For example, at the Savannah River Site (SRS) in South Carolina, DOE has made significant strides in groundwater and soils remediation over the past several years. Of the 500 acres that require remediation, nearly 330 acres have been remediated or are in the process of being remediated. Of eleven groundwater contamination areas, six have remediation systems in operation and over 3,000 million gallons of groundwater has been treated. Innovative technology has played an important role in acceleration of remediation at SRS and has helped drive down costs. For example, passive technologies have reduced costs while achieving excellent pollution removal. A total of 12 innovative technology deployments in 1998 will further accelerate our remedial activities. Unlike FUSRAP sites, significant work remains at the SRS to manage the legacy nuclear materials and wastes requiring stabilization and disposition. Additionally, the SRS will be assisting other DOE sites, including the Rocky Flats site in Colorado, by accepting certain excess nuclear materials. Key to these activities is the complex operations in the H and F Canyon processing facilities and the Defense Waste Processing Facility. These large facilities require specialized management experience in nuclear safety programs, including radiation safety and criticality control. DOE has more relevant and significant experience in these areas and is better positioned than the Corps to assure oversight in these key areas. DOE also has the requisite experience to ensure that the waste tank farm operations are conducted in a manner that fully supports the waste processing needs of the Canyon facilities.

The Department also is actively engaged in a program to assure the return of highly enriched uranium from foreign research reactors in support of U.S. non-

proliferation efforts. Program management activities require extensive exchange with the Department of State, interface and technical assistance to foreign research reactor owners, outreach with affected States and receipt, transport and storage of spent nuclear research reactors fuels at Savannah River and Idaho. Again, the Department has significant and relevant experience in these complex program areas.

The Department must manage its facilities in an integrated fashion to accelerate cleanup, and more rapidly reduce large mortgage costs at its sites. This integration is typified by the current plans to accelerate the closure of the Rocky Flats site. The SRS is preparing to receive surplus plutonium from Rocky Flats at an accelerated pace by modifying the K Area Reactor to permit storage of the Rocky Flats plutonium two years earlier than previously planned. This action will help support accelerated Rocky Flats closure by fiscal year 2006, with an estimated life cycle cost savings of approximately $1.3 billion. Significant program integration efforts involving EM Headquarters, the Rocky Flats site, Savannah River, the Hanford Site, the DOE Office of Fissile Materials Disposition and other contractor and national laboratory participants was necessary for providing the needed support. In our view, the Department is better able to effectively manage these integration efforts because of our extensive experience. In short, the programmatic challenges faced at Savannah River require the unique experience of the Department for effective, successful management.

At Rocky Flats, we are aggressively working to accelerate the closure of the site, and are developing a revised baseline to achieve closure by 2006. Closure of Rocky Flats is absolutely dependent on other DOE sites. Waste and material generated during the closure is going to a minimum of six other DOE facilities in six states. Material from the pits is going to Pantex, highly enriched uranium to Oak Ridge, residues to Savannah River, low-level waste to the Nevada Test Site, and TRU waste to the Waste Isolation Pilot Plant (WIPP); decisions on the disposition of classified parts still categorized as national security material are being finalized, with the material likely to go to Savannah River Site, the Los Alamos National Laboratory, and/or the Lawrence Livermore National Laboratory. Many of these shipments are on-going. Some of the material being shipped is actually being stored or processed in facilities funded and managed by other DOE programs in addition to EM. Extensive coordination among DOE federal staff is necessary to ensure schedule, cost, and environmental concerns are known and are being resolved to allow the shipments to take place.

At Oak Ridge, Tennessee, the Department has made significant progress in the remediation of the first gaseous diffusion plant at the K–25 site. This site, now known as the East Tennessee Technology Park (ETTP), is a good example of how the Department is working closely with the private sector to accelerate cleanup and returning property and buildings to productive use. The Department's innovative approach to reindustrialization of the site has attracted 20 companies and over 650 jobs, and has resulted in considerable savings to the government. Major remediation projects such as the removal of contaminated sludge from highly radioactive storage tanks, called the "Gunite Tanks" at Oak Ridge National Laboratory and the removal of radioactive deposits from old process buildings have reduced the risk of criticality as well as health and safety risk to workers and have been completed ahead of schedule.

The Toxic Substance Control Act (TSCA) Incinerator, located at the ETTP, is a unique resource used by other DOE programs and sites. This facility treats radioactive, TSCA, and RCRA hazardous wastes from numerous facilities, allowing them to maintain compliance with their Site Treatment Plans required by the Federal Facility Compliance Act. The Filter Test Facility (FTF), also located at ETTP, is another facility operated by EM that provides a complex-wide service to other DOE programs. The FTF tests High Energy Particulate Air Filters that are used throughout the complex and are essential to worker safety and controlling releases of radioactive constituents. This facility is the only one within the DOE complex serving this function. In addition, EM has awarded the Broad Spectrum Waste Treatment Contract at Oak Ridge to effectively treat mixed hazardous and radioactive wastes to meet compliance schedules established by the Site Treatment Plans at other DOE sites as well as at Oak Ridge.

EM has also made considerable progress at Oak Ridge in several other areas. Cleanup of Gunite Tanks is well underway using robotic technologies, developed by EM's Office of Science and Technology (OST), to empty the tanks of the transuranic contaminated sludges. This project is attacking problems similar to the tank waste project at Hanford, and lessons learned from Oak Ridge activities will be utilized at Hanford. Technologies developed by OST at other sites have also been instrumental in mitigating releases of contaminants to ground and surface waters at the Oak Ridge Reservation, and at the Paducah, Kentucky and Portsmouth, Ohio sites.

In addition, EM is addressing a highly complex problem with the decommissioning of the Molten Salt Reactor Experiment at ORNL. EM is in the process of purging radioactive gases from the system and is about to tackle the removal of Uranium deposits that have migrated into the project's filter system. This is a highly complex operation with high levels of radioactive material, and EM is drawing on the expertise of DOE's National Laboratories to solve the problem. Another technically difficult problem at Oak Ridge is the treatment and packaging of TRU waste for eventual disposal at WIPP. Oak Ridge currently has most of the DOE complex's remote-handled TRU, as well as large amounts of contact-handled transuranic waste in storage and has recently issued a fixed price contract to prepare this material for shipment to WIPP.

EM is also a partner with DOE's Office of Nuclear Energy in dealing with the United States Enrichment Corporation (USEC) at the Paducah and Portsmouth Gaseous Diffusion Plants in Kentucky and Ohio. DOE provides landlord services to USEC and obtains services from USEC's operating contractor, Lockheed Martin Uranium Services, for maintenance and other EM tasks. In addition, if USEC shuts down either of these plants, it will be transferred to DOE and become part of EM's responsibilities. Funds for this activity have been specifically earmarked by Congress in the Uranium Enrichment Decontamination and Decommissioning Fund managed by the Department's Oak Ridge Operations Office. Certain United States nuclear utilities contribute to this fund based on past operations.

At the Weldon Spring, Missouri site, the Department is on track to complete a complex remediation effort which involves decontamination and demolition of dozens of contaminated structures, treatment of millions of gallons of contaminated waste waters, hundreds of thousands of cubic meters of sludge waste, removal and disposition of hundreds of thousands of cubic meters of contaminated soils, and construction of an on-site disposal facility that will close one of the first DOE complexes used in the development of our nation's nuclear weapons program. Working with the site contractor and with the cooperation of stakeholders, DOE has been able to reach its remediation goals at Weldon Springs within the cost and schedule objectives as originally planned.

At the Fernald, Ohio site, the Department has been working to accelerate the cleanup by closely coordinating our plans with the regulators and the community. Again, dozens of structures are being decontaminated and removed, and the land is being remediated so that it can be returned to public use. Our cooperative approach with the stakeholders and regulators will enable the Department to close this site and return it to public use decades ahead of the original schedule.

At Idaho, DOE has made major strides in meeting the Idaho Settlement Agreement commitments for placement of spent nuclear fuel (SNF) in dry storage. The new dry storage facility was ready to receive its first shipment of SNF in December 1998, and the first transfer of Three Mile Island SNF was loaded into the facility in March 1999. In January 1999, DOE issued a Request for Proposal for a SNF privatization storage project which, when awarded late this year, will be a critical facility for providing dry storage capacity for additional SNF at Idaho. In addition, DOE will complete moving at-risk SNF from wet storage in the CPP–603 facility to safe storage by December 2000. Idaho is and will continue to receive and store both domestic and foreign research reactor fuel. The success of safely managing the highly radioactive SNF has been due to the experienced and highly qualified DOE staff at Idaho and Headquarters, and an established working relationship with the Nuclear Regulatory Commission and the State of Idaho. Idaho also manages the National Spent Nuclear Fuel Program and integrates all SNF management and disposition activities across the DOE complex, including coordination with the DOE Office of Civilian Radioactive Waste Management, which is responsible for ultimate disposal.

The inter-dependence between DOE sites is especially evident at Idaho, which depends on other DOE sites, including Argonne National Laboratory-West for examination of spent nuclear fuel, Yucca Mountain for receipt of high-level waste and spent fuel, the WIPP site for receipt of transuranic waste, and the Y–12 Plant in Oak Ridge for receipt of highly enriched uranium. Shipments of transuranic waste from Idaho to WIPP are being coordinated among EM Headquarters, the Carlsbad Area Office, the Idaho Operations Office, and other DOE sites that will be shipping to WIPP. Other sites also depend on Idaho, since it receives their mixed low-level waste for incineration at Idaho facilities.

At the Hanford, Washington site, the Department faces probably the greatest technical challenges as well as the largest inventory of high level waste. The cleanup of the K–Basins and the high-level waste tank farms are unique missions involving high-level radioactive materials which need the specialized expertise the Department has built over many years. After about 50 years of producing nuclear materials at Hanford, DOE is now cleaning up seriously degraded facilities containing

great hazards. The background, knowledge, skill and training of the contractor and Department personnel are essential to conducting the work safely. Many times the experience of the workers and the Federal staff are a critical component in determining how to conduct work safely in old facilities where existing conditions are uncertain. The Defense Nuclear Facilities Safety Board (DNFSB) recognized the critical importance of worker qualification and experience in issuing Recommendation 93–3 to the Department on this topic, and DOE staff have worked diligently over the past six years to reach the DNFSB expectations. Furthermore, the DNFSB has issued a number of other Hanford-specific recommendations that recognize the difficult challenge of characterizing the wastes in the tanks, and highlight safety issues. These are topics that demand personnel who are highly specialized and trained in the nuclear sciences and engineering—exactly the people that the Department and its contractors now have.

Furthermore, there are many interfaces across the Hanford site which led the Department to adopt the Management and Integrating contractor concept. We are now realizing the benefits of this arrangement through greater cooperation among onsite organizations, resulting in improved performance, cost savings and enhanced cleanup accomplishments. For example, the groundwater and vadose zone studies in the tank areas and in the other parts of the Hanford site are being integrated to develop a site-wide picture of subsurface water movements. Similarly, integration of work by the various contractors is being accomplished through a systems engineering approach, governed by Interface Control Documents. This effort is part of DNFSB Recommendation 92–4. The integration of the numerous programs and contractors enables DOE to manage the whole site, putting limited resources on the most important work yet taking into consideration the concerns of stakeholders. The Department views the path to success as more integration; sharing cleanup with another Federal agency would limit the opportunities for integration.

Progress in 1998 at Hanford included completion of the B–Plant deactivation, four years ahead of schedule and at a savings of $100 million. Annual facility costs have been reduced from $20 million to less than $1 million. DOE and its contractors used innovative techniques to accelerate the project, including reengineering the organization to make it more efficient, forming dedicated project teams and using lessons learned from the successful early closure of the PUREX Plant. The continuation of expertise from key Federal staff involved in the PUREX project played a vital role in the success of the B–Plant project. The N–Reactor deactivation project was also completed in fiscal year 1998, placing the N–Reactor in a low-cost surveillance and maintenance mode pending final disposition. This project included the deactivation of 86 facilities, removal of 4,774 cubic feet of sediment and 1,140,000 gallons of water, and 350 pounds of fuel from the fuel basin. The N–Reactor deactivation project cost $120 million over a 6-year period, and resulted in the N–Reactor being placed in a safe and stable condition with an annual surveillance and maintenance cost of only $350 thousand.

In light of all the progress EM is making, the Department does not believe additional transfers to the Army Corps of Engineers would provide any significant benefit. The FUSRAP program was the most straightforward of the DOE's cleanup programs. With the exception of the wastes stored at the Niagara Falls Storage Site, this program involved material with some of the lowest concentrations of any material managed by DOE. The inter-site and intra-Department integration of radioactive materials at the other DOE sites being remediated would be disrupted by other possible transfers of responsibilities. The regulatory and safety issues involved with the remediation of DOE sites could quickly lead to complications if responsibility for cleaning up these sites were transferred to the Corps, due to the fact that these other sites generally are contaminated with material of significantly greater radioactivity levels than the FUSRAP sites, which in many cases cannot be disposed of at any facility other than a DOE site under DOE control. Likewise, a number of sites contain special nuclear materials often require coordination with and the involvement of other DOE sites. The Department has extensive expertise in dealing with these waste materials, which the Corps does not have.

For these reasons, I believe that the consequences of transferring any additional portions of the Department's cleanup program to the Army Corps of Engineers would be to slow down progress and that any such transfer would be detrimental to the sites involved, the communities, and the Government as a whole.

WASTE ISOLATION PILOT PLANT (WIPP)

Question. How important is the opening of WIPP to DOE's waste disposal strategy?

Answer. The Waste Isolation Pilot Plant is the cornerstone of the Department's national strategy for disposal of transuranic waste. Numerous legally-binding Consent Orders and Agreements between the Department and States are predicated on the disposal of transuranic waste at the Waste Isolation Pilot Plant (WIPP). In addition, WIPP is critical to achieving the accelerated closure of sites such as Rocky Flats.

Question. Will DOE begin waste shipments to WIPP this year as planned? What is your current schedule to make the first shipment? What actions could jeopardize the first shipments at this late date?

Answer. On March 22, 1999, Judge John Garrett Penn concluded that the permanent injunction he issued in 1992 does not prevent the shipment of waste to WIPP for disposal, and that WIPP has interim status under the Resource Conservation and Recovery Act (RCRA). The first shipment of waste from Los Alamos occurred on March 26, 1999. DOE made its first shipment of waste from the Idaho National Engineering and Environmental Laboratory to WIPP on April 27, 1999, and plans to begin shipments from the Rocky Flats Environmental Technology Site in June or July 1999. There is still the possibility that private plaintiffs or the New Mexico Environment Department will seek to block shipments to WIPP from DOE sites outside of New Mexico.

Question. Mr. Owendoff, you know I have been extremely concerned about the State of New Mexico's delay in considering a RCRA permit for WIPP. Can you tell me where we stand today with respect to the suit before Judge Penn and when you expect the New Mexico Environmental Department to issue a permit?

Answer. I am happy to inform you that on Monday, March 22, Judge Penn ruled that WIPP has interim status under RCRA and that DOE could ship waste to WIPP. On Wednesday, March 24, eight federal judges in three separate courts agreed that WIPP's opening should not be delayed. The first shipment of waste from the Los Alamos National Laboratory arrived at WIPP at about 3:30 am (MST) on Friday, March 26. Over the next several months, DOE plans to send additional shipments to WIPP from Los Alamos, Idaho and Rocky Flats based on the judge's decision that WIPP has interim status and therefore may accept waste while the permitting process is completed.

We do not expect that the Department will be in a position to ship waste to WIPP from these three sites pursuant to a final permit until late this year or sometime next year. It appears that the New Mexico Environmental Department (NMED) will not issue a final permit until October or November 1999, and under New Mexico's regulation, the permit would not become effective until thirty days after its issuance. In addition, the draft permit requires that NMED approve every site before it ships mixed waste to WIPP, and NMED has never provided DOE with any indication of its schedule for issuing these approvals for Los Alamos, Idaho and Rocky Flats.

The latest draft of the permit issued by NMED also has provisions that would require Westinghouse, DOE's contractor at WIPP, to provide financial assurances for closure of the facility despite the fact that RCRA exempts the federal government from the requirement for financial assurances. Westinghouse estimates that, even if it finds an insurance or bonding mechanism for providing such assurances, the cost could be somewhere between $2–18 million annually. DOE will have to reimburse Westinghouse for this expenditure.

We are also troubled by statements NMED has made during the permit hearing and elsewhere that DOE might be: (1) required to submit a new RCRA permit application; (2) prohibited from using Panel 1 after the permit is issued; or (3) subject to enforcement actions under RCRA if DOE ships waste to WIPP before the State issues the permit. We know of no legal basis for these assertions, but NMED has been making them even after Judge Penn concluded that WIPP has interim status.

Question. What would be the impact across DOE if WIPP does not open as expected?

Answer. We are pleased to report that WIPP received its first shipment of transuranic waste on March 26. We look forward to operating WIPP as the integral part of our environmental cleanup program.

Question. How many State consent orders and agreements would be impacted by a delay in WIPP opening?

Answer. There are sixteen states which have DOE facilities that generate or store transuranic (TRU) waste. All of the facilities in these states have "waste disposition maps" which identify WIPP as the disposal facility. Key among the State consent orders and agreements are those for Idaho National Engineering and Environmental Laboratory (INEEL) and the Rocky Flats Environmental Technology Site (RFETS) which are at the critical point for milestone compliance. Several other DOE sites may need to negotiate with their host state on transuranic waste alternatives if the

final resource Conservation and Recovery Act (RCRA) WIPP permit is issued beyond the October–November 1999 time frame.

At INEEL, DOE met the milestone in the Idaho Settlement Agreement when the first shipment of TRU waste left the state on April 27, 1999. Under the Agreement/court order, DOE must also meet the following TRU waste interim deadlines: ship no fewer than 3,100 cubic meters of TRU waste out of Idaho by December 31, 2002; after January 1, 2003, ship out of the State a running average of no fewer than 2,000 cubic meters of TRU waste per year; and ship an estimated 65,000 cubic meters of TRU waste out of the State of Idaho by a target date of December 31, 2015, but no later than December 31, 2018. If any of these deadlines are not met, the DOE must suspend shipments of DOE spent nuclear fuel and foreign research reactor spent fuel to INEEL for storage.

Under the terms of the Rocky Flats Cleanup Agreement, the Department committed to ship 375 drums of TRU waste by the end of fiscal year 1998. Because WIPP did not open, DOE renegotiated the milestone with the regulators to ship 670 cubic meters of TRU waste offsite by the end of fiscal year 1999. An inability to ship TRU waste offsite for a prolonged period of time would require construction of a storage facility for TRU and mixed TRU waste. In addition, DOE is strongly committed to accelerated cleanup of Rocky Flats, and shipments of transuranic waste should begin this year to support achievement of that goal.

By making the first shipment from the Los Alamos National Laboratory, the Department was able to meet a commitment to the State of New Mexico and avoid entering into negotiations to identify treatment requirements for the transuranic waste in storage at that site.

Question. If WIPP does not open on time will DOE waste movements come to a halt? What alternatives is DOE considering to maintain schedules and cost savings tied to opening of WIPP?

Answer. On Monday, March 22, Judge Penn ruled that WIPP has interim status and that there is no reason to delay shipments to WIPP any longer. On Wednesday, March 24, eight federal judges in three separate courts agreed that WIPP's opening should not be delayed. The first shipment of waste from the Los Alamos National Laboratory arrived at WIPP on Friday, March 26. DOE also made the first shipment to WIPP from the Idaho National Engineering and Environmental Laboratory (INEEL) on April 27, 1999. Over the next several months, DOE plans to send additional shipments to WIPP from Los Alamos, Idaho and Rocky Flats.

LOS ALAMOS ENVIRONMENTAL RESTORATION PROGRAM

Question. A few months ago, there were new reports of contamination of the groundwater aquifer around the Los Alamos Laboratory from high explosive residues. Could you explain the problem and what DOE is doing to address the issue?

Answer. The Department has detected high explosives (HE) residues in groundwater beneath the southwest edge of the Los Alamos National Laboratory (LANL). This contamination was discovered in the characterization well R–25 that is currently being constructed at LANL Technical Area 16. The contamination comes from past high explosives research, development, and testing activities carried out in this area. Prior to operations at the Pantex site, HE components for the nation's nuclear stockpile were manufactured at the TA–16 area.

High explosives and chemicals associated with their breakdown were present in most of the samples down to a depth of 1,607 feet. Concentrations in most groundwater samples above 1,607 feet exceed the EPA health advisory guidance for drinking water.

Groundwater in the TA–16 area is not used for drinking water. The closest water supply well is located 3.5 miles east of the R–25 well. The groundwater travel time between the R–25 well and the nearest water supply well is probably between 50 and 200 years. Samples from the nearest six water supply production wells on the LANL property were tested and found to contain no high explosive degradation products.

Steps have already been taken to reduce the discharge of high explosives processing water in the TA–16 area. In the early 1990s, LANL recognized that high explosives wastewater discharges at TA–16 would not meet State stream standards, and began to reduce discharges and improve discharge water quality. These changes were completed in September 1997 and included a new high explosives wastewater treatment plant. In addition, installation of new vacuum pumps at TA–16 high explosives processing facilities improved reuse of wastewater and reduced flow to the wastewater treatment plant. Other changes eliminated 19 of the 21 high explosive wastewater outfalls. Before 1997, the Laboratory discharged more than 12 million gallons of HE-contaminated wastewater a year at TA–16. Since the new treatment

plant was installed and the wastewater outfalls were eliminated, the Laboratory discharges only 120,000 gallons per year, or about 1 percent of the amounts previously discharged.

The R–25 well is the third of 32 planned deep wells that LANL will install as part of a seven-year groundwater study. The study, documented in the Hydrogeologic Workplan, has been approved by the New Mexico Environment Department and is being carried out jointly by the Offices of Environmental Management and Defense Programs. The goal is to develop better understanding of the geology, groundwater flow, and geochemistry beneath the 43 square mile LANL area. The study will also assess impacts that prior LANL activities have had on groundwater quality in the area.

The TA–16 area is one of LANL's highest priority cleanup sites. Removal of high explosives from contaminated soils near recently eliminated wastewater outfalls will begin this year. In particular, high explosive contaminated soils in the vicinity of the Building 260 outfall are scheduled for cleanup this summer. The Department is also constructing R–25 as a monitoring well with nine sampling ports distributed throughout the upper and lower zones of saturation. Once completed, the additional samples will be collected on a periodic basis to define the distribution of high explosive concentrations in groundwater and to monitor changes in the quality of the groundwater over time.

Question. Are you coordinating your actions with the State of New Mexico and do they concur with your actions and plans?

Answer. The Department and Los Alamos National Laboratory (LANL) staff are working closely with regulators in the New Mexico Environment Department and Groundwater Bureau to define future planned activities as a result of the R–25 findings. State regulators have been briefed on the R–25 results throughout the R–25 drilling effort. Results have also been discussed with the New Mexico Environment Department at the Hydrogeologic Workplan quarterly meeting on February 9, and at a meeting with the New Mexico Environment Department and Groundwater Bureau held in Santa Fe on March 4.

LANL staff discussed the R–25 results and future characterization plans with State regulators at the March 29–31 Hydrogeologic Workplan meeting.

Question. What are DOE's plans and schedule for installing a new regional aquifer to the monitoring well to determine whether contaminants have moved away from Technical Area–16?

Answer. The Department is accelerating the schedule for installing a new regional aquifer monitoring well that will be located between the characterization well R–25 and the nearest water supply wells as part of the Hydrogeologic Workplan. The new well will show whether contaminants have moved away from TA–16, and provide information to assist LANL efforts to ensure that drinking water supplies are protected. Drilling the new well will begin either this year or early next year.

In addition to the regional aquifer well described above, LANL is planning additional investigations in the TA–16 area to better understand the nature and extent of groundwater contamination identified by the R–25 drilling effort. Plans are currently under development to determine the size of the contaminant plume that contains high explosives components and the direction and velocity of groundwater flow. The numbers and locations of any new wells will be developed in cooperation with State regulators in the New Mexico Environment Department and Groundwater Bureau.

HANFORD REPROGRAMMING/EM PROGRAM ACCOUNTABILITY AND CONTROL

Question. Now I'd like to talk for a moment about the Hanford Tank Operations reprogramming proposal, and the broader, more fundamental issue of accountability and control within the Environmental Management program.

First, regarding the reprogramming of $53.3 million for Tank Operations at Hanford, I understand that DOE knew as early as May 1998 that additional "critical" work requirements would make it difficult to stay within available funding levels. The Department was notified in August of 1998 by the M&I contractor that there were increased funding needs to address important issues in the tank farm. Yet, there was no action taken until mid-February 1999 to alert the committee of a potential problem, and it was not until February 24, 1999, that the Department formally notified the appropriate Committees of Congress of the funding shortfall and the need for the additional $53.3 million. This chronology raises serious questions as to how the Department of Energy manages its programs and the extent that the Department is able to control how appropriated funds are spent.

Why, based on your own timeline, in May and again in July of 1998 when additional unscheduled work became known, didn't the Department take actions to reorder priorities in an effort to stay within the available funding level?

Answer. In May 1998, although some of the conditions that would eventually require this reprogramming were known to exist, the impact to fiscal year 1999 planning was not fully apparent. By July, a number of events occurred, such as completion of a Process Control Plan for tank C–106, the State's notification of its intent to sue related to interim stabilization, and a high incidence of reported alarm failures, that defined the urgent and emergent safety actions which would need to be addressed in fiscal year 1999. However, the full scope, schedule, and costs associated with these activities were not defined sufficiently to be able to reprioritize work at that time. In retrospect, we should have advised the Congress in August 1998 of the new requirements and the potential for a reprogramming request. This would have provided the Congress the opportunity to decide if the fiscal year 1999 appropriation marks should be revised.

Question. Why in August of 1998 was the committee not informed of the additional problems and funding needs as identified by the M&I contractor? You'll remember that the Conference on the fiscal year 1999 Energy and Water Appropriations Bill had not taken place, so the committee had the ability and opportunity to address this issue when finalizing the fiscal year 1999 Environmental Management budget.

Answer. While the need was recognized, the information required for a formal request was not fully developed. In August 1998, the Richland Operations Office was still working on the contractor's multi-year work plan. Additionally, the Department was in the midst of negotiations with the State of Washington concerning stabilization of the single shell-tanks. The full scope of the activities to be required was not fully defined at that time. Therefore, the entire scope of the additional work was not clearly defined, nor were the associated costs. It would have been premature to request Congressional action without proper details to support the request. However, in retrospect, had we advised the Congress in August 1998 of the new requirement and potential for a reprogramming request, it would have provided Congress with the opportunity to decide if the fiscal year 1999 appropriation marks should be revised.

Question. Why, knowing of the shortfall in funding, did the Department authorize the M&I contractor to proceed with additional work prior to notification and approval of a reprogramming by the Committee on Appropriations of the House and Senate?

Answer. The contractor was authorized to proceed to address urgent and emergent safety needs, as well as regulatory requirements. At no time did Richland intend to exceed available funding limits, or violate any fund controls. There had always been a plan in place to reduce scope to stay within the limitations. However, this plan involved significant impacts to site-wide programs. The need for the reprogramming arose because of the requirement for additional operating funds in the Post-2006 Completion Fund account. If the reprogramming were to be disapproved, all programs under this account (i.e., environmental restoration, waste management, and Tank Waste Remediation System/privatization support) would have had to absorb reductions to allow the tank safety work to continue.

Question. Why did it take from August of 1998 until February 1999 for the Department to get a reprogramming request to the committee?

Answer. Last summer, the Richland Operations Office identified several funding needs in the high level tank waste operations program. These needs exceeded the identified potential funding sources. Therefore, the Richland Office and Headquarters worked together to develop the funding priorities to be included in the reprogramming request as well as the potential funding sources.

During this process, additional funding needs arose as a consequence of new technical issues with one tank that has posed significant health and safety problems in the past, as well as the new consent agreement with the State of Washington to resolve compliance issues concerning interim stabilization of the single shell tanks.

To ensure that these new activities were properly priced and to avoid the need to submit two reprogramming requests, the Richland Office and Headquarters continued to work together to finalize the technical approaches and pricing for these new activities before the reprogramming request was submitted to Congress.

The Richland Office submitted its formal reprogramming request to Headquarters on December 10, 1998; Headquarters submitted the request to OMB on February 4, 1999; and the Department submitted the final request to Congress on February 24, 1999.

In retrospect, we should have advised Congress in August of 1998 of the new requirement and potential for a reprogramming request. This would have afforded

Congress the opportunity to decide if the fiscal year 1999 appropriation marks should be revised or wait for a formal reprogramming request.

Question. Finally, can you explain how or why the Department was able to assume approval of the reprogramming in the fiscal year 2000 budget, which the Department prepared last year and submitted to the Congress on February 1, 1999, when the requirements of the reprogramming request were not fully known and no request had been submitted to the committee?

Answer. The Department intended to present the Congress with a request for fiscal year 2000 that was consistent with the reprogramming request that would be presented to the Congress at approximately the same time. In this manner, the Department would be presenting to the Congress a consistent and coherent description of the program that the Department was seeking to execute at the Hanford site in fiscal year 1999 and fiscal year 2000. With respect to the timing of the fiscal year 2000 budget submission, the Richland portion of the fiscal year 2000 budget request was not finalized until late January 1999, so that it would accurately reflect the information contained in the soon-to-be-submitted reprogramming request. At no time did the Department assume the reprogramming had been approved. If the reprogramming had not been approved, we would have modified our request for fiscal year 2000 accordingly.

In retrospect, we should have advised the Congress in August 1998 of the new requirement and potential for a reprogramming request. This would have provided the Congress the opportunity to decide if the fiscal year 1999 appropriation marks should be revised.

Question. Secondly, and probably of more concern, is the total lack of ability of DOE to control the waste cleanup program, not just at Hanford, but throughout the DOE complex. This reprogramming is just one illustration of the issues and problems. It is just a symptom of a bigger problem namely, that DOE's cleanup efforts are being driven by compliance agreements and state threats of legal action irrespective of the actions by Congress in appropriating funds for the Environmental Management program.

Mr. Owendoff, would you care to respond?

Answer. First, I would like to address the concern regarding the extent to which the EM program is "driven" by cleanup agreements and potential state legal actions.

The EM budget is driven by a number of factors, including:

(1) the need to mitigate or control risks to human health and the environment posed by the Department's unprecedented inventory of nuclear and hazardous wastes and materials;

(2) legal obligations to perform a variety of activities, and the national policy to reduce global nuclear proliferation risks; and

(3) a strategy to invest in certain activities such as accelerating project completion dates that can reduce longer-term program costs.

The Department's legal obligations arise directly from federal and state environmental and public health laws and regulations that apply to DOE's activities, and from compliance agreements that the Department has entered into pursuant to those laws.

The Department recognizes the importance of both meeting its legal obligations and managing a program within the current budgetary constraints. In many instances, state and federal regulators have been willing to renegotiate compliance milestones in light of emerging technical information and budgetary constraints. However, state and federal regulators have recently indicated an increasing reluctance to continue to do so.

Many EM projects involve unique and complex technical and managerial challenges. These include unique, high-level liquid radioactive waste mixtures in leaking underground tanks, corroding spent nuclear fuel in wet storage pools, and waste in burial pits containing plutonium and other wastes in unknown concentrations and locations. In a number of instances, the cost and schedules of these projects have proved difficult to accurately define or project in advance. However, the Department has taken a number of steps to improve its project management to help ensure that projects can be completed on schedule and within current budgets. For example, the Department has undertaken a major effort to integrate cleanups between sites to take advantage of potential economies of scale and to eliminate duplicate facilities. Also, pursuant to Congressional direction, the Department has created the Office of River Protection to manage the Hanford tank program. EM also is creating the Office of Independent Project Reviews to monitor and improve management of major projects. We are continuing to improve our contracting methods to provide our contractors with the right incentives and penalties for good or poor performances.

I must respectfully disagree with the suggestion that there is a "total lack of ability to control the waste cleanup program." The Department acknowledges that there

have been prominent instances in which project cost escalations and/or delays in schedules have led to legal issues and budgetary pressures. These projects generally have involved the unique technical challenges described above. In these cases, the Department has taken steps to improve its management of these specific projects as well as other technically challenging projects. In fact, the Department has made substantial progress in completing cleanup projects. By the end of fiscal year 1999, we expect to have completed cleanup or made "no further action" determinations for nearly half (47 percent) of the approximately 9,300 contaminated release sites for which the EM program is responsible. This will result in the completion of the active cleanup of 65 of the 113 sites originally under the EM program (excluding the FUSRAP sites). We have produced 617 canisters of waste vitrified into glass since operations began at the Savannah River Site near Aiken, South Carolina, and 237 canisters at the West Valley Demonstration Project in New York. In 1998, the Department completed the Uranium Mill Tailings Surface Project (cleanup of 22 mill sites and 5,700 vicinity properties); the decommissioning of the Hanford-Reactor and B–Plant; the cocooning of the Hanford C–Reactor; and the completion of Phase I of the vitrification program at West Valley, New York (vitrification of all waste except for tank heels.) In addition, the Department is on track to complete the closure of the Weldon Spring site by 2002 and the Mound site by 2005. We are also on track to complete cleanup at Fernald by 2006 and continue to refine our project baselines at Rocky Flats in order to meet our ambitious goal to clean up Rocky Flats by 2006.

The Department therefore believes that although there are several instances in which project management has been a difficult challenge, the program is being managed and we are making the necessary progress.

SCIENCE AND TECHNOLOGY

Question. The funding request for fiscal year 2000 for the DOE environmental management Science and Technology program is $230.5 million compared to $243.2 million provided of the current year, a reduction of $12.6 million. Within the overall request is funding for the Office of Science program which support the efforts of the Environmental Management program. This is funded at $47 million in fiscal year 1999 and the request for fiscal year 2000 is $32 million, a reduction of $15 million from the fiscal year 1999 level.

Is the continued reduction in the Science and Technology program strictly related to budget constraints or is there some other reason for the decline?

Answer. In fiscal year 1999, the Department requested $219.5 million for the Environmental Management Science and Technology program, including $32 million for the Science Program. The Congress appropriated $243.5 million for the Science and Technology program, including $47 million for the Science program. This represented a $15 million increase from the request for the Science program and a $14 million overall increase. The increase provided by Congress in fiscal year 1999 for the Science program will enable the Department to initiate several new projects in fiscal year 1999 to address scientific problems associated with vadose zone, subsurface contamination, and groundwater issues at sites such as Hanford and to develop a better scientific basis for understanding exposures and risks to humans from low dose radiation.

In fiscal year 2000, the Department is requesting $230.5 million for the Science and Technology program, including $32 million for the Science program. The requested level for the Science program represents the amount that is necessary to continue funding for the projects that already have been initiated. The Department intends to assess the results from the first round of Science program projects (for which fiscal year 1999 is the last year of funding) prior to requesting funding for new projects.

The Science and Technology program budget is developed in conjunction with the budget for the other EM sites. The EM budget is driven by a number of statutory and regulatory requirements for which sufficient funding must be requested. The program's priority is to fund these compliance requirements, and other safety-related priorities, before it funds other important, but discretionary, items such as research that allows the program to address many of the technical challenges it faces.

We are committed to and pleased with the progress of the Science and Technology Program, including the Environmental Management Science Program, which is co-managed by EM and the Office of Science. We continue to believe that a strong Science and Technology Program is essential to the success of the EM Program.

Question. Now several years ago, GAO gave the program poor marks for use of funds appropriated for technology development and moving that technology into use around the DOE complex. What has DOE done to bring about change and to focus the technology development program on the areas of critical need?

Answer. The Environmental Management (EM) program has made significant changes in the way our science and technology (S&T) program seeks to deploy new technologies. S&T is no longer solely a developer of cleanup technologies. S&T now provides the full range of science and technology capabilities necessary to deliver and support fully developed, deployable solutions to DOE's cleanup problems—from basic research through development, demonstration, deployment and technical assistance. We have enhanced the "focus area" membership—teams that address EM's five major problem areas—to serve as centers of expertise to provide technical assistance to the sites on technologies through all phases of development and deployment. We have also established Focus Area User Steering Committees that consist of senior-level user and developer representatives who are involved in decision-making throughout all phases of technology development. This ensures that users provide input as technologies evolve so the technologies meet sites' needs as they become available for use.

Also, an EM Research and Development Program Plan has been developed that "maps" investments in technical solutions to site-identified needs. This effort ensures that our science and technology activities are planned and managed in an interactive, coordinated and participatory relationship with EM cleanup project managers and stakeholders.

S&T uses a multi-attribute decision model that defines and prioritizes EM's technology needs and drives investments for science and technology. The prioritization criteria help ensure we are meeting our highest priority needs to solve environmental cleanup problems, as well as addressing areas of high technical risks, addressing high cost waste streams, and accelerating deployment.

To spur widespread use of available innovative technologies, EM began an accelerated site technology deployment initiative in fiscal year 1998. Fourteen projects were competitively selected and initiated that resulted in 13 deployments by the year's end. Another 42 deployment projects were reviewed and approved for possible funding in fiscal year 1999, from which 32 have been funded and initiated. The cost and performance data from these successful deployments help accelerate widespread use by eliminating the perceived business risks associated with new technology.

S&T also helps sponsor the Interstate Technology and Regulatory Cooperation Working Group (ITRC), a state and federal partnership for streamlining the regulatory approval process. ITRC provides an excellent forum for regulators from 26 states to collaborate with representatives from federal agencies, industry and stakeholder groups to raise the confidence of environmental decision-makers concerning deploying new technologies. This collaboration among participating states eliminates duplicative verification work, thereby reducing the time and cost regulating agencies must spend reviewing and permitting new technologies.

Question. Can you give the committee some idea of how you have been able to develop and move technology from the concept stage to use at DOE sites?

Answer. An example of a viable technology that grew from an idea is cesium removal using crystalline silicotitanate (CST). Approximately 100 million gallons of radioactive waste are stored in underground storage tanks at Hanford, Idaho, Oak Ridge, and Savannah River. The waste contains the radioactive element cesium, which emits penetrating radiation that presents health risks to workers and the public if they are exposed to the tank waste. Removing the cesium from liquid tank waste reduces the volume that must be carefully and expensively handled to prevent such exposures.

To address the cesium removal problem, we began a collaboration between Texas A&M University and the Sandia National Laboratory (SNL) to improve our understanding of the molecular structure of this type of waste. This effort showed promise as an improved method for separating radionuclides from high level wastes. These early results led to a Cooperative Research and Development Agreement between SNL and a private company, UOP Molecular Sieves, to produce CSTs in an engineered form. Oak Ridge National Laboratory (ORNL) used their "hot" cell facilities to perform successful pilot-scale testing (one-liter samples). The results of the pilot-scale tests enabled scale-up to a size suitable for processing Oak Ridge waste, and 25,000 gallons of Melton Valley tank waste were successfully treated using a full-scale system built by TTI Engineering under contract with ORNL. Going from breakthrough to full-scale deployment took about five years and involved one university, two National Laboratories, and two companies.

Question. One of the tools which has been developed is "technology roadmaps". Explain the concept of these "roadmaps", how DOE plans to use them, and how the budget request addresses areas where there are significant science and technology issues to be addressed?

Answer. EM has been playing a lead role in the Department-wide effort to use roadmapping techniques to improve the way we develop and manage science and

technology investments. Roadmapping within EM involves an interactive dialogue between the user community responsible for the cleanup and the science and technology community developing solutions. This dialogue results in a jointly defined set of needs and an investment strategy to address them. The success of the DOE environmental cleanup program will ultimately depend on whether cleanup project managers at DOE sites have the tools and information they need to complete their projects on time and within budget.

EM has approached roadmapping at three levels. In November 1998, EM issued the EM Research and Development Program Plan. This Plan outlines a five-year investment portfolio for science and technology at the program level and is based on data provided by the sites to support EM's planning processes. The second level of roadmapping is at the environmental problem level (i.e., high level waste, mixed waste, deactivation and decommissioning, plutonium stabilization, and subsurface contamination). We have developed a set of multi-year program plans for each of these major problem areas which are reviewed by the site users and ultimately endorsed by the Focus Area User Steering Committees—groups established to ensure user and developer coordination through all phases of technology development. The third tier of roadmapping is at the project level and to date has been focused on a limited number of projects (e.g., salt treatment alternatives for cesium removal at the Savannah River Site and vadose zone activities at Hanford). These roadmapping efforts provide the underlying basis for the budget request.

To ensure the requested budget addresses areas where there are significant science and technology issues, S&T uses a multi-attribute decision model that defines and prioritizes EM's technology needs and drives investments for science and technology. The sites across the DOE complex recently reported over 500 environmental problems that require technological solutions in order to complete cleanup activities, over 80 percent of which are categorized as medium and high priority. Also 86 pathways or events on the critical path to closure were identified as having medium to high technological risk, where critical cleanup projects may not be completed on time or within budget due to a technology deficiency. This prioritization process uses these data to ensure that S&T's investments are aimed at meeting the highest priority needs, addressing areas of high technical risks, addressing highest-cost needs, and accelerating deployment.

Question. How important is the Science Program to the success of the environmental management and cleanup program?

Answer. The Environmental Management Science Program (EMSP), which is co-managed by DOE's Offices of Environmental Management (EM) and Science (SC), has a significant role in the successful cleanup of the DOE weapons complex. The sites have identified a number of significant and intractable problems they will face in the long-term, primarily in work that needs to be done beyond the 2006 timeframe. The EMSP addresses the most challenging, and potentially the most costly, technical problems facing DOE related to high-level waste, spent nuclear fuel, mixed waste, nuclear materials, remedial action, decontamination and decommissioning, and health, ecology and risk.

Question. Is the $32 million funding level sufficient to carry out a credible program? Please explain.

Answer. We are confident that the requested $32 million is adequate to continue the multi-year grants that were awarded in previous years. This includes the last year of 66 three-year research projects initiated in fiscal year 1997, 33 three-year projects initiated in fiscal year 1998 in the areas of radioactive tank waste and decontamination and decommissioning, and fiscal year 1999 grants to be awarded in September 1999 to address subsurface contamination/vadose zone and effects of low dose radiation exposure.

Question. What, in your judgement, is the minimum credible annual funding level?

Answer. At this time, we believe $32 million is the minimum level at which the EMSP program can adequately conduct a research program that provides basic scientific knowledge in support of the development of "cutting-edge" environmental technologies. The requested level for the Science program represents the amount necessary to continue funding for the projects that already have been initiated. The Department intends to assess the results from the first round of Science program projects (for which fiscal year 1999 is the last year of funding) prior to requesting funding for new projects.

Question. Can you give the committee some of the accomplishments to date as a result of the funding provided for the Science Program?

Answer. We are pleased with the progress of the Environmental Management Science Program (EMSP), which is co-managed by the DOE Offices of Environmental Management (EM) and Science. Since its beginning in fiscal year 1996

through fiscal year 1999, EMSP has invested over $190 million to support 235 research projects—work that is already providing useful results. Some selected accomplishments are:

—We are genetically engineering a natural soil bacterium with high resistance to radiation into a natural detoxifier for complex mixed wastes. These results show the promise of yielding an inexpensive, effective bioremediation of contaminated sites.

—We have also demonstrated innovative metal contaminant remediation methods using tobacco plants (phytoremediation) to remove methyl mercury from soils.

—We now have a better understanding of gas bubble-tank waste interactions during barometric pressure changes, which can lead to better methods of measuring and monitoring dangerous gas formation in high-level waste tanks and process streams.

—We are developing a method that combines seismic reflection and ground-penetrating radar to better map near-surface (2 to 8 meters) conditions at waste sites. This non-invasive approach can facilitate retrieval of buried waste at sites with complex geologies.

At the end of fiscal year 1999, we expect final reports from over 100 of the research projects awarded in fiscal year 1996, and we expect to have many scientific results that will help EM in achieving its cleanup mission.

Question. Has the Department decided whether there is no longer a need for a stable Science Program as reflected in the budget request for fiscal year 2000?

Answer. We believe the requested $32 million is appropriate at this time to support the multi-year grants that were awarded in previous years.

ROCKY FLATS CLEANUP

Question. Last year the Congress funded the cleanup work at Rocky Flats in the Closure Account at $657 million. The budget request for fiscal year 2000 is level funded at $657 million. The committee has been funding the Rocky Flats cleanup effort based on an accelerated schedule with closure by 2006. The current plan on which Rocky Flats cleanup costs and schedules are based on project closure of the site by 2010 at a cost of $7.3 billion. DOE's *Accelerating Cleanup: Paths to Closure* also indicates that cleanup will not be completed by the year 2010.

Accelerated cleanup of Rocky Flats is a key to DOE's efforts to reduce landlord and mortgage costs thereby freeing up resources to be applied to other critical cleanup work and sites. If Rocky Flats is not accelerated and the resulting savings of an estimated $1.3 billion realized, then there will be insufficient funds available to accomplish work at other sites across the DOE complex.

Explain DOE's strategy and approach to cleaning up Rocky Flats. Why doesn't DOE's report on Pathways to Closure support closure by 2006?

Answer. The Department fully supports efforts to clean up and close Rocky Flats as soon as possible, including meeting the 2006 goal. The strategy for cleanup and closure of Rocky Flats is straightforward, but challenging. The nuclear material in the buildings at Rocky Flats needs to be stabilized, packaged and sent off-site to a disposition facility or for storage in preparation for disposition. Once the materials are removed, the buildings will be deactivated and torn down. Waste generated by all these activities will also be sent off-site to a disposal facility. The soil will then be cleaned up to the agreed-upon soil action level and some areas will then be capped. The existing baseline and the *Accelerating Cleanup: Paths to Closure* document show this work being completed in 2010. The Department and the Rocky Flats contractors have accepted a challenge to accelerate that goal to 2006. This goal has not yet been translated into a detailed baseline and assumptions necessary to give us confidence that this goal can be turned into a plan, but we expect to receive a detailed baseline to achieve the 2006 goal from the contractor in May 1999. We plan to validate that baseline by the end of this year. Following this, we expect that future revisions of *Accelerating Cleanup: Paths to Closure* will reflect the 2006 goal.

FUNDING FOR 2006 COMPLETION

Question. Does the fiscal year 2000 request of $657 million support the 2006 date, and if not, why? How much additional funding is needed to maintain the 2006 completion schedule?

Answer. The fiscal year 2000 budget request is based on the current baseline for Rocky Flats, which has a 2010 closure date. However, activities have already been identified that would help accelerate closure to 2006, and these activities are included in the fiscal year 2000 budget request. Some examples include the ongoing shipment of plutonium residues to the Savannah River Site (SRS) for stabilization, and accelerating by two years the shipment of metals and oxides to SRS. We are

expecting the details of a 2006 closure baseline from the contractor in May 1999. DOE expects to validate the baseline by the end of this year. I am confident at this point that the Department's fiscal year 2000 budget request includes adequate funds to support accelerated closure.

WIPP OPENING

Question. How important is the opening of the WIPP facility in New Mexico to the Rocky Flats accelerated cleanup strategy. What impact will a delayed opening of WIPP have on cleanup plan for Rocky Flats?

Answer. Opening WIPP is extremely important to the overall effort to accelerate the closure of Rocky Flats and several other DOE sites. We are very pleased that WIPP has begun receiving waste and expect this will help clean up and close Rocky Flats. Nonetheless, more on-site storage for TRU waste may be needed. The repackaging of plutonium residues in fiscal year 1999, when combined with existing and projected TRU waste in inventory at Rocky Flats, may result in more TRU waste than can currently be stored at Rocky Flats even assuming shipments of waste from Rocky Flats to WIPP. Therefore, even after WIPP begins receiving Rocky Flats waste this summer, more storage capacity may be needed. Rocky Flats is already increasing its storage capacity by modifying existing temporary structures and expanding Building 440. If Rocky Flats does not begin shipments of waste to WIPP by July 1999, and is not able to ship at fairly aggressive rates, the site will need to make a decision by the end of fiscal year 1999 on whether to start modification or construction of additional storage facilities. We do not expect the need for additional storage to impact the 2006 closure goal.

CLEANUP BUDGET

Question. What portion of the $657 million budget request is for actual cleanup work and how much goes to other expenses such as landlord and management costs?

Answer. Approximately $245 million (37 percent) of the $657 million fiscal year 2000 request is for actual cleanup work, including stabilization, packaging, and shipment of special nuclear material, storage and shipment of waste, deactivation and decommissioning of facilities, and environmental restoration activities. The remaining $412 million (63 percent) (commonly referred to as fixed cost) supports safeguards and security, surveillance and maintenance of over 600 facilities, infrastructure and utilities, analytical support, and project/program management. The desire to reduce the high "fixed cost" at Rocky Flats is one of the key reasons that the Department is investing cleanup dollars for accelerated closure of the site.

MIXED LOW-LEVEL AND LOW-LEVEL WASTES

Question. What are DOE's plans regarding disposal of mixed low-level and low-level wastes? Do you have an approved plan, where is the waste to go, what is the schedule for having plans approved, and what are the major issues or problems associated with providing a path for disposal of these wastes?

Answer. Low-level waste is currently being shipped to the Nevada Test Site for disposal. Some mixed low-level waste is currently sent to a commercial facility. The wastes now being shipped generally have a low radionuclide content.

Some mixed low-level wastes that will be generated during cleanup do not now have an approved disposal pathway. These mixed low-level wastes are projected to have radionuclide levels greater than any commercial facility is currently authorized to accept; and no DOE facility can accept off-site mixed low-level waste, regardless of radionuclide content, until DOE issues the Record of Decision for mixed low-level waste based on the Waste Management Programmatic Environmental Impact Statement. We are pursuing two potential disposition paths for this higher radionuclide waste—disposal in a commercial facility in Colorado or disposal in a DOE facility. A decision on these options is expected in fiscal year 2000.

IDAHO NATIONAL ENGINEERING & ENVIRONMENTAL LABORATORY

Question. Briefly explain the strategy and major milestones for waste management activities at the Idaho National Engineering and Environmental Laboratory (INEEL).

Answer. The INEEL Waste Management program will safely treat, store, and dispose of low-level waste, mixed low-level waste, transuranic waste, and high-level waste in compliance with agreements (e.g., the 1995 Settlement Agreement among the Department, the State of Idaho, and the U.S. Navy), the Federal Facility Compliance Act Site Treatment Plan, and other applicable environmental requirements.

The Department's strategy is to dispose of 6,500 cubic meters of stored low-level waste by the end of fiscal year 1999, to treat and dispose of backlogged mixed low-level waste (as defined in the Site Treatment Plan) by 2003, and to treat and dispose of the retrievably stored transuranic waste by 2018. Newly generated low-level, and mixed low-level waste will be dispositioned within one year of generation. High level waste will be treated and prepared for transport out of Idaho by 2035.

Question. What impact is there on the Idaho Settlement Agreement if the WIPP facility does not begin receiving waste this year as planned? What alternate or backup plan is there to ensure that the requirements of the Settlement Agreement are met?

Answer. The remedy for failure of DOE to meet the transuranic waste shipment milestones outlined in the Idaho Settlement Agreement is the suspension of DOE spent nuclear fuel and foreign research reactor shipments to the Idaho National Environmental and Engineering Laboratory (INEEL). DOE met the first milestone when the first shipment left INEEL on April 27, 1999.

Question. Is there anything other than opening of WIPP which could delay shipments of TRU waste out of INEEL in fiscal year 1999?

Answer. DOE shipped the first shipment of transuranic waste from INEEL on April 27, 1999, to the Waste Isolation Pilot Plant in New Mexico. Over the next several months, DOE plans to send transuranic waste shipments to WIPP from Los Alamos, INEEL, and Rocky Flats.

ADVANCED MIXED WASTE TREATMENT PROJECT (AMWTP)

Question. The fiscal year 2000 Budget Request includes $110 million for the Advanced Mixed Waste Treatment Project at the Idaho National Engineering and Environmental Laboratory. This project is being carried out under the DOE Environmental Management Privatization program.

Update the Committee on the current status of the Advanced Mixed Waste Treatment Project. Is construction of this facility required under the Idaho Settlement Agreement?

Answer. The AMWTP has been proceeding very successfully since the contract was awarded in December 1996. The contractor, BNFL Inc., has submitted quality Phase I project deliverables on schedule. Examples of such deliverables include the DOE Environment, Safety, and Health Program Operating Plan; the Resource Conservation and Recovery Act permit application; Air Permit to Construct application; and the Toxic Substances Control Act permit application. The AMWTP Final Environmental Impact Statement was completed and distributed in February 1999, and the DOE Record of Decision was signed by the Acting Assistant Secretary for Environmental Management on March 22, 1999. In the Record of Decision, DOE decided to implement the EIS Preferred Alternative, which is to proceed with construction (Phase II) and operation (Phase III) of the AMWTP facility, in accordance with the Department's contract with BNFL Inc.

The project is still in Phase I. BNFL is in the process of securing the necessary permits and completing needed safety and health documents to obtain DOE authorization to proceed. BNFL will begin construction after regulator approval is received. The regulators have indicated they expect to issue the permit by the end of this year.

Completing construction of a facility by December 31, 2002, to treat INEEL transuranic and alpha-emitting mixed low-level waste is a specific requirement of the 1995 Settlement Agreement between the State of Idaho, DOE, and the Navy. The AMWTP is on track for meeting this construction milestone. Construction of a facility to treat these wastes is also required by the INEEL Site Treatment Plan pursuant to the Federal Facility Compliance Act, which is enforceable by the State.

Question. How will the budget of $110 million be used?

Answer. The $110 million in privatization program funds in the fiscal year 2000 Congressional Budget Request will be available, if necessary, to cover the costs incurred by the contractor during the construction phase (Phase II) of the project if the Government decides to terminate the contract for its convenience. When the facility becomes operational in 2003, the $110 million will be available to pay the contractor for the amortized capital facility costs over the first 25,000 cubic meters of treated waste, as required by the contract.

Question. What is the facility expected to cost? How long is the facility expected to operate and at what cost?

Answer. There are two components of the unit price for treated waste: an operating cost component and a capital amortization component. The privatization funding pays for the capital amortization component and the site's operating budget pays for the operating cost component.

The privatization portion of the total project cost is $569.4 million, which includes the capital facility financing portion of the contractor's price, profit, and the cost of financing (i.e., interest). The facility is expected to operate until 2015 to complete the treatment of 65,000 cubic meters of INEEL waste under Option 1 of the contract, at a cost of $546 million, which includes the M&O Contractor and other project support costs, as well as decontamination and decommissioning costs. Therefore, the total project cost is $1,115.4 million. If DOE executes Option 2 of the contract, the AMWTP could also treat up to 120,000 cubic meters of additional, similar waste from INEEL or other DOE sites at a cost (in operating dollars) of $2,596 per cubic meter. In this case, the facility could treat up to a total of 185,000 cubic meters of waste and would operate for its full expected design life of 30 years.

Question. Why has the total project cost been revised from $1.078 billion to $1.115 billion? I thought that using the privatization approach was an effort to control project schedules and costs?

Answer. The capital portion of the privatization contract is fixed and is not subject to either price redetermination or economic price adjustment. There has been an adjustment to the facility operating costs due to two factors. First, the contract was negotiated with an assumed, level production schedule. An updated production schedule has been developed and incorporated into the contract which reflects a more realistic waste processing schedule having less throughput during the early facility startup phase. This adjustment totaled $7.8 million.

Second, escalation rates in the initial forecast were based on rates established by the Office of Management and Budget. However, the negotiated contract requires use of a Department of Labor index as the basis for change in economic price adjustment. This contract requirement resulted in an adjustment to the estimated life cycle cost of $28.7 million. It can be expected that downward or upward changes to unit prices will occur when the index forecast changes materially. Future budget submissions will stay constant unless there is a significant increase or decrease in the index. The economic price adjustment clause of the contract does not apply to the privatization (capital) part of the contract price; the clause applies only to facility operating costs.

Question. Explain the change in the escalation rates from the OMB required rates used in the initial estimates to the economic index based escalation negotiated in the Advanced Mixed Waste Treatment Project contract which has resulted in an increase of $28.7 million in the estimated life cycle cost of the project.

Answer. Escalation rates in the initial forecast were based on OMB rates. However, during negotiation of the contract with BNFL, the Department and BNFL negotiated the use of a Department of Labor index as the basis for change in economic price adjustment. This contract requirement resulted in an increase to the estimated life cycle cost of $28.7 million. It can be expected that downward or upward changes to unit prices will occur when the index forecast changes materially. Future budget requests will reflect significant increases or decreases in the index through adjustments to the project estimates. The economic price adjustment clause of the contract does not apply to the privatization (capital) part of the contract price; the clause applies only to facility operating costs.

PIT 9 PROJECT

Question. What is the current status of the impasse related to the Pit 9 project at INEEL? What can you report regarding the Secretary's commitment to find a path forward to resolve the impasse?

Answer. There are two matters in litigation regarding the default termination of the Pit 9 subcontract with Lockheed Martin Advanced Environmental Systems (LMAES) for remediation of Pit 9. First, LMAES and Lockheed Martin Corporation have commenced an action in the United State Court of Federal Claims against the United States. (Cases in that court are filed against the United States rather than against an individual department or agency.) Second, Lockheed Martin Idaho Technologies Company (LMITCO) commenced an action against LMAES and the Lockheed Martin Corporation in the United States District Court for the District of Idaho, to which the Department is not a party.

The United States has filed a motion to dismiss the Court of Federal Claims action because (1) there exists no privity of contract between the United States and LMAES or the Lockheed Martin Corporation upon which to base a direct contract action against the United States, and (2) no action undertaken by the United States Government has effected a cognizable taking of the property of LMAES or the Lockheed Martin Corporation. That motion is pending before the Court.

With respect to the Idaho litigation, we understand that there have been discussions between LMITCO and LMAES and the Lockheed Martin Corporation. In addi-

tion, LMITCO has been exploring with the Department various mechanisms that might be available and appropriate to address issues raised by the Pit 9 subcontract dispute. Such an undertaking has been impeded, however, by the efforts of LMAES and the Lockheed Martin Corporation to have the Idaho litigation stayed (that is, consideration of its merits delayed) while they pursue their Court of Federal Claims action in Washington.

The Secretary and the Department remain committed to moving ahead expeditiously on cleaning up the Radioactive Waste Management Complex, including Pit 9. Working with EPA and the State of Idaho, the Department has developed and begun to implement an "alternative", three stage approach to the Pit 9 cleanup. Stage I focuses on subsurface exploration. Stage II focuses on design, construction, and operation of robotic and remotely operated retrieval systems and confinement systems to demonstrate that remedial action Record of Decision objectives are achievable. Stage III will complete the remediation of Pit 9.

Question. What is the current cost to finish the project and how does this compare to the original baseline estimate?

Answer. DOE, EPA, and the State have agreed to complete the remediation of Pit 9 under a three-stage project for an estimated cost of $200 million, which was the fixed price of the original project under the now-terminated sub-contract signed in 1994 with LMAES. A more detailed cost estimate will be available at the completion of stage 2 of the project.

Question. The budget justification indicates that DOE plans to spend $50 million for an Alternate Pit 9 phased alternative approach. Explain DOE's plans to proceed with a "Alternate" approach at Pit 9. Doesn't proceeding with this effort make it more complicated and difficult in resolving the current legal and contractual dispute?

Answer. Because the subcontract for the implementation of the Pit 9 interim action was terminated and the regulatory agencies are requiring DOE to meet the terms of the original 1993 Pit 9 Record of Decision, the development of a revised schedule and scope of work were necessary to satisfy the requirements under the 1991 Federal Facility Agreement and Consent Order to issue a Comprehensive Record of Decision for the Radioactive Waste Management Complex in 2002. A three-stage process for remediating Pit 9 was jointly developed by the DOE, EPA, and the State of Idaho, and the schedule for completing the comprehensive investigation of the Radioactive Waste Management Complex was extended. The revised effort, referred to as the Operable Unit 7–10 Staged Interim Action, will include three stages: Stage I focuses on subsurface exploration; Stage II focuses on design, construction, and operation of robotic and remotely operated retrieval systems and confinement systems to demonstrate that remedial action Record of Decision objectives are achievable. Stage III will complete the remediation of Pit 9.

The $50 million requested in the fiscal year 2000 Congressional Budget Request will be used for CERCLA work on the entire Radioactive Waste Management Complex, which includes Pit 9. The Pit 9 portion of these funds will be used to complete Stage I, continue work on Stage I activities (including monitoring and waste treatability studies), and initiate Stage III remediation.

The decision to proceed with the Staged Interim Action for Pit 9 described above does not affect the ability of the management and operating contractor (Lockheed Martin Idaho Technologies Company, Inc. (LMITCO)) to resolve its dispute with Lockheed Martin Advanced Systems, Inc. (LMAES).

HANFORD SITE

Question. Explain the overall strategy for cleanup and removal of legacy waste from the Hanford Site, particularly as it relates to the high level waste tanks and activities associated with the K–Basin.

Answer. The Hanford Site strategy is to protect the Columbia River and to mitigate, to the extent practicable, the greatest hazards by 2006 while proceeding with the necessary preparations for longer-term cleanup. As part of the near-term work, the corroded spent fuel in the aging K–Basins is being moved away from the Columbia River into safe, dry storage on the central plateau of the 200 Area, where it will remain in interim storage awaiting final disposition in a national repository. Other near-term actions include completing stabilization of plutonium; interim stabilizing the single-shell tanks, some of which have leaked, which involves transferring pumpable liquids into double shell tanks; and developing a privatized vitrification facility to treat and immobilize the high-level wastes in the double shell tanks and low-activity wastes at the tank farms. The high-level wastes will be placed in an interim storage facility to await final disposition in a national repository, and the vitrified low-activity wastes will remain in an on-site facility. Transuranic wastes

will be shipped to the Waste Isolation Pilot Plant beginning in fiscal year 2000, and other waste-types will be safely disposed on-site at Hanford.

The site is remediating contaminated soils, cleaning up facilities and buildings through demolition or decontamination, and addressing groundwater contamination to reduce risks and reduce surveillance and maintenance costs. As agreed to by the regulators, DOE will address the decontamination and decommissioning (D&D) of the surplus reactors in two phases. Phase I will place the reactors in interim safe storage, ensuring that facilities are safe and secure and reducing surveillance and maintenance costs. Phase II will involve removal of reactor cores to a disposal facility in the 200 area. The overall strategy for remediation and D&D activities is to complete cleanup first in areas nearest the Columbia River, then move cleanup efforts toward the 200 area. The majority of contaminated soils and materials will be disposed on-site in the Environmental Restoration Disposal Facility in the 200 area, which has already received over 1.5 million tons of contaminated soil.

Question. How does the Paths to Closure plan support these DOE's strategies?

Answer. The *Paths to Closure* report focuses on addressing the highest risk activities first, along with accelerating project completion and site closure. This strategy is reflected in the prioritization of activities at the Hanford site, where mitigation of the greatest Hanford hazards (e.g., tanks, spent fuel in K-basin, and the Plutonium Finishing Plant) are given the highest ranking while environmental restoration and deactivation work is executed in a more constrained manner. The *Paths to Closure* analysis indicates that the funding profile for a number of sites decreases in the 2006–2010 time frame as projects are completed. Several major hazard-reduction projects at Hanford should also be completed by this time. We therefore anticipate that some additional EM funds will be available for the Hanford site for the TWRS project and environmental restoration activities.

Question. What are the areas where the Plan does not meet the milestones of the Tri-Party Agreement? What is DOE doing to bring its planned work into compliance with the Agreement?

Answer. *Accelerating Cleanup: Paths to Closure* is consistent with all current milestones in the Tri-Party Agreement (TPA) with the State of Washington and the Environmental Protection Agency. However, the Richland Operations Office's June 1998 Plan was developed prior to the signing of the BNFL contract. DOE is proceeding with negotiations with BNFL to determine the full scope and schedule of the privatization contract. The Department is also negotiating with the State of Washington to revise the current high-level waste milestones in the TPA based on the outcome of contract negotiations with BNFL.

Question. The 2006 Plan and budget realities demand increased efficiencies in order to save resources which can then be applied to critical cleanup work. What were the results of negotiations between DOE, its regulators, and stakeholders to identify and agree upon needed efficiencies to cover project compliance shortfalls?

Answer. The Department is continuing to strive for efficiencies to avoid shortfalls. This was the purpose of numerous discussions that were held between DOE, the field offices, federal regulators, state regulators and stakeholders. At Hanford, these meetings explored different means to get more work done given the existing budgets. The general areas that were identified as areas of potential savings and are currently being pursued are:

44. Reduce the amount of money going to support activities (e.g. safeguards and security, project/program management).

45. Reduce infrastructure costs and activities.

46. Examine areas where DOE can improve and possibly reduce the requirements to make sure that excessive, low value activities are not placed on contractors.

47. Work closely with regulators to ensure that we are only doing what is necessary to fix a problem.

48. Perform the work that is currently being done in waste management and environmental restoration using fewer resources.

49. Delete unnecessary work, or if it is not a high priority, explore the possibility of moving it to the future.

The regulators and stakeholders actively participated in the fiscal year 2000 budget development. They are aware that additional efficiencies alone may not be sufficient to solve all future funding issues. We will work with the State and local stakeholders to address compliance issues that may arise.

Question. What major cleanup activities remain to be accomplished at Hanford other than the tank remediation work?

Answer. Other than tank remediation work, the other major Hanford cleanup projects include:

—completion of stabilization activities at the Plutonium Finishing Plant;

—removal of spent fuel from the K–Basins near the Columbia River and placement into the Canister Storage Building on the 200 Area plateau;
—stewardship of nuclear materials and spent fuel pending final disposition;
—retrieval, certification and packaging of transuranic wastes for shipment to the Waste Isolation Pilot Plant in New Mexico;
—remediation of 1,497 contaminated areas (release sites); this will require moving almost 6 million tons of material, much of it from along the Columbia River, to safe disposal in the Environmental Restoration Disposal Facility in the 200 Area;
—decontamination and decommissioning, and ultimately dismantlement and disposal of 244 structures including final disposition of the seven deactivated reactors in the 100 area;
—remediation of contaminated ground water to prevent migration towards the Columbia River, including operation of "pump and treat" systems to extract contaminants such as chromium, carbon tetrachloride and strontium-90.

TANK WASTE REMEDIATION SYSTEM (TWRS)

Question. Explain the TWRS privatization proposal. How much will it cost to cleanup the storage tanks at Hanford?

Answer. Under the privatization approach, the Department has moved from a government-owned, contractor-operated facility concept to a contractor-owned, contractor-operated facility concept where the Department will purchase the necessary Hanford tank waste treatment and immobilization services. In July 1998, the Department submitted its *Report to Congress, Treatment and Immobilization of Hanford Radioactive Tank Waste*, which details the history and the next steps in the privatization of the treatment of tank wastes.

In February 1996, the Department solicited and awarded contracts for Phase I of the privatization contract, Part A, which required the contractor teams to demonstrate their technical, operations, regulatory, business and financial approach. During 1998, after a controlled process that analyzed contractor proposals, the Department selected BNFL, Inc., and authorized it to proceed to Part B–1 of the contract. We are now in Part B–1, which is a 24-month design period that is intended to develop sufficient engineering and financial maturity to establish fixed-unit prices and to finalize project financing terms, including BNFL's ability to obtain outside financing. The design phase ends in August 2000. DOE will then make a decision whether to authorize BNFL to construct and operate the facilities as proposed.

If authorized, BNFL would provide both high-level and low-activity waste treatment and immobilization services and would be expected to process approximately 10 percent of the Hanford tank waste by mass and 20 to 25 percent by radioactivity. Phase I is scheduled to be completed in 2018, with the potential to continue into Phase II with BNFL. The Phase II concept for full-scale production facilities to complete the tank waste remediation effort will be developed based on Phase I experience. Under all scenarios being considered for Phase II, the Phase I plant will be expanded and continue to operate in Phase II.

The tank waste will be processed by using vitrification, a process that immobilizes the waste in glass. The less radioactive low-activity waste will be permanently and safely stored at the Hanford site. The high-level waste will be temporarily stored at Hanford. It will eventually be moved to a national repository. Both types of waste will be treated in the BNFL facility.

The design, construction, and operation of the treatment facilities for both high-level radioactive wastes and low activity wastes will be the responsibility of BNFL. BNFL will commit its own equity to the project, augmented with additional financial backing to pay for facility construction. The Department will pay fixed-unit prices for delivery of the immobilized waste.

In the fiscal year 2000 Congressional Budget Request, the Department estimated the cost of Phase I of the vitrification project to be approximately $12.5 billion (current year dollars). This estimate includes the cost to construct, operate, and deactivate the privatized vitrification facility, as well as BNFL's financing costs and fee. It also includes the costs that will be incurred by the Department at the Hanford site to support to the operations of the privatized facility, including activities to retrieve the waste from the tanks, deliver feed to BNFL, accept and store the low-activity and high-level vitrified products, and provide other infrastructure support to BNFL

In the report *Accelerating Cleanup: Paths to Closure*, released in June 1998, the Department estimated the total life-cycle cost of cleaning up the 177 underground high-level waste storage tanks at Hanford to be approximately $52 billion (current year dollars). This estimate included the costs of both Phase I and Phase II. How-

ever, this estimate was prepared before the Department selected and authorized BNFL, Inc., to proceed with the design of the Phase I vitrification facility. The Department is currently evaluating several options for facility design and operations during Phase I, each of which has an impact on total life-cycle costs for the project. The Department will update and provide a revised total life-cycle cost estimate for the project as Phase I proceeds.

Question. The budget request for fiscal year 1999 includes $106 million, a slight increase over the current year level, to continue the Hanford TWRS privatization project. What activities were carried out in fiscal year 1998, what work is scheduled to be accomplished in fiscal year 1999, and what work is planned to be accomplished in fiscal year 2000?

Answer. Fiscal year 1998 resulted in the completion of Phase I Part A of the TWRS privatization contracts. Part A was a 20-month period to establish the technical, operational, regulatory, and financial elements required by privatized facilities to provide waste treatment services at fixed-unit prices. The 20-month period was divided into a 16-month period for the contractors to provide Part A deliverables and a four-month period during which they were reviewed and DOE determined whether to proceed to Phase I Part B. During performance of Part A, the contractors developed two parallel solutions for 1) Low Activity Waste (LAW) treatment and immobilization services only, and 2) LAW and High-Level Waste (HLW) services. During fiscal year 1998, the DOE reviewed the deliverables from both contractors and negotiated a contract modification with BNFL to proceed into Phase I Part B–1.

Fiscal year 1999 and fiscal year 2000 encompass the time period associated with Phase I Part B–1. During this period BNFL will: (1) optimize the LAW and HLW treatment and immobilization system, mitigate risk, and reduce contingencies in the waste treatment and immobilization system defined by BNFL during Part A of the contract; (2) revise the technical, operational, regulatory, and financial elements of the waste treatment and immobilization system; (3) provide firm fixed-unit prices for waste treatment services; and (4) perform all contractor activities necessary to reach financial closure for privatized facilities. The major decision affecting the TWRS privatization project, whether to authorize BNFL to proceed into construction and operation of facilities to treat the waste, is currently scheduled for August 2000.

Question. What are the major compliance and other milestones and decision points for the remainder of fiscal year 1999 and fiscal year 2000?

Answer. Major compliance and other milestones and decision points for the Office of River Protection, which manages the Tank Waste Remediation System project, include Tri-Party Agreement (TPA) milestones, Defense Nuclear Facilities Safety Board recommendations, and decisions affecting scheduled for August 2000, whether to authorize BNFL to proceed into Phase 1B2 for construction and operation of facilities to treat and immobilize the Hanford tank waste. This decision will be made based on BNFL's success in completing an acceptable 30 percent design by August 2000, committing equity and arranging financing for the construction and operations of the facilities, and submitting an agreeable fixed unit price for treating and immobilizing the tank waste.

The major TWRS compliance and other milestones for the remainder of fiscal year 1999 and fiscal year 2000 are:

Milestone	Description	Date
TPA M–40–12	Resolve nuclear criticality safety issue	30 Sep 99
TPA M–43–12	Start construction for upgrades in the first tank farm	30 Jun 99
TPA M–43–13	Start construction for upgrades in the second tank farm	30 Jun 00
TPA M–45–08A	Complete systems description and operation strategy for tank leak monitoring and mitigation.	31 Dec 00
TPA M–41 series (Consent Decree).	Initiate pumping for interim stabilization of single shell tanks S–102, S–103, and S–106.	30 Jul 99
TPA M–41 series (Consent Decree).	Initiate pumping for interim stabilization of single shell tanks U–103, U–105, U–102, and U–109.	15 Jun 00
TPA M–41 series (Consent Decree).	Reduce pumpable liquid remaining to be removed from single shell tanks to 93 percent of total liquid.	30 Sep 99
TPA M–41 series (Consent Decree).	Reduce organic complexed pumpable liquids remaining to be removed from single shell tanks to 38 percent of total organic complexed pumpable liquids.	30 Sep 00
DNFSB 93–5	Transmit letter to DNFSB reporting completion of topical report to resolve high heat safety issue.	31 Dec 99 (originally 31 May 98)

Milestone	Description	Date
DNFSB 93–5	Transmit letter to DNFSB reporting resolution of organic complexant safety issue.	30 April 00
DNFSB 93–5	Complete vapor sampling of all double shell tanks	31 Dec 00

Question. How much does it cost annually to monitor and maintain the 177 tanks at Hanford? What do you expect these costs to be after the waste in the tanks is removed?

Answer. The highest priority items with the TWRS budget are those necessary to maintain a "minimum-safe" condition. The current annual "minimum-safe" cost is about $100 million, and it is expected to remain at this level until the amount of high level liquid waste is substantially reduced.

In the post-2028 time-frame, when all the liquid wastes in the tanks have been removed, treated, and immobilized, the tanks themselves will remain, along with some solid waste material in the bottom of the tanks. The final disposition for these residuals has not yet been determined, but nominal surveillance and maintenance will be continued until the tank farm area is completely remediated. The annual cost will be a small fraction of the current surveillance and maintenance costs.

Question. What is the estimated total project cost for Phase I of TWRS, how does it compare with the cost estimate reported last year, and what accounts for the change?

Answer. The BNFL contract for Phase I contains target prices for treatment and immobilization services during the construction and operations phase. These target prices will be refined during the design phase, which is August 1998 to August 2000. The current agreement negotiated with BNFL establishes a $6.9 billion target price (constant fiscal year 1997 dollars) for a 10-year, minimum-order quantity of treatment and immobilization services. This minimum-order quantity will treat 10 percent of the Hanford tank waste by mass and 20 to 25 percent of the radioactivity.

This target price is higher than the original DOE estimate for Phase I. The fiscal year 1999 budget submission as reflected in the Construction Project Data Sheet showed an estimated cost of $5.14 billion. The higher price is due in part to the fact that the hazards presented by the operations to be performed under the contract necessitated more substantial facilities for processing and confinement of the waste. These hazards are principally due to worker radiation protection and seismic requirements. These facilities will have a 30-year design life rather than the original concept of a 5 to 9-year demonstration facility. As a by-product of the longer design life, the proposed plant has the potential to treat additional waste, to treat waste with a broader composition range, and to treat, with limited additional investment, more than half of the tank waste by mass and approximately 95 percent of the long-lived radionuclides if the plant is expanded in a modular approach.

Question. What is the basis for the $1.45 billion estimated total cost of the capital investment required under Phase I, and how confident is DOE that the capital investment can be held within this estimate?

Answer. The estimated cost of the capital investment required under Phase I is $5.4 billion (current year dollars), as determined at the end of Phase I Part A. (The $1.45 billion was a preliminary estimate of construction costs developed prior to Phase I Part A.) At that time, the design was only about five percent complete; and, as more data and information become available, this cost estimate will be refined. However, because the construction costs have such a large impact on the total costs, DOE is working hard to control and manage these costs. The contract with BNFL includes incentives for BNFL to reduce the capital cost of the facility as part of the process of establishing ceiling prices for waste treatment services. These ceiling prices will be established prior to the start of Phase I Part B–2—the construction and operations phase of the project. DOE is also negotiating with BNFL to include in the contract incentives for BNFL to control and reduce these costs during Part B–2. Any cost reductions will result in a decrease in the price that DOE pays for waste treatment services.

Question. Now, I understand that the requirement for Budget Authority for the TWRS privatization project increases from around $100 million this year to about $600 million in 2001 and $660 million in fiscal year 2002. Am I correct, and if so, what will be the impact on the project if the committee is unable to provide the additional budget authority? What options would DOE have available to continue the project at that point?

Answer. The Department identified in the fiscal year 2000 Congressional Budget Request a target funding level for the TWRS privatization project of $606 million in fiscal year 2001 and $659 million in fiscal year 2002.

The Department would have several options if the target level of funding is not provided. The Department's determination of which of these options to proceed with would include a consideration of the magnitude of any funding shortfalls and the potential for additional funding shortfalls.

First, the Department could renegotiate the terms of the privatization contract with the contractor. However, because the current funding targets represent the optimal schedule for the project, an extension of the schedule of the contract due to the unavailability of sufficient funds would lead to increased project costs. The magnitude of the cost increase would depend upon the extent of the funding shortfall and the length of the extension of the contract.

Alternatively, the Department could abandon the privatization approach and proceed with a traditional level-of-effort or cost-plus contracting approach. Either of these approaches will present less risk to the contractor in a budgetary environment, where project funding fluctuates from year to year and the government is unable to provide any certainty to the contractor regarding future funding levels. However, these approaches again put the burden on the government for project risks and cost growth. Thus, these options may increase total project costs significantly.

It should be noted that the contractor may not be able to secure adequate financing for the project if the government is unable to provide a sufficient amount of budget authority. The private sector may be unwilling to invest sufficient funds if it believes that the government is not strongly committed to the project. In the event of funding shortfalls, the contractor may attempt to either increase the contract price to cover the increased risk of project termination or even terminate the project.

The Tri-Party Agreement (TPA) establishes enforceable milestones for removing and treating the high-level waste from the Hanford tanks. The Department is working with the State of Washington and the U.S. Environmental Protection Agency to re-negotiate milestones for the privatization project to align with the current privatization schedules. The Department is also seeking to establish alternative milestones in the TPA in the event the Department does not proceed with the privatized approach.

Once the Department proceeds with the privatization approach, and is subject to milestones consistent with that approach, a renegotiation of the contract schedule or the abandonment of the privatization approach and the re-establishment of a traditional contracting approach could subject the Department to fines and penalties for non-compliance with TPA milestones.

The Department believes that fully funding the privatization approach will provide the most cost-effective option for successfully meeting the government's obligation to remove the high-level liquid wastes from the Hanford tanks.

Question. How does the TWRS privatization approach shift sufficient risk to the private sector to ensure that hoped for efficiencies and cost savings are realized?

Answer. The most visible way to see the risk shift from the government to the contractor is through the payment process. Rather than using a "cost-plus" type arrangement, DOE is paying BNFL based on performance. In a cost-plus type of contract, DOE assumes all the risk. However, in a performance or fixed-price type contract, once the price is set for a given period, that price will be fixed through that period. If BNFL costs go up because of their own actions, differences would be absorbed from their funds; and DOE would not be responsible for that cost growth. If BNFL can reduce costs, they will benefit from the savings.

It should be noted that DOE will still assume part of the risk relative to cost growth. DOE will assume risks from escalation and from uncontrollable circumstances. But again, any actions or decisions of BNFL that increase costs will be covered by BNFL. This places the equity investment of BNFL and its parent company at risk.

In order to optimize the financing of the project, the Department is applying "financial engineering" skills to complement physical engineering skills. Financial engineering seeks to optimize the allocation of risks, rewards and penalties. The balance between public and private capital is critical to obtaining the best results. At succeeding points in the development of the project, there will be varying optimal capital structures. We will continuously review the financial structure to minimize the "life cycle" cost of the program over time.

Financing for the construction and operations phase will involve BNFL equity, loans that are not backed by DOE (non-recourse debt), and loans that rely upon some level of credit support from DOE (recourse debt). Equity funding represents BNFL's direct corporate investment in the success of the project. This investment is in a "first loss" position and would be at risk if the project should fail because of inadequate performance by BNFL. Originally it was hoped that sufficient private funding could be secured to fund the entire project. DOE now believes it will need

to back a significant portion of BNFL's loans to enable BNFL to obtain sufficient and affordable private sector financing. However, government payment of debt occurs only after BNFL and its partners have lost all their equity investment and contingent liabilities. Therefore, only under a worse case scenario would the government be liable for the payment of the debt.

By shifting risks that the contractor can control to the contractor and by using the right mix of incentives combined with the optimum mix of financing type, significant cost savings can be attained. Initial estimates indicate that, even with the financing costs associated with the BNFL contract, substantial savings can be realized over alternative contracting approaches. Private financing will inject powerful incentives to contain costs and to ensure project success.

Question. What can you offer the committee that will assure us that this approach is the most effective and cheapest way for the government to procure this service?

Answer. BNFL has provided DOE with a technically robust approach that is expected to perform as designed and that may be capable, with future capacity expansions, of processing essentially all of the Hanford tank waste. Also, one of Congress' concerns is that DOE's traditional contracting methods may not result in work being performed in an efficient and cost-effective manner. DOE has examined a number of different options to process the Hanford waste as quickly and cost effectively as possible. Based on the results of these studies and investigations, the privatization concept was selected. A summary of these comparisons was included in the July 1998 Report to Congress: "Treatment and Immobilization of Hanford Radioactive Tank Waste." The establishment of fixed prices and the risk to the contractor's own equity together with incentives for cost reduction will drive the contractor to perform work under the contract in an efficient and cost-effective manner. DOE's evaluation has shown that work will be done more efficiently and cost-effectively than under DOE's traditional contracting approach.

Question. Since financing costs are a significant part of the total project cost, why is it to the government's advantage to use this privatization approach?

Answer. While the financing costs do represent a significant part of the total project cost, the privatization approach offers savings that balance these out. In our Report to Congress on the TWRS privatization, we provided some detailed information on the financing strategy and the benefits to be derived. Most specifically, the Department's experience in the traditional cost reimbursement contracting approach has been that schedules slip and costs increase. The government bears the financial burden associated with these project changes. The privatization approach places more responsibility on the contractor to control the costs and schedule. Because the contractor has a financial stake in the work to be performed, they are more motivated to stay within budget and on schedule. Also, the contractor assumes a greater share of the risks, particularly those under the contractor's control such as technology performance and operating efficiency. Private financing is shown to provide built-in incentives as the contractor's money is also at risk. Project failure would result in loss of equity. The contractor also has the incentive to perform more efficiently since this can result in additional profit to the company. The advantage to the government is realized through greater efficiency during project performance and through achieving project completion at cost and within schedule.

The Department's current plan is to finance the privatization through the use of:

—Equity from BNFL. This is typically the most expensive type of money because BNFL has this whole amount at risk should the project fail and therefore requires a higher return on investment.

—Non-recourse debt. This money will is backed by the contractor and the projects ability to repay the money. This type of loan is a little more expensive than recourse debt because, if the project failed, the lender and BNFL could lose much of this money.

—Recourse debt. This type of loan is backed by DOE, meaning that, if the project failed, DOE would ensure that BNFL has the money to repay its loan. This is the least expensive type of money, but it also puts less risk on the contractor and lender and more risk on DOE.

Each source of money has costs and benefits associated with it. DOE is currently studying the mix of the different funding types to determine the percentage of each funding source that will be used to finance the TWRS Privatization. This study will not just consider the costs of the funding types but also the benefits of each. The final results of the study should indicate the optimum proportion of the different funding types, the associated costs, and the associated benefits. DOE is also evaluating other financing options in addition to those discussed above. The financing approach will be determined in August 2000.

Question. Under Phase II B of the contract with BNFL, does the government have the option of whether or not to proceed with construction of waste processing facilities? If you do, when must that decision be made?

Answer. At the end of the 24-month design phase of the contract (Phase I Part B–1), DOE will reach closure with BNFL on the cost of the project and the firm fixed price the DOE will pay to have the waste treated and immobilized. At that point, the contract can be terminated if the DOE determines that the price is too high, the technology is not satisfactory, or for any other reason which leads the DOE to conclude that continuation of the contract is not in the Government's best interest. This decision will be made in the summer of 2000.

Question. What criteria will the Department base its decision on?

Answer. At the end of the 24-month design phase (Phase I Part B–1), DOE will decide whether to proceed with the subsequent construction and operations portion or to pursue one of several other approaches to process waste. The BNFL authorization to proceed will depend on:

1. DOE receiving acceptable fixed-unit prices
2. Acceptance of the BNFL design for nuclear and chemical process safety
3. Adequate assurance of technical success
4. Assurance that BNFL can successfully manage the project
5. Substantial equity commitment by BNFL
6. Other significant financing arranged by BNFL
7. Assurance that the M & I contractor at Hanford (Project Hanford Management Contract) can deliver waste to the facility on schedule

Question. What impact would a decision not to proceed have on current compliance agreements?

Answer. The schedule proposed by BNFL, Inc., for treatment of tank wastes in Phase I, which is required to comply with hazardous waste regulations, does not meet the current Tri-Party Agreement (TPA) milestones. The current milestones are based on an approach to the project that has since changed because of the complexities identified in Part A, and are no longer considered feasible. The Department has been working with the regulators on a proposed strategy for re-negotiating new TPA milestones which would align with current DOE/BNFL "90 percent confidence level" privatization schedules. These non-enforceable target dates would convert to enforceable milestones consistent with the Phase I Part B–2 contract including a reasonable contingency.

The Department has proposed July 31, 1999, as the completion date for negotiations on TPA milestones for tank waste remediation. If negotiations are successful, DOE, Washington State and the EPA will have reached agreement on a set of commitments for the privatized approach to address the tank farm wastes. These commitments would include provisions for an alternative tank waste treatment approach should the Department decide not to proceed with the privatization approach.

The milestones in the TPA are subject to enforcement by the State of Washington and the EPA. The State has already indicated its intent to take appropriate enforcement action for non-performance should we fail to successfully renegotiate the existing milestones. A decision not to proceed with privatization would be likely to significantly delay the development of treatment capability and increase the Department's vulnerability under the TPA.

The capital portion is $5.4 billion from the overall $12.5 billion total project cost reflected in the fiscal year 2000 Congressional budget submission. The $12.5 billion also includes an estimated $5.1 billion for facility operations and $2 billion for the Management and Integrating contractor support. We are working hard at reducing construction costs and considering various financial alternatives to understand their impacts on risk allocation between the government and BNFL. We will be discussing these alternatives with the Congress prior to decision on the next phase, the construction phase.

Question. Do current OMB budget planning targets support the $600–$660 million requirement for new budget authority in fiscal year 2001 and beyond?

Answer. Yes. The Administration's request for advance appropriations is sufficient to cover the new budget authority required to support the TWRS Privatization Phase I project in the years fiscal year 2001 through fiscal year 2004. The amounts requested are sufficient to cover the funding profile for the project as presented in the Project Data Sheets in the Congressional Budget Request for fiscal year 2000.

Question. Can you explain for the committee the concepts of loan guarantees, lease/purchase, or other arrangements, and how they affect the future budget picture for the TWRS project?

Answer. The Environmental Management privatization approach requires the contractor to finance the acquisition of facilities to deliver cleanup services. As the

contractor begins to provide cleanup services, DOE pays for its operating costs and the construction and financing costs the contractor incurred. Based on this approach, the Office of Management and Budget scores privatization projects (i.e., determines when and how much budget authority and outlays will be counted against the budget caps) as service contracts, which means that only sufficient budget authority is needed each year equal to the government's legal obligations under the contract. If services will not be delivered until the construction of a facility is complete, outlays would not be scored during the construction period.

If privatization projects were to be scored as the purchase, lease-purchase, capital lease, or operating lease of an asset, more budget authority and outlays would be counted against the caps earlier in the period of performance for the contract. For example, budget authority for a lease-purchase would be scored in the amount of the estimated net present value of the government's total estimated legal liability in the year budget authority is first made available. Outlays for a lease-purchase in which the government assumes substantial risk (e.g., with loan guarantees) would be scored across the construction phase of the contract.

The TWRS project will be financed using BNFL equity, non-recourse debt, and recourse debt backed by the government. The debt supported by the government is not a loan guarantee because DOE is not making a commitment to the lenders to pay back the loans. The exact proportion of each type of financing has not yet been determined. The financing package will be a factor in the 24-month decision point to determine whether Phase I Part B–2 can begin. BNFL's equity is at full risk should there be a problem with the project. The more the government supports the debt (as it does with progress payments), the lower the financing cost of the project to the government. However, because the government is accepting the added risk, the overall cost of the project could rise even though the initial price to the government may fall. As the party best able to manage the risk is no longer totally responsible for managing its risk, the potential for failure increases and thus the potential for increased costs becomes higher. At the end of Phase I Part B–1, we will identify the optimum proportion for each type of money. For the current estimate, these different types of money have been accounted for and are included in the project estimates. Although the exact proportions may shift some, at present we believe that they will not shift enough to materially impact future budget requirements.

SAVANNAH RIVER SITE

Question. Explain the plan using the F-Canyon to help accelerate closure of Rocky Flats.

Answer. The key to accelerating closure of Rocky Flats is removing nuclear materials from the site. Combined with substantial cleanup work, moving nuclear materials (e.g., plutonium and uranium) from Rocky Flats is the most critical element of our effort to reduce risks and costs. The Department has been working to identify receiver sites with appropriate facilities to manage the nuclear materials at the lowest cost with the greatest safety and security.

On November 25, 1998, the Department issued the first *Record of Decision on Management of Certain Plutonium Residues and Scrub Alloy Stored at the Rocky Flats Environmental Technology Site (RFETS).* This Record of Decision announced that the Department had decided to ship the following nuclear materials to the Savannah River Site (SRS) for stabilization to help accelerate closure of Rocky Flats by 2006:

—3,377 kg bulk (271 kg Pu) Sand, Slag, and Crucible (SS&C) and Plutonium Fluorides

—700 kg bulk (200 kg Pu) Scrub Alloy.

The first shipment of SS&C was received at the SRS from RFETS in early December of 1998. All the nuclear materials listed above are scheduled to be shipped to the SRS by July of 2001. All of these nuclear materials are scheduled for stabilization to metal in F–Canyon/FB–Line by May of 2002 for safe, interim storage at SRS.

Question. What are the major elements and milestones for making this happen?

Answer. There is only one major milestone for this stabilization effort: by May 2002 the Savannah River Site will convert the above Rocky Flats nuclear materials to stable metal and then package them to meet the metal and oxide storage standard. The Department committed to meeting this milestone in Revision 1 of the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 94–1, *Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex,* dated December 22, 1998. In addition, this stabilization effort is a milestone in the fiscal year 1999 Savannah River Site Annual Operational Plan/Westinghouse Savannah River Company/F–Area Stabilization Project/Summary Task Description Sheet, dated September 2, 1998.

The first shipment of SS&C was received at the SRS from RFETS in early December 1998. All the nuclear materials listed above are scheduled to be shipped to the SRS by July 2001. All of these nuclear materials are scheduled for stabilization to metal in F–Canyon/FB–Line by May 2002 for safe, interim storage at SRS.

Question. How important is the opening of the WIPP to the success of this effort? What alternative or contingencies exist if WIPP does not open as scheduled?

Answer. Being able to dispose of waste at WIPP is extremely important for the overall effort to accelerate closure of Rocky Flats, as well as several other DOE sites. The type of waste sent to WIPP, however, is transuranic waste that meets the WIPP waste acceptance criteria. The material being shipped to SRS for processing in the F–Canyon does not meet these acceptance criteria and cannot be disposed of in WIPP. Hence, the opening of WIPP has no impact on shipment of the Rocky Flats materials listed above to the Savannah River Site for stabilization and safe, interim storage.

Question. Has the state of South Carolina approved this approach, and if not, what is the schedule for getting State approval?

Answer. The Department provided copies of the *Environmental Impact Statement (EIS) on Management of Certain Plutonium Residues and Scrub Alloy Stored at the Rocky Flats Environmental Technology Site* (DOE/EIS–0277D and DOE/EIS–0277F) to the State of South Carolina when it was issued as a draft for public review and comment, and when it was issued as a final document. The Department also provided copies of the first and second *Records of Decision (ROD) on Management of Certain Plutonium Residues and Scrub Alloy Stored at the Rocky Flats Environmental Technology Site* (63 FR 66136 of December 1, 1998 and 64 FR 8068 of February 18, 1999) to the State of South Carolina. As documented in Chapter 9 of the final EIS, the various agencies of the State of South Carolina that reviewed the draft EIS either had no comment, or specified that the "Project is consistent with our goals and objectives." The State of South Carolina had no comment on the final EIS, as documented in Section V of the first Record of Decision.

ACTINIDE PACKAGING AND STORAGE FACILITY

Question. A key element/component to the Savannah River and DOE wide nuclear material storage and handling capability is the Actinide Packaging and Storage Facility and modifications to the K–Area facilities. How do these facilities fit into DOE's waste management strategy?

Answer. These facilities are expected to be very important for secure storage of plutonium. The Actinide Packaging and Storage Facility (APSF) is intended to store plutonium from the Savannah River Site (SRS) and from the Hanford site near Richland, Washington. The Department intends to use SRS K Area facilities to store Rocky Flats plutonium. Both facilities will store plutonium until such time as the Materials Disposition (MD) facilities that will be used to prepare the plutonium for final disposition come on line.

Question. Explain the major changes which have occurred on the Actinide Packaging and Storage Facility project and how the Department plans to proceed with this project in the future.

Answer. There have been changes to the design of the APSF to expand storage capacity and reduce life cycle security costs (putting the vault underground), implementing International Atomic Energy Agency safeguards and security requirements, and reducing personnel exposure to existing project limits. A decision has been made to temporarily suspend work on the APSF pending a re-evaluation of functional requirements. This re-evaluation has become prudent given the significant estimated construction cost increases for the APSF subproject, coupled with the recent designation of the Savannah River Site as the preferred location for the surplus plutonium Pit Disassembly and Conversion Facility. We have concluded that it is advisable to halt further progress on the APSF to allow time to conduct a systems engineering evaluation of plutonium material management functions and planned new storage facilities at SRS. This study will consider the benefits and efficiencies available through designing and constructing storage facilities with an eye towards shared storage, economies of scale, and improved safety margins. The plan is to restart the APSF project in fiscal year 2001, implementing the results of this study.

Question. How will the funds previously appropriated for this project be used?

Answer. Funds previously approved for this project have been used to complete the original design of the facility and a number of other development activities that have led to the existing design package. The Department also intends to seek a $44 million reprogramming of fiscal year 1999 funds from Actinide Packaging and Storage Facility (APSF) to critical projects that have budget shortfalls. These include (1) upgrades to the ventilation systems in the F and H Canyons that address safety

and health deficiencies, and (2) funding to support operations in the H Canyon facilities for stabilization of plutonium solutions.

IN-TANK PRECIPITATION PROJECT (ITP)

Question. DOE has experienced major problems with the In-Tank Precipitation Project which is a key facility in processing waste in storage tanks at Savannah River. Describe the problems encountered and why they were not foreseen .

Answer. During the design and construction activities related to ITP, several studies and reviews raised questions about the operability and efficiency of the ITP process. These concerns dealt with various issues, including the generation of benzene, an explosive chemical. However, the extent to which very large quantities of benzene would be produced was not raised.

The In-Tank Precipitation (ITP) Facility initiated radioactive operations in September 1995 to remove cesium and other radioactive components from Tank Farm waste salt solutions. During slurry pump operation in December 1995, benzene was generated from the reaction tank at higher rates than expected, presenting an explosion risk.

Subsequent investigations revealed the source of the benzene was decomposition of sodium tetraphenylborate (TPB) that was added to precipitate cesium from the waste solution. ITP operations were suspended in March 1996 to better understand the ITP process chemistry and evaluate any impacts on down stream facilities.

While benzene generation was expected as a result of this process, it was not anticipated to be produced at such high rates. Further investigations revealed that trace amounts of some elements such as paladium found within the waste were acting as catalysts driving the chemical reaction and subsequent benzene production to much higher levels then originally predicted. The presence of these catalysts was not known during the limited testing phase.

Question. Also explain why the In-Tank Precipitation technology was selected.

Answer. The ITP process was believed to be a cost effective alternative for separating high-level radioactive cesium from the other materials in the waste. There were several reasons supporting the selection of ITP.

From a technical standpoint, ion-exchange was, and is, the more commonly used technology for separation processing. However, that technology was not as effective for the very alkaline high-level waste at the Savannah River Site. On the other hand, the tests supporting the ITP process at that time looked very promising.

From a cost standpoint, the ion exchange alternative was expected to have a life-cycle cost (including capital and operating costs) in excess of one billion dollars. The ITP process used existing high-level waste storage tanks, which saved the costs of constructing new facilities.

Question. How is the delay impacting waste processing efforts at Savannah River, and what is DOE doing to address issues relating to ITP?

Answer. Waste processing and pretreatment activities continue for the sludge waste stream feed. Canister production continues at the Defense Waste Processing Facility (DWPF) with sludge-only canisters being produced. As of March 22, 1999, we have produced over 600 canisters of the estimated 5,200 total (salt and sludge) canisters, and will continue to produce sludge-only canisters until the replacement for ITP is operational about fiscal year 2008.

We originally anticipated that ITP would begin operation in fiscal year 1999 to pre-treat (i.e., separate out the highly radioactive cesium from the balance of the salt waste) and supply the salt waste stream precipitate (i.e., the cesium) for processing at DWPF. Due to significant technical and safety issues incurred due to the higher than anticipated levels of benzene generation with the ITP process, the restart of operations at ITP were suspended in January 1998.

With the suspension of ITP efforts, we began a systems engineering approach in March 1998 to assess all potential alternatives for removing cesium from stored high-level waste solutions. This resulted in a recommendation to pursue three options with a final selection of a process in fiscal year 2000. The three options are: direct disposal as grout, small tank in-tank precipitation, and non-elutable ion exchange.

On February 22, 1999, the Department published a Notice of Intent to prepare a Supplemental Environmental Impact Statement (SEIS) for the alternatives to the ITP process. As part of this process, two public scoping meetings were held in Columbia, S.C. and North Augusta, S.C. on March 11 and 18, 1999, respectively.

In the SEIS, the Department will assess the potential impacts of the three ITP replacement processes and a no-action alternative. The Department does not have a preferred alternative at this time. However, the Department intends to complete

this SEIS in the February 2000 time-frame, and a Record of Decision (ROD) some time after that.

Question. What impact does this have on the Defense Waste Processing Facility operations?

Answer. The Defense Waste Processing Facility will continue to produce sludge-only canisters, and, according to current waste feed projections, should be able to maintain production of sludge-only canisters until the year 2008 time-frame. At that time, we will need to have the alternative salt separation process in place and producing waste feed for DWPF.

Question. How much funding was provided for the operation of the ITP facility in fiscal year 1998 and fiscal year 1999, and how have these problems affected the use of these funds?

Answer. The funding for the operation of ITP was $19 million in fiscal year 1998 and $12 million in fiscal year 1999. These funds have been used to maintain the ITP facilities in a safe condition until final determination on the use of these facilities is made as a part of the overall Salt Alternative assessment process.

Question. How will any unobligated balances be used?

Answer. There were no unobligated balances for the Salt Alternative in fiscal year 1998 and we do not expect to have any fiscal year 1999.

Question. What level of funding is included in the fiscal year 2000 budget request, and how will those funds be used?

Answer. The fiscal year 2000 budget request for the High-Level Waste Salt Alternative Disposition is $42 million. These funds will be used to complete the Supplemental Environmental Impact Statement (SEIS), support research and development activities on three alternatives to the ITP process, and construct a pilot prototype for the preferred alternative.

Question. What date is assumed for the restart of ITP operations?

Answer. fiscal year 2008 is the anticipated start of radioactive operations for any of the alternatives being evaluated.

Question. Will DOE have to construct a new facility?

Answer. Yes, if any of the three alternatives under consideration are selected, new facilities would have to be constructed. At this time we are also looking very closely at which, if any, existing facilities could be utilized.

Question. Explain technology options being considered and the costs associated with each.

Answer. Three technology alternatives are being evaluated. The costs identified below include capital costs and operating costs in support of construction for the necessary facilities associated with each alternative. They do not include the costs for operation or the facilities or for waste disposal. They are:

Small Tank In-Tank Precipitation.—This alternative would use the same chemicals and process as the existing ITP batch process, but would use continuous flow, low residence time, and chilled tank processing. The high-level liquid waste would be mixed with monosodium titanate and filtered to remove adsorbed uranium, plutonium, and strontium. The adsorbed solids would be vitrified at DWPF. To capture the cesium, as with the larger ITP process, this process would use sodium teraphenylborate as the reactant to precipitate cesium out of the waste. The precipitate stream would be fed to DWPF to be vitrified. The smaller tank process would eliminate the benzene control uncertainties associated with the large tank process. Preliminary cost projections for construction of new facilities and the support activities necessary for implementing this process are $1.1 billion.

Ion Exchange.—This alternative would use a different ion exchange medium from that previously considered. The medium (or resin) being proposed is crystalline silicotitanate (CST). The high-level liquid waste would be mixed with monosodium titanate and filtered to remove adsorbed uranium, plutonium, and strontium. The adsorbed solids would be vitrified at DWPF. The CST resin ion exchange columns would be used to remove the cesium from the salt solution. The cesium bearing-resins would be vitrified in the DWPF. Preliminary cost projections for construction of new facilities and the support activities necessary for implementing this process are $1.2 billion.

Direct Disposal as Grout.—In this alternative, the high-level liquid waste would be mixed with monosodium titanate and filtered to remove adsorbed uranium, plutonium, and strontium. The adsorbed solids would be vitrified at DWPF. The filtered salt solution which would contain radioactive cesium would be combined with grout in a facility that would be constructed under this alternative, and disposed of in the SRS saltstone vaults. Preliminary cost projections for construction of new facilities and the support activities necessary for implementing this process are $900 million.

Question. Do future OMB budget planning targets have sufficient room to accommodate a potential new facility to pre-treat the waste at Savannah River?

Answer. The current OMB outyear targets provide a stable level of funding for the Environmental Management program under the assumption that the Administration's Social Security reform and other proposals are enacted. To accommodate new requirements, such as the salt alternative program, within these current targets, the EM program will have to become more efficient and/or reprioritize currently planned activities. EM intends to work with OMB, regulators, stakeholders, and the Congress on such funding and prioritization issues as they arise.

CANISTER PRODUCTION AT DWPF

Question. Explain the reason why canister production is falling off in fiscal year 2000.

Answer. The Department's fiscal year 2000 budget request stated that it would be necessary to reduce sludge-only canister production from its current level of 200 to 100 in fiscal year 2000 to accommodate funding for salt alternative work. The reduced canister production, accomplished by slowing down the waste removal activities, would then provide additional funding for continued study of the high-level waste salt alternatives.

However, subsequent to the fiscal year 2000 budget submission, and based on senior level discussions and consideration of all factors involved, the Savannah River Site has committed to maximizing canister production (about 200 canisters) in fiscal year 2000.

PROCESSING OF HEAVY WATER

Question. Last year Congress provided additional funds for the Department to process tritium-contaminated water stored at the Savannah River site. Could you update the committee on the current status of this program? Has the agreement with Canada been completed and signed? If not, why?

Answer. As currently planned, the heavy water contract with Atomic Energy of Canada, Limited (AECL) will be in two parts. We expect to sign the first part of the contract at the end of April 1999. Under the first part of the contract, AECL will ship 35.5 metric tons (MT) of clean heavy water to the National Institute of Standards and Technology (NIST) to meet Savannah River Site (SRS) commitments to NIST. SRS will then ship 50 MT of tritium-contaminated heavy water to Canada to replace the clean heavy water shipped to NIST. By the end of May, we expect to sign the second part of the contract. This part of the contract will result in shipment of an additional approximately 950 MT of tritium-contaminated heavy water to AECL.

AECL has decided to team with a Canadian partner, who will provide the financial support needed for AECL to accomplish their functions under the contract, as well as construct and operate a detritiation facility in Canada. In addition, the Department has decided to add an option to include another 500 metric tons of heavy water in the contract, if and when the Accelerator Production of Tritium (APT) program determines that it no longer needs or wants the water. This heavy water is now being held in reserve for the APT program. When AECL has negotiated a contract with their partner, we believe that all preparations will be in place for both the Department and AECL to sign the second part of the contract. The contract has been delayed until now due to the contract changes discussed above and the fact that AECL needed to find a funding source for their efforts.

Question. Does the fiscal year 2000 budget request continue to support the program adequately and in accordance with the agreement?

Answer. Recognizing that the contract has not been finalized, the fiscal year 2000 budget request provides sufficient funds for this program.

Question. Does the Department believe the program is cost effective and in the U.S. interest.

Answer. Yes. The Department no longer needs the heavy water. Therefore, continuing to store this material is not cost-effective for the Department. The revenues from the sale of heavy water will offset the cost of cleaning up the former heavy water production and storage facilities.

OAK RIDGE NATIONAL LABORATORY

Question. The budget request for the Oak Ridge National Laboratory proposes to transfer several activities conducted under non-Defense environmental management to the Defense Environmental Management program for fiscal year 2000. The total amount to be transferred is estimated to exceed $60 million.

Please explain the reasons for proposing the transfer of several programs previously conducted under the non-Defense environmental program over to the De-

fense environmental management account for fiscal year 2000. What is the total amount proposed to be transferred?

Specifically, what is the direct link to the Defense work that would support the transfer to Defense EM?

Provide for the record a crosswalk which shows all programs or activities being proposed for funding in the fiscal year 2000 budget under Defense Environmental Management which were funded outside of the Defense EM program last year. The crosswalk should show the amount of funding in fiscal year 1999 and where it was provided, the request for fiscal year 2000 and where it is requested, along with a brief reason for the move, including a brief explanation of the direct link with defense activities which would support the Department's proposal.

Answer. The Oak Ridge National Laboratory is a complex, multi-funded site, which supported both weapons production (defense) and energy research (non-defense) activities through the years. While waste generated or shipped to the Bethel Valley and Melton Valley sites was from both non-defense and defense funded activities, the majority of the waste was produced from defense activities, including early prototype reprocessing activities.

Historically, funding for environmental management activities at Bethel Valley and Melton Valley was provided both from the defense and non-defense accounts. During the 1980's funding was solely from the defense account. Beginning in the early 1990's, funding for these two sites was provided from both the defense and non-defense accounts. (In fiscal year 1990 through fiscal year 1998 approximately $230 million was provided from the defense account and approximately $260 million from the non-defense account for environmental restoration activities.)

In fiscal year 1999, funding for environmental management activities at these two sites was exclusively from the non-defense account. The reason for this decision was due to budget constraints on the defense account. The non-defense account no longer has the flexibility to accommodate funding these important activities. For example, in fiscal year 1999 Congress increased the defense appropriations by about $90 M from the requested level, and decreased the non-defense appropriations by about $30 M (out of $462 M) (6 percent). The Department believes that because the majority of waste at the Oak Ridge sites is from defense funded activities, it is appropriate that funding be provided from the defense account. This is reflected in the fiscal year 2000 budget request. In addition, under the new Management and Integration contract for environmental management activities at ORNL there will be many more fixed price subcontracts than in the past. The administration of these numerous subcontracts would be much more difficult to manage if they were funded from two different accounts. Thus, in order to streamline the program management and administration costs, the decision was made to fund this work from one account. The defense account was chosen because, as noted above, the majority of waste at these sites is from defense funded activities.

The following four activities at Oak Ridge National Laboratory were funded from the Non-Defense Environmental Management Appropriation in fiscal year 1999, and now are being requested in the Defense Environmental Management and Waste Management Appropriation. The crosswalk follows:

[In thousands of dollars]

TITLE	NON-DEF PBS	NON-DEF FISCAL YEAR 1999	DEFENSE PBS	DEFENSE FISCAL YEAR 2000
Melton Valley D&D	OR43201	33,434	OR43101	24,307
Melton Valley RA	OR43202	2,573	OR43102	1,300
Bethel Valley RA	OR43203	18,473	OR43103	28,569
Bethel Valley D&D	OR43204	5,197	OR43104	3,626
Total		59,677		57,802

Question. What is the National Metal Recycle Center which is being funded from Oak Ridge Defense Direct Support in fiscal year 2000? What level of funding was provided for this Center in fiscal year 1999 and previous years? Provide a detailed breakout of the $4.162 million being requested for Direct Support-Defense activities compared to the $2.898 funding level for fiscal year 1999.

Answer. The National Center of Excellence for Metal Recycle was created in October 1997 to facilitate the cost effective recycle of clean and decontaminated metals at DOE sites across the country. The Center identifies recycling opportunities and

provides technical assistance to all DOE sites on projects that may be able to realize cost reductions through recycling of materials for unrestricted use. The Center provides expertise to support the evaluation of cost and risk aspects of specific recycling projects to make sure that each project is safe and cost effective. The Center's goal is to make recycling a well understood and commonplace component of our cleanup projects. The Center has already participated in six large projects and several smaller actions that resulted in the recycling of 11,000 tons of metal, with an estimated savings to the Department of approximately $9.9 million.

The Oak Ridge Operations Office funds the Center, which provides technical assistance to any site or recycling project in the DOE complex. The Center receives funds from each of the three main Oak Ridge appropriations, that is, Post 2006 Completion Defense, Post 2006 Completion Non-Defense, and the Uranium Enrichment D&D Fund. The total funding for the Center in fiscal year 1998 was $700,000 and $900,000 in fiscal year 1999. The fiscal year 2000 Congressional Budget Request includes $900,000 for this program.

The requested detailed breakout of the direct support-defense activities (PBS OR–48104) is provided below:

[In thousands of dollars]

	Fiscal year	
	1999	2000
Agreements In Principle	1,650	1,225
DOE Direct	2,000	2,437
Metal Recycle	100	500
Total	[1] 3,750	4,162

[1] The current total fiscal year 1999 is $3.75 million. However, only $2.898 million was shown in the fiscal year 2000 budget request due to the availability of carryover funds. Therefore, Defense -funded Direct Support requirements have really only increased a net of approximately $400K.

DOE Direct funding covers crosscutting program technical requirements such as: support to the EM portion of transportation activities; technical program support in the areas of independent validation; readiness assessments and laboratory audits; and State mixed waste fees. This activity also supports corporate and educational initiatives such as Historically Black Colleges and Universities/Minority Educational Initiatives and educational grants to local schools. The increase in fiscal year 2000 represents increased funding for independent validation of program baselines and increased independent audit requirements.

ENVIRONMENTAL MANAGEMENT CENTERS

Question. Regarding special "Centers", how many other "Centers" is DOE funding in the Environmental Management program? Provide for the record a list of those "Centers" showing where each "Center" is funded, what funding has been provided each year for the past 4 years, the funding profile over the next 5 years, and what the benefit they provide to the Defense EM program?

Answer. The Metal Recycling Center is the only Oak Ridge Center. The majority of the Centers of Excellence were established in fiscal year 1997, therefore the funding profile will begin with fiscal year 1997. Attached is a chart depicting where each center is located and the funding profile, as well as a brief description of the benefits provided to the Environmental Management Program.

DEFENSE ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

[In thousands of dollars

Center of excellence	Fiscal year					Description/benefit of centers
	1997	1998	1999	2000	2001–2006	
Albuquerque: LLW/MLLW Center of Excellence [1].	([1])	([1])	([1])	([1])	([1])	Prepares Federal Facilities Compliance Act, Chief Financial Officer Report to Congress.
Chicago: Risk Management Center of Excellence.	1,103	1,962	2,389	2,415	14,490	Provides technical expertise and support to help field offices implement EM/DOE risk initiatives; technical assistance to field on the Accelerated Paths to Closure development.
Idaho: LLW/MLLW Center of Excellence [1].	.....	498	395	.....	13,264	Idaho is the lead for complex-wide Environmental Management integration efforts for LLW/MLLW (opportunities for acceleration of cleanup, mortgage reduction, cost savings).
National Spent Nuclear Fuel Program [1].	19,844	21,952	26,092	14,275	82,338	Idaho will provide overall program management to safely and efficiently manage DOE-owned spent nuclear fuel and prepare it for disposal.
Nevada: LLW/MLLW Center of Excellence [1].	([1])	([1])	([1])	([1])	([1])	Provides technical assistance to the LLW Federal Review Group; completes disposal facility Performance Assessments/Composite Analyses and leads effort to consolidate site audits of treatment, storage and disposal facilities.
Savannah River:						
National Environmental Training Office Center of Excellence.	1,000	1,600	1,500	1,500	6,000	Coordinates/manages EM-related technical training and facilitates increased standardization of contractor training.
National Spent Nuclear Fuel Program **.	([1])	([1])	([1])	([1])	([1])	Savannah River is the lead for aluminum-based and Foreign Research Reactor fuels.
FETC: Center for Acquisition and Business Excellence.	2,125	1,275	1,594	1,702	10,841	Serves as a field resource in areas such as research acquisition plan development, business and technical assistance in developing procurement strategy, and identifying and promulgating best practices and lessons learned.

[1] Funding for both the LLW/MLLW and National Spent Fuel Centers of Excellence are requested under Idaho and released to other sites during execution.

QUESTIONS SUBMITTED BY SENATOR COCHRAN

SCIENCE AND TECHNOLOGY

Question. Mr. Owendoff, one of the Department of Energy's major thrusts has been privatization of its cleanup efforts. One of the dangers of privatization is that private companies are selling general solutions that are not always tailored to the specific waste site. Without proper departmental oversight and necessary tailoring, these already expensive solutions can become even more costly.

How is the Department of Energy using university organizations—such as DIAL at Mississippi State University—to provide independent evaluations of the feasibility of cleanup proposals, such as the $10 billion cleanup effort at Hanford, Washington?

Answer. The Department is currently using a number of university organizations and faculty—including for example, the Diagnostic Instrumentation and Analysis Laboratory (DIAL) facility at Mississippi State University; the Hemispheric Center for Environmental Technology (HCET) facility at Florida International University; and the Institute for Central and Eastern European Cooperative Environmental Research at Florida State University—to provide independent evaluations of the efficacy of environmental technologies in cleanup proposals. The Director of the DIAL facility has, for example, recently been invited to participate in an independent assessment of the baseline technology proposed by the privatization contractor for the Tank Waste Remediation System at Hanford, Washington. In addition, researchers at DIAL are currently working on validating a critical thermodynamic equilibrium model that will be directly applicable to successful treatment of the waste contained in all Hanford tanks, and to the work of the privatization contractor.

WASTE ISOLATION PILOT PLANT (WIPP)

Question. Mr Owendoff, the Mississippi Emergency Management Agency has been informed that the Waste Isolation Pilot Plant (WIPP) program budget has been cut by $513,000. Mississippi and other states, through which transuranic waste will ultimately travel to WIPP, have been using this money to prepare for the impending shipments and address safety concerns associated with them. With reduced funding for WIPP, how will states such as Mississippi adequately prepare for the safety concerns associated with these transuranic waste shipments?

Answer. On March 22, 1999, Judge John Garrett Penn concluded that the permanent injunction he issued in 1992 does not prevent the shipment of waste, and that WIPP has interim status under RCRA. This ruling resulted in the Department completing the first shipment of transuranic waste to WIPP on March 26, 1999. The Department plans to continue shipments of waste to WIPP and to increase the rate of shipments to 17 per week.

Since WIPP did not open when originally planned, the Department had withdrawn approximately $13 million from the Carlsbad Area Office budget to offset increased waste management costs at the sites where transuranic waste is stored. However, now that shipping has begun, we have already released funding for the Southern States Energy Board, which supports the Mississippi Emergency Management Agency.

SUBCOMMITTEE RECESS

Senator CRAIG. Gentlemen, thank you very much for your time and your willingness to be forthright in your responses.

The subcommittee will recess.

[Whereupon, at 11:06 a.m., Thursday, March 18, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2000

TUESDAY, APRIL 13, 1999

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:42 a.m., in room 138, Dirksen Senate Office Building, Hon. Pete Domenici (chairman) presiding.

Present: Senators Domenici, Reid, and Dorgan.

DEPARTMENT OF ENERGY

OFFICE OF SCIENCE

STATEMENT OF DR. MARTHA KREBS, DIRECTOR

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

STATEMENT OF BILL MAGWOOD, DIRECTOR

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

STATEMENT OF DAN REICHER, ASSISTANCE SECRETARY

OPENING STATEMENT OF SENATOR DOMENICI

Senator DOMENICI. The hearing will please come to order.

First, I want to welcome my ranking member and indicate to him that since he has a time schedule that is difficult, I will let you proceed wherever you would like.

Would you like to make your opening statement?

Senator REID. No, I'm okay.

Senator DOMENICI. Today, the subcommittee will review the Department of Energy's budget request for the Office of Science, the Office of Nuclear Energy, and the Office of Energy Efficiency and Renewable Energy programs. In that regard, we will hear from Dr. Martha Krebs, Director of the Office of Science; Mr. Bill Magwood, Director of the Office of Nuclear Energy Science and Technology; and Mr. Dan Reicher, Assistant Secretary of Energy for Energy Efficiency and Renewables.

Before we begin, I want to compliment all three witnesses. Mr. Magwood assumed his responsibilities after Congress was extremely critical of the management of the Office of Nuclear Energy Science and Technology and has initiated a number of interesting, and worthwhile programs. We thank you for that.

Dr. Krebs is the first Director of Science at the Department of Energy, since we created that office last year in this committee. We

thought there ought to be one focal point for all of science. It was predominantly under you before, but now it is unequivocal, in that now there is one office and you are in charge.

Beyond that, obviously, she has other duties. She manages some of the Department's most exciting research in the human genome, high-energy physics, fusion energy, and other areas, or I should say as part of that office. Those are all exciting functions for the Department.

I have a great deal of confidence in Mr. Reicher. The programs for which he is responsible within the jurisdiction of this subcommittee, if we were able to provide the amount in request, would expand 50 percent since 1998. I do not think that we are going to be able to do that, however, but I do not think the resources are going to be more fully justified.

But within the request, I do see some changes that I find encouraging. I see an effort to move away from short-term thinking and deployment toward long-term research. I see an effort to choose among technologies and to stop pursuing technologies that are not making necessary advances.

CLIMATE CHANGE BUDGET REQUEST

With that said I must point out that, in my opinion, the funding is rather lopsided in the President's request in terms of dealing with climate change. Within the subcommittee jurisdiction, the Administration has requested $436 million for research and development related to climate change. Of that, $399 million is for solar and renewable energy, $33 million is for science, and a paltry $5 million is for nuclear energy.

I do not know how much longer policy makers are going to be able to carry on this kind of a charade by continuing to ignore nuclear power as we attempt to address the issue of climate change. So I have to wonder if the Administration is serious about climate change or is simply using this opportunity to use renewable energy as a kind of a bone that they throw money at indicating that it will solve the global climate issue.

I do not believe that is the case, and I do not know how much longer we can continue to say to those who know we need nuclear energy that this approach and this kind of balance or lack of balance is something realistic.

Having said that, as soon as the distinguished Senator from Nevada is finished, we are going to start with you, Dr. Krebs, followed by Mr. Magwood, and then Mr. Reicher.

Senator Reid.

STATEMENT OF SENATOR REID

Senator REID. Mr. Chairman, thank you very much. Again, I apologize to you and the witnesses. I had the morning cleared for this hearing, but there was a meeting called at the White House and I am obligated to attend, so I am going to have to leave here at about 10:15.

I would ask permission that I be allowed to submit the questions that I had prepared to these witnesses and that they respond in a reasonable period of time.

Senator DOMENICI. That will be the order. The questions and the Department's responses will be included at the appropriate place in the record.

RENEWABLE ENERGY TECHNOLOGIES

Senator REID. First I want to talk about energy efficiency and renewable energy.

Mr. Reicher, energy-efficient advances in building insulation, lighting technologies, and many other things have saved the country enormous quantities of energy and money, and I would like to think that work we have done within this committee to direct attention to that has been one of the cost-saving areas that we have done, and we should be proud of these accomplishments.

Renewable energy sources that do not contribute to pollution or global warming can be just as successful if these technologies can become cost competitive with proven power technologies. Tax incentive is another artificial subsidy which, in my opinion, can never replace the effectiveness of cost savings, and so competitiveness has to be a primary goal in the renewable energy program.

Mr. Chairman, I just returned from a trip to South America, and in Brazil they decided to privatize the power industry. They went from 60,000 employees that worked for the Brazilian government, now that it's private, to 6,000, and it is much more effective and working very well. Can you imagine that, 60,000 to 6,000?

So my point here is that tax incentives and artificial subsidies can never replace the effectiveness of cost savings. Competitiveness has to be the primary goal in renewable energy and some of our other programs. I hope that testimony here, Mr. Reicher, will demonstrate the Department's commitment to developing renewable resources that are market-driven instead of policy-driven.

I am particularly interested in the program, because Nevada is a state with significant renewable energy potential, as is I think much of the Southwest, which has not been fully developed.

We know that commercial geothermal power production is an important resource already in northern Nevada. However, in spite of high potential for wind power generation, no wind power has been developed in Nevada. I have spoken to you and others. There may be some problems with that, because of the wind now blowing like it does in some parts of California, but it is something I think we need to take a look at. We, in Nevada, think the wind blows all the time.

Finally, Nevada is at the very center of the highest quality solar power potential in the country. We have been told by experts that there is enough sun generated where the Nevada test site is located to supply power for the whole United States, and the largest producer of solar power in the country is down near Barstow, that is 200-megawatt facility, very small compared to the potential available. So I think we need to do a better job of solar energy.

The United States, particularly Nevada, will benefit enormously from the development of cost-competitive and renewable energy. So I wish you well.

SCIENCE RESEARCH BUDGET REQUEST

As far as science, Dr. Krebs, the $2.8 billion request for science programs competes significantly with other priorities in our appropriations bill, such as water projects that are important to many western states. Many seem to see science as a luxury that can be reduced, later even abandoned. I do not agree with that.

I believe that science provides one of the foundations of leadership that the United States clearly must show in its economy, its quality of life, and its ability to promote global peace and security.

It is important that you, Dr. Krebs, demonstrate the relevance and priority of your programs, because these programs are very difficult to sustain given some of the other priorities that people have looked to this subcommittee for years to fund. One of the projects that I think we have to take a close look at, we need to understand the development of geologic faults, and their permeability is being reduced, because I understand there are some general reductions in geo-sciences.

This topic is critical to understanding what is going on in the western United States. We had the serious earthquake in Northern California and a serious earthquake in Southern California.

Nevada is the second most earthquake-prone state in the United States, and with the population growth as it is there, I think we need to do a lot better in understanding earthquakes. That also, as part of that, is the problems we are having on nuclear waste. So I hope that you will all personally within your discretion do a good job of promoting science programs, because we need help in this subcommittee to do that.

NUCLEAR ENERGY PROGRAMS

Last, Mr. Chairman, nuclear energy. Last year this subcommittee held a hearing on the future of nuclear energy. For the past 2 years the Administration has proposed a couple of initiatives, the Nuclear Energy Research Institute and the Nuclear Energy Plant Optimization. I want to build upon what you have just said, Mr. Chairman.

I am not opposed to nuclear waste, if, in fact, we can show that it is safe, but I think we cannot even consider more nuclear power production unless we talk about the number one problem dealing with nuclear power, and that is what you do with the waste. That has taken months of our time here in the Senate, what are we going to do with nuclear waste, and I find that not addressed.

We have to do something about that before we can talk about developing more nuclear power. Unless we can handle the waste, there will never be nuclear power. That is in addition to all the safety problems that we have.

So I hope and I agree with the chairman of the subcommittee, that I doubt that geologic disposal will ever be found acceptable. If we are going to do more with nuclear power generation, we have to be able to answer what we are going to do with disposal.

I compliment and applaud the chairman that he is willing to take a look at other methods of disposing of nuclear waste. So, Mr. Chairman, thank you very much for your allowing me to go on with this extended statement. I look forward to the witnesses' testimony.

Senator DOMENICI. Thank you very much, Senator.

Senator Dorgan, do you have some opening remarks?

STATEMENT OF SENATOR DORGAN

Senator DORGAN. Just very briefly, Mr. Chairman.

The President has a briefing on Kosovo this morning, so I regret I will not be able to attend the entire hearing. But I did want to comment and indicate that the President's proposed increases in both the conservation program and also the request for expenditures on renewable fuels, I think, is one of a whole series of approaches to deal with climate change; but it also represents investments in the right kinds of things.

I welcome Dr. Magwood and Dr. Krebs. I do not know quite as much about your work as I do of Mr. Reicher's, but am interested in learning, and have been reading some of the statements that you are offering today.

I want to thank Mr. Reicher, he came to North Dakota and pronounced that North Dakota was the Saudi Arabia of wind energy. I guess only when I am home he meant that to be the case, but that does not mean that is what we are producing from wind energy, but the potential in North Dakota is quite extraordinary in wind energy, and bio-mass and wind energy programs, I think, hold great promise, and I appreciate very much the leadership of Mr. Reicher.

I found out during his visit in North Dakota that he has kayaked the Yangtze River, and I wondered whether someone who decided they wanted to kayak the entire Yangtze River was fit for public service after that, and I discovered he is. He is an extraordinary asset to our government. I appreciate all three of you being here and presenting testimony today about these important areas.

If we can make the right kinds of investments and make the right kinds of choices about our energy future, we can address, even as we make those choices, a lot of the significant problems that lie ahead of us, and that is part of what the job of this subcommittee is about, to help make those choices. The President has made recommendations. I think they are sound recommendations.

The proposed increases in areas, solar and wind, $274 million in the President's request, geothermal, $29 million, and so on, represent, in my judgment, good choices, and I am pleased to be here to support them, and pleased to welcome the panel.

Mr. Chairman, thank you very much.

Senator DOMENICI. Thank you very much, Senator.

I just wanted to say, particularly to you Senator Reid, with reference to the admonishment toward the Science Program. Dr. Krebs has a very high post, and of great concern to us, because we need clear thinking and as much as we can get with reference to science.

HUMAN GENOME PROJECTS

I do not know if you know, Dr. Krebs, but one of the greatest wellness and health programs, research programs, that ever came upon human beings is genome research—it will revolutionize how we get well, stay well, and how we get rid of hundreds of very, very big diseases that have bothered humanity for a long, long time.

I think when people ask whether the Department of Energy is really a science institution, you ought to hold your head up proudly and say, "Well, but for the Department of Energy and Dr. Charles DeLisi, who moved to DOE from NIH, we would not have the genome project."

He was at NIH, and they did not want to start that project, so he, in frustration, moved over to your department, and came up to see me, and said, "This is a great thing, we ought to do it," and as a matter of fact, within 7 or 8 months, Senator Lauton Chiles and I started it without any authorization, nothing in the President's budget.

It was developed at NIH, the program was shared by the two departments. We get one-third now, and we have for the last 8 or 9 years. They get two-thirds, but they deal theirs out all over the country. One laboratory gets one program, another gets another, with reference to chromosomes, and we have made some giant strides. I assume you are enthusiastic about the genome program, are you not?

Dr. KREBS. I am very enthusiastic about the genome program. I think it is one of the best things that the Department of Energy has done over the last 10 to 15 years. Creation of the genome program will change the way biology is done in the future.

Senator DOMENICI. Yes.

Senator REID. Mr. Chairman, I had a tour of Lawrence Livermore Laboratory, and they had this genome project there. I misunderstood, let me make sure, but I had the impression they took credit for it, but it was just part they were sharing with everybody else.

Senator DOMENICI. Yes. They got a chromosome. I do not remember which one. They might have two.

Dr. KREBS. Nineteen, Mr. Chairman.

Senator DOMENICI. Which one?

Dr. KREBS. I think theirs is chromosome 19.

Senator DOMENICI. Los Alamos has one, et cetera. It is one of many chromosomes, Senator Reid.

Dr. KREBS. Right.

Senator DORGAN. Mr. Chairman, this is interesting and a history that I was not aware of. I wonder if the staff might be able to put together a little briefing memo for us establishing the outline of this, because I think you make an excellent point. There are a lot of investments we make that people are very unaware of, and the origin of these often comes from——

Senator DOMENICI. Committees.

Senator DORGAN [continuing]. Areas of our government, and committees, and committee and subcommittee chairs, and so on, so that would be very helpful, I think, just to put together a briefing.

Senator DOMENICI. It will. The staff will combine and get it done. Thank you.

STATEMENT OF DR. MARTHA KREBS

Dr. KREBS. May I make a comment before I start my——

Senator DOMENICI. Sure. Then you can go to your sermon, please?

Dr. KREBS. Right, my advocacy piece. [Laughter.]

Actually, the Office of Biological and Environmental Research within the Department of Energy has existed for 50 years, since the time of the Atomic Energy Commission. We have a document that celebrates those 50 years that could tell you about the work we have done in nuclear medicine, as well as in the genome, and I would be happy to provide that in addition to whatever the staff might prepare. It is a very exciting story, actually.

[CLERK'S NOTE.—The following information "A Vital Legacy," Biological and Environmental Research in the Atomic Age, by the Office of Biological and Environmental Research, U.S. Department of Energy, Internet address is www.er.doe.gov/production/ober/ can be found in the subcommittee files.]

Senator DOMENICI. What happened, Senator, to the predecessor agency, before we had Energy. There was the Atomic Energy Commission, and then we had the Energy Research and Development Agency [ERDA], and now DOE. It was because of the development and use of the atomic weapons, the Department of Energy and its predecessors became a primary focal point to try to determine the health effects of those two first atomic bombs. They were required to keep all kinds of data, and became the data experts with reference to hundreds of thousands of Japanese people. From that developed the expertise in biological and environmental impact.

They have great biologists in the Department of Energy, some of the best in the world, working at the laboratories, is that not right?

Dr. KREBS. Working at the laboratories, also universities, the positron emission tomography technology, and the research that supports it in everything from addiction to brain tumors, a lot of things have come out of the Department of Energy's Biological and Environmental Research Program.

Senator DOMENICI. Please continue.

PROGRAM OVERVIEW

Dr. KREBS. Mr. Chairman, Senator Reid, Senator Dorgan, I am delighted to be here this morning to describe the fiscal year 2000 budget for the DOE science programs. It is important to keep in mind that in terms of the Federal investment and basic and applied research, DOE is second only to the Department of Health and Human Services.

The Office of Science itself is in a class with the National Science Foundation. We are the primary funders of physical science in this country, at $1.7 billion, and clearly out rank organizations like NASA and the National Science Foundation.

We have a principal role in large scientific user facilities, the high energy and nuclear physics accelerators, at Fermi, at SLAC, at Jefferson Lab, the Cyclotron sources and research reactors for material science and chemistry.

But significantly, as well, we are an integral part of the Department of Energy, both carrying out its science and technology missions and commitments through the high energy and nuclear physics programs, in what we call a theme of exploring energy and matter, and not only are we looking at fundamental particles, but also, for example, the building blocks of life, like the genome.

We have a critical role in supporting the energy missions of the Department of Energy, as well as the environmental missions, in

terms of both the consequences of the use and production of energy, but also in supporting the cleanup mission, understanding how to remove the contamination that has been induced at our sites, and then as I noted before, we build extraordinary tools to carry out extraordinary science, and we get results year after year.

PROGRAM ACCOMPLISHMENTS

Let me tell you about some of them. We have had new findings this year on corrosion resistance, which will enable better protective coatings for high-temperature, high-wear environments, such as furnaces, turbines, engines. In the exploration of the new world of nano-structures, we have created small fibers 50 to 100 times more conductive than copper, which could have a major impact in energy utilization.

Again, in the biological area, as a spinoff of the human genome we have been using the genomic technologies to explore other organisms. One of them is called D. radiodurans, which we call "Conan the Bacterium." It is a thousand times more resistant to radiation than humans, and we sequenced its genome this past year, and now we are engaged in the systematic exploration of its properties.

We believe there may be long-term use of this organism for bioremediation at some of our most contaminated sites, and, in fact, the environmental molecular science program, which we help the Environmental Management Program to manage jointly, is exploring more practical applied applications of this mechanism.

As I mentioned before, most recently we have been using the positron emission tomography at the Brookhaven Laboratory to explore the chemical pathways of addiction, and this year we identified an epilepsy drug, GBG, as a treatment to block the addictive effects of cocaine and nicotine. Joanna Fowler, who leads that group, was recognized this year with the Lawrence Award for her activity.

Science Magazine named the work of a group at the Lawrence-Berkeley Lab on the accelerating universe as the scientific breakthrough of the year. It represents a 10-year campaign that indicates that there may be a new force in the universe that works against gravity, expanding the universe at a faster and faster rate.

Another advance was the first indications of neutrino mass at the facility in Japan, but that was strongly supported by the United States high energy physics program, and we supported most of the U.S. scientists in that collaboration.

FISCAL YEAR 2000 BUDGET REQUEST

Let me turn to the budget itself now. In fiscal year 2000 we are requesting $2.8 billion. It is up about $138 million, or 5 percent, over 1999, taking into account $46 million of one-time projects. The overall activity is up about $184 million.

If you want to think about how we used that additional $184 million, it was an increase of $84 million for the Spallation Neutron Source to keep it on track with the original proposed cost profile, $70 million for the Scientific Simulation Initiative, part of the President's information technology initiative, and a $10 million increase for science education, and the remaining is spread in various ways.

Despite increases for our major initiatives, difficult decisions were made within the base program that are defensible, but not comfortable. One of them was the example that Senator Reid gave of our reductions in geoscience, but some accommodations had to be made, given the tight constraints that the Administration applied to the budget, and which I know you have equally tight constraints as well.

Within these constraints we have to accommodate new projects and new directions, and we have to make sure that we balance the operation of existing facilities against that which supports the research, and the researchers that use them.

The budget request has numerous important elements, but in the time that remains, I will talk mainly about the two major initiatives in the budget, the Spallation Neutron Source and the Scientific Simulation Initiative.

SPALLATION NEUTRON SOURCE

The Spallation Neutron Source is a $1.36 billion facility, expected to be completed in December 2005. It is a five-lab collaboration, among Oak Ridge, Argonne, Berkeley, Brookhaven, and Los Alamos. It is a high-priority facility for the scientific community. It was recommended first in 1984, in the National Academy study, and again reconfirmed in the 1999 material science study by the National Research Council.

The material impacts are important, but there are also other activities that will benefit from this facility. In particular, metals, ceramics, polymers, magnetic systems, and biological systems as well as molecular structures, and understanding the functional properties of biological molecules.

A recent January 1999, review took place that has received some fair amount of coverage in the scientific press, but also in the House Committee on Science, that made some fairly strong criticisms of this project. These criticisms were echoed in testimony given by the General Accounting Office, but they only confirmed what had been discovered by our review; namely, that the technical project director must report to the lab director, that the civil construction requires more oversight, and we need to prepare a new baseline for the project by July 1999, and regain additional cost contingency above what had already been regained by the project.

Within a week of that review, the five lab directors identified Dr. David Moncton, from Argonne National Laboratory, as the project director. He has been on-site at Oak Ridge and working with the technical team for the project, and today they are briefing the involved lab directors from the five different laboratories on the results of their review, which is essentially a stem to stern technical review of the project and a commitment to an action plan for the next 6 months to arrive at the baseline and to get the project back on track.

This review will be presented to Under Secretary Moniz tomorrow, and we will be presenting it, bringing Dr. Moncton to the interested congressional committees and members on Thursday and Friday.

GAO STUDY

Senator DOMENICI. Can I interject here? On the spallation machine for Oak Ridge, was the GAO study helpful?

Dr. KREBS. The GAO study in general confirmed the findings of our own review. They were present at our review, by our invitation. Additional comments made by the GAO about the Department's capability to manage large projects are things we have heard before.

Senator DOMENICI. You have heard that before?

Dr. KREBS. Yes.

Senator DOMENICI. That was not the question. Was it relevant?

Dr. KREBS. Only insofar as they confirmed what we had already found out.

Senator DOMENICI. Okay.

Dr. KREBS. They did not provide any new information. It is important for me to also say that Dr. Moncton was responsible for the on-time and on-budget delivery of the $800 million Advanced Photon Source at the Argonne Lab, so I think he is one of the best people we could possibly find to deliver this kind of a project.

I think it also demonstrates the effectiveness of our construction management review process that has helped the Office of Science deliver projects on time and on budget, such as the Relativistic Heavy Ion Collider, the Jefferson Lab, the Advanced Photon Source, the Advanced Light Source.

It demonstrates the workability of the collaboration of the five lab directors, but we are going to go further, we will negotiate stronger memorandums of agreement and clear performance measures for all the labs.

SCIENTIFIC SIMULATION INITIATIVE

Let me turn quickly now to the Scientific Simulation Initiative, DOE's contribution to the President's information technology for the 21st Century. This initiative is aimed at providing the science base that will build the computer and information technology for the second decade of the next century. The National Science Foundation and DARPA have the primary responsibility for this science base.

The Department of Energy and other mission agencies, NOAA, NASA, and NIH, are investing in the Tera scale computer and software infrastructure under development now for specific applications.

DOE has a special role in that effort. In Defense Programs, the Advanced Strategic Computing Initiative [ASCI] is developing the trillion-operations-per-second machines and intermediate software to enable certification of the safety and security of the nuclear stockpile in a comprehensive test ban regime.

It is now foreseeable that tens of Teraops will be available in the next decade for science, also the next century, but we have to start now developing the algorithms, building the models, to match both the capability and the structure of these new machines.

In the Department of Energy, we have two primary applications to drive the development on these machines for science, climate modeling and combustion. The criteria that we use to choose these initiatives were, first of all, we needed to have complex scientific

problems for which an order of magnitude increase in computing would transform the understanding of the problem.

We needed a scientific community comfortable and sophisticated about large-scale computing, and finally we had externalities that justified prompt development and exploitation of the coming technologies. In climate models, as you have noted, the need to better understand the impact on a regional scale of changes resulting from increased carbon dioxide in the atmosphere and in the environment generally is an increasingly pressing problem in our negotiations and discussions with colleagues around the world. In combustion, foreseeable emission limitations that may be the discussion of regulations for transportation could present a crisis for vehicles in the next decade.

In sum, DOE has critical scientific problems. We are in the middle of the technology development, and the interagency collaboration will enable us broad access to the scientific community. It is very exciting, and it is relevant. We have a lot of other activities that I could talk to you about. Our scientific facilities are coming along.

In addition to bringing on RHIC, the B-factory, the Combustion Research Facility at Sandia Livermore, we are also in the middle of and working well in our upgrades at LANSCE. We are making progress on the Large Hadron Collider. The Next Generation Internet is moving along, and in the human genome we will be dedicating the production sequencing facility that matches some of the new investments at NIH.

PREPARED STATEMENT

Let me just say that in closing, this is a good budget. It will enable exciting science. We believe we are managing effectively in the face of lots of uncertainties. There is room for improvement, and we look forward to working with you.

Senator DOMENICI. Do you have prepared remarks?

Dr. KREBS. I do. I would like to submit them for the record, sir.

Senator DOMENICI. Your full statement will be made part of the record.

[The statement follows:]

PREPARED STATEMENT OF MARTHA KREBS

Mr Chairman and Members of the Subcommittee: This is the sixth time I have had the honor of testifying before this subcommittee on behalf of the budget for the newly renamed Office of Science (SC). The fiscal year 2000 budget request for the Office of Science supports: Basic Energy Sciences, Fusion Energy Sciences, High Energy Physics, Nuclear Physics, Biological and Environmental Research, Computational and Technology Research, Energy Research Analyses, Multiprogram Energy Laboratories-Facilities Support, and supporting Science Program Direction. The Technical Information Management program budget is located within the Energy Supply R&D account. Continued leadership in science and technology is a cornerstone of the President's and Vice President's vision for America. During the past six years, the Administration and this committee have provided substantial growth for scientific research and enabling technology programs despite tight overall fiscal constraints. This budget request builds upon and strengthens those vital investments for the Twenty-first Century.

Scientific research and the knowledge and technologies that follow have been credited with about half of the productivity growth of the United States' economy in the past fifty years. What growth it has been—millions of high-skill, high-wage jobs; the longest life expectancy in human history; agricultural output to confound

Malthus; new means of working and communicating on a global basis; and exciting new frontiers to explore. The Department of Energy, and its predecessor agencies, have been a proud sponsor of science-driven growth through the combined efforts of the National Laboratories, 66 Nobel Laureates and thousands of other outstanding university and industry based researchers nationwide. As we begin the Twenty-first Century, we prepare for the next fifty years with focused investments in science and scientific tools for the future.

The Department of Energy (DOE) budget for fiscal year 2000 plans for the next century by providing for a $138 million increase in the Office of Science, to invest in thousands of individual research projects at hundreds of research facilities across the U.S., primarily in our national laboratories and research universities. The fiscal year 2000 request will allow for continued construction of the Spallation Neutron Source, the first world class neutron source built by the U.S. in over 30 years; the pursuit of a new Scientific Simulation Initiative that will revolutionize our ability to solve scientific problems of extraordinary complexity and enable us to apply these new resources toward advancing DOE missions; and participation in the Next Generation Internet effort with a focus on R&D and implementation of the technologies and tools that help meet mission requirements and contribute to the Scientific Simulation Initiative.

OUR MISSION HASN'T CHANGED

As the Office of Science, our mission remains to: produce the scientific and technical knowledge needed to develop energy technology options; understand the health and environmental implications of energy production and use; maintain U.S. leadership in understanding the fundamental nature of energy and matter; provide and operate the large-scale facilities required in the natural sciences; ensure U.S. leadership in the search for scientific knowledge; and support the availability of scientific talent for the next generation.

Achieving our mission contributes to the goals of the Department and the Administration while advancing science and contributing to U.S. economic growth. Our history of success continued in fiscal year 1999 with the following:

Hundreds of principal investigators, funded by SC, yearly win dozens of major prizes and awards sponsored by the President, the Department, the National Academy of Sciences, the National Academy of Engineering, and the major professional societies including: the 1997 Nobel Prize for Chemistry; National Medal of Science; Presidential Young Investigator Award; 1998 Fermi and Lawrence awards; National Science Foundation Career Award; eight 1998 R&D 100 awards; two 1998 Discover Awards; 1998 Federal Laboratory Consortium Award; Gordon Bell Prizes and Fernbach Award; IBM's Supercomputer Award; and many other awards and honors from scientific societies.

Researchers supported by the Office of Science showed that the universe is not only expanding but that the outward motion appears to be speeding up, not slowing down. The implication is that Einstein was right when he suggested that there is a mysterious energy that fills "empty" space and that most of the energy of the universe is in this form. The finding raises profound questions about the nature of space and the ultimate fate of the universe including fundamental new questions for physics. As a result, Science Magazine named *The Accelerating Universe* "the 1998 Breakthrough of the Year ".

SC also provided support for the $100 million detector, Super-Kamiokande, operated by a collaboration of 120 physicists from 23 institutions headed by the University of Tokyo's Institute for Cosmic Ray Research (ICRR). This experiment demonstrated that the supposedly massless neutrino must, in fact, have a non-zero rest mass. Once verified, this discovery will force a revision in the Standard Model, which assumes a massless neutrino and may alter our estimates of the total mass of the universe, with implications for understanding its origin and eventual fate.

Incredibly light synthetic metals with a potential electrical conductivity 50–100 times better than copper per weight are being made from carbon nanotubes doped with metals. First discovered in 1991, nanotubes are a new class of materials formed from graphite-like sheets of carbon rolled into exquisitely small cylinders (one-billionth of a meter).

Microbial genomics, one of today's most exciting and high profile fields in biology, was initiated by DOE in 1994. Science Magazine also identified microbial genomics as one of the top 10 fields of discovery in 1998. Two of the 1997 "11 hottest papers in biology" were for microbial genomic sequences funded by SC. For example, SC research on "Conan the Bacterium"—*D. radiodurans R1*, has shown extreme resistance to genotoxic chemicals, oxidative damage, high levels of ionizing and UV radiation, and desiccation. The ability to survive such extreme environments is attrib-

uted in part to a unique DNA repair system in combination with its chromosome copy number and structure. The remarkable capabilities of this microbe may enable scientists to engineer a form of D. Radiodurans that can help us clean up some of our most troublesome waste problems.

The Human Genome Program was initiated by the Department of Energy (DOE) in 1986 to map and determine the complete DNA sequence of the human genome. A Memorandum of Understanding was established with the National Institutes of Health (NIH) in 1988 to coordinate the U.S. Genome Project. The latest joint five-year plan was published in Science Magazine in October 1998. This plan calls for determining the complete sequence of the human genome by the year 2003, two years ahead of the original target date. Recent successes include identifying the gene for kidney disease.

SC has renewed our commitment to forging more effective partnerships that leverage our research investments and connect us more closely with other federal science programs and the direct beneficiaries of our research. We are fostering new kinds of partnerships among our national laboratory, university and industry based researchers to maximize the effectiveness and impact of research activities. In partnership with the Department's applied programs, SC is also working to bridge the gap between basic research and application through: joint planning of critical long-term research; joint solicitations and funding of targeted research efforts; and annual integration workshops that bring together program managers and researchers from across DOE.

New scientific research facilities coming on-line include: the William R. Wiley Environmental Molecular Sciences Laboratory; the Jefferson Lab's Large Acceptance Spectrometer; SLAC's B-Factory, the Oak Ridge Free-Air CO2 Enrichment Facility, the JGI Production (DNA) Sequencing Facility and the Relativistic Heavy Ion Collider (RHIC). Initiation of RHIC operations in fiscal year 2000 opens an exciting new era of nuclear physics studies: the behavior of hot, dense nuclear matter and an expected new state of matter, the quark-gluon plasma. Projects completed on time and budget include: Fermilab's Main Injector, and the Combustion Research Facility Phase II.

Bringing science to the researcher's desktop became a reality as over 30,000 technical reports (2 million full-text pages) of DOE's R&D results became accessible and searchable over the World Wide Web via the Information Bridge (www.doe.gov/bridge). Researchers are regularly downloading 4,000 reports per week from this web site.

The Department of Energy is a science agency because its mission and goals require technologies and scientific knowledge far beyond that which is currently available. From safeguarding the nuclear stockpile to ensuring our nation's energy supply for the next century, DOE continues to challenge the frontiers of science and technology.

The DOE Strategic Plan outlines the vision, goals and strategic objectives that will, through leadership in science and technology, help the DOE to meet those challenges. In keeping with the Government Performance and Results Act (GPRA), the Office of Science fiscal year 2000 budget request includes program specific goals, strategies, and measures that focus our research activities and ensure continuity with Departmental plans and national goals.

RETHINKING OUR GOALS AND STRATEGIES

In the past year, the Department has begun to rethink how we characterize our R&D efforts across business lines to assemble the key information for improving our analysis and management of these investments. The result is a set of R&D Portfolios, scheduled for public release this month, that capture the spectrum of DOE R&D efforts in each Business Line.

The basic research of the Office of Science presses forward on the frontiers of fundamental understanding but also supports and enables the R&D of the other business lines. Thus, a Science Portfolio has been developed so as to clarify and improve the integration of our program results in the Department. As the Department R&D Portfolios evolve, the Office of Science will continue to integrate basic research with the applied R&D in the other business lines' Portfolios to ensure strong linkages between technology needs and science.

A revised Strategic Plan of the Office of Science, also scheduled for release at the end of the month, will articulate the long-range vision, goals, objectives, and strategies for our programs. The Science Portfolio complements and supports the Strategic Plan by providing a near-term "snapshot" of our investments that dovetails with the new strategic framework.

The motivations behind this planning effort are to develop a shared long-term focus for SC programs, their scientific communities and performers; to describe our present scientific programs and position them for the future; to provide a framework for cooperation and risk taking; to illustrate the unique and coordinated role of SC programs within the DOE and the federal science investment; and to inform and inspire our sponsors and the general public.

The new SC Strategic Plan, and supporting Science Portfolio, is structured around five high-level goals with twelve strategic objectives, listed in Figure 1. These goals were developed through a series of planning activities and workshops that drew on the experience and knowledge of our research scientists and stakeholders to capture both what is necessary and what is possible for our science as we look to the next century.

The first goal, Fueling the Future, is centered on science for affordable and clean energy options for the future. Some of the questions that motivate this goal are: How can we tap and harness affordable, clean fuels? What clean new electric power systems will fuel the future? and How can energy systems be made more efficient and environmentally sound?

Development of this goal has been closely connected with the development of the Energy R&D portfolio and the objectives directly map onto the energy portfolio.

—Fueling the future: New fuels; clean and affordable power; and efficient energy use.
—Protecting our living planet: Sources and fate of energy by-products; impacts on people and the environment; and prevention and protection.
—Exploring energy and matter: Components of matter; origin and fate of the universe; and complex systems.
—Extraordinary tools for extraordinary science: Instrumentation for the frontiers of science; scientific simulation; and institutional capacity.
—Enabling world class science.

The second goal, Protecting our Living Planet, is centered on understanding energy impacts on people and the biosphere. Some of the questions that motivate this theme are:

—What are the sources and fate of energy-related by-products?
—What factors affect global climate and how can they be controlled? and
—How do complex biological and environmental systems respond to our energy use?

This goal also contributes to both the Energy R&D portfolio and the Environmental R&D portfolio.

The third goal, Exploring Matter and Energy, is centered on discovering the building blocks of atoms and life. Some of the questions that motivate this theme are:

—What are the fundamental components of matter?
—How can the origin and fate of the Universe reveal the secrets of energy, matter and life? and
—How do atoms and molecules combine to form complex dynamic systems?

This goal captures the most fundamental research in the Office of Science. The complex systems question links to R&D efforts in all of the DOE business lines.

The fourth goal, Extraordinary Tools for Extraordinary Science, is centered on the national assets that DOE provides for forefront, multidisciplinary research. This goal builds on the unique role of the Office of Science in providing the nation with forefront research facilities at our National Laboratories such as research accelerators, reactors, computational centers, and other unique instrumentation. In addition, the National Laboratories as a system of institutions is increasingly becoming an extraordinary tool beyond the set of specific facilities located on their sites. The Office of Science will continue to ensure that these critical research tools remain accessible to peer reviewed researchers from all across the nation and meet the technical challenges of forefront scientific investigation. This goal looks to the future and to training and educating the next generation of scientists and engineers.

Some of the questions that motivate this goal are:

—How can we explore the frontiers of the natural sciences?
—How can we predict the behavior of complex systems? and
—How can we strengthen the nation's capacity for multidisciplinary science?

This goal enables research in all of the DOE business lines. By organizing future facility needs, as identified by the scientific community, this theme ensures that America's research capability will remain both accessible and state of the art.

The fifth goal, Enabling World Class Science, conveys the commitment of DOE and National Laboratory staff to continuously improve their operational processes. Of paramount importance is the selection and conduct of excellent, productive science that is carried out safely and with care for the environment and involvement of local communities.

The five goals provide a framework for current programs and a platform for future efforts. Fiscal year 2000 initiatives and priorities that support these goals include: utilizing the advances in computation that are flowing from the Accelerated Strategic Computation Initiative (ASCI) to aid scientific research in critical complex areas as part of The President's Information Technology for the Twenty-first Century (IT^2); continuing progress made toward returning U.S. International Leadership in Neutron Science; carefully managing our partnership in the Large Hadron Collider; ensuring wide utilization of our Scientific User Facilities; developing and applying DOE applications and technologies for the Next Generation Internet; providing the scientific basis for DOE's Climate Change Technology Initiative; and providing unique services in the exploding field of Genome Research. Figure 2 depicts the cross-connection between the goals above and the priorities in the fiscal year 2000 request.

	Fuel the Future	Protect Our Living Planet	Explore Energy & Matter	Extraordinary Tools for Extraordinary Science
Science Simulation Initiative	✓	✓	✓	✓
Spallation Neutron Source	✓		✓	✓
Large Hadron Collider			✓	✓
Scientific User Facilities	✓	✓	✓	✓
Next Generation Internet				✓
Climate Change Technology Initiative	✓	✓		
Genome	✓	✓	✓	✓

Figure 2

Scientific Simulation Initiative.—It is now possible to obtain computational capabilities 100 times faster than currently in common use through the application of technologies developed for the Accelerated Strategic Computing Initiative (ASCI). Therefore the Department of Energy, in coordination with the National Science Foundation and other federal science programs, has developed a Scientific Simulation Initiative (SSI) in support of the President's Information Technology for the Twenty First Century (IT^2) Initiative. The purpose of the SSI is to further develop and employ an emerging generation of very high performance computers as major tools for scientific inquiry. These resources will revolutionize our approach to solving complex problems in such areas as energy, the environment, and fundamental research. This initiative will require close collaboration between scientists in many disciplines: chemistry, fluid flow, global systems, mathematics, computer science, etc. However, it is important to remember that this is a research program and that even the operation of computing facilities at this scale presents significant research issues.

Within the Office of Science, the SSI will be an integrated effort with the Computational and Technology Research (CTR) program coordinating and overseeing competitive, peer reviewed selections of sites for computational centers and basic science applications. In addition, CTR will manage the leading edge research programs in computer science and enabling technologies which will be required to transform the SSI computing and communications facilities into tools for science. The element of the program that addresses enabling hardware and software will be directed by a joint SC/Defense Programs ASCI effort. The management of the research programs required to use these facilities for scientific discovery will be led

by the appropriate programs within the Office of Science: Basic Energy Sciences for Combustion; Biological and Environmental Research for Global Systems; and the Offices responsible for the scientific disciplines selected in the basic science applications competition.

The first scientific applications to be run on these new massively parallel computers have been chosen carefully. Combustion and global systems are complex scientific problems for which terascale computing will provide a transformation in our level of understanding. The scientific communities in these areas are also experienced in using computational tools. Finally, these two problems are central to DOE's mission.

Combustion.—Currently, eighty-five percent of U.S. energy use is derived from the combustion of fossil fuels and this dependence on combustion is not likely to change in the coming decades. Combustion remains one of the primary causes of lowered air quality in urban environments. At present, engineers have neither sufficient knowledge nor the computational tools to understand and predict the chemical outcome of combustion processes with any degree of practical reliability. Existing models that guide the design process are of very limited usefulness because of the extraordinary complexity of the combustion process. With very high end computing resources and a concerted research program in combustion modeling, we can develop the next generation of combustion modeling tools for accelerated design of combustion devices meeting national goals of emission reduction and energy conservation.

Global Systems.—Unlike many disciplinary areas of research, the complex workings of the global environmental system cannot be studied in a laboratory setting. The integration of knowledge from the many disciplines that together describe the global system can only be performed in computer simulation models. It is only through such general circulation models that it is possible to understand current climate and climate variability and to predict future climate and climate variability, including prediction of the possible effects of human activities on the global system. Advances in scientific understanding are therefore predicated upon the successful development of modeling tools to keep pace with the rapid advances in the quality and quantity of data available. These tools will lead to the development of detailed fully coupled global system models that accurately reproduce, and ultimately predict, the behavior of the interacting components of the system, i.e. the global atmosphere, the world ocean, the terrestrial land surface and both glacial and sea ice.

Fundamental Research.—Whereas the scientific accomplishments of this century have resulted in seeking and understanding the fundamental laws that govern our physical universe, the science of the coming century will be characterized by synthesis of this knowledge into predictive capabilities for understanding and solving a wide range of scientific problems, many with practical consequences. In this endeavor, the computer will be a primary instrument of scientific discovery. Many areas of scientific inquiry, critical to the Department's mission, will be advanced dramatically with access to high-end computation—including, but not limited to, materials sciences, structural genomics, high energy and nuclear physics, subsurface flow, and fusion energy research.

The Spallation Neutron Source (SNS).—The importance of neutron science for fundamental discoveries and technological development has been enumerated in all of the major materials science studies over the past two decades, including a major study by the National Research Council entitled "Major Facilities for Materials Research and Related Disciplines" (Seitz-Eastman Report).

As the needs of our high-technology society have changed, so has the way in which we conduct the R&D that helps us to meet those needs. It has become increasingly important to develop new materials that perform under severe conditions and yet are stronger, lighter, and cheaper. Major research facilities are used to understand and "engineer" materials at the atomic level so that they have improved macroscopic properties and perform better in new, demanding applications. The SNS is a next-generation facility for these types of applications. Neutron scattering will play a major role in all forms of materials design and understanding. This research will lead to the development of advances such as: smaller and faster electronic devices; lightweight alloys, plastics and polymers for transportation and other applications; magnetic materials for more efficient motors and for improved magnetic storage capacity; improved understanding of form and function in biological structures and the development of new drugs for medical care. Upon completion, the SNS will be the world's most powerful neutron source, accommodating more than 1,000 researchers and 30 to 40 special purpose instruments.

The SNS Total Project Cost (TPC) is estimated to be $1,360 million over a 7.25-year schedule. Throughout the life of the project, semi-annual reviews will track cost and management fiscal year 1999 funding provides for the start of Title I design activities, initiation of subcontracts and long-lead procurement, and continued R&D

to reduce technical and schedule risks. The fiscal year 2000 budget request of $214 million would support Title II (detailed) design for the technical components and control systems. Construction, on some of the conventional facilities, is scheduled to begin in fiscal year 2000 along with the procurement of key technical equipment.

The SNS project is an example of DOE's commitment to use the DOE laboratories as a system. Oak Ridge National Laboratory is responsible for the project with participation from Lawrence Berkeley National Laboratory, Los Alamos National Laboratory, Brookhaven National Laboratory, and Argonne National Laboratory. The laboratories have been working together in an increasingly effective manner and R&D is proceeding smoothly with no technical barriers in sight.

In January 1999, an Office of Science construction management review of the SNS made recommendations with respect to the project director and staff experienced in the oversight and integration of all aspects of the large complex project. The Laboratory Director has hired a new Associate Laboratory Director for the project and is assembling the necessary senior management team. As a first step, I tasked the laboratory to undertake a comprehensive assessment of the project. The assessment is due to the Department in the first week in April. These construction management reviews have been a key tool for keeping SC projects on time and on budget. The prompt action in response to the review's recommendations will allow us to deliver the SNS as well.

Scientific Facilities Utilization.—This fiscal year 2000 budget request continues to strongly support Scientific Facilities Utilization in the following programs: Basic Energy Sciences, High Energy Physics, Nuclear Physics, Fusion Energy Sciences, Biological and Environmental Research, and Computational and Technology Research. Each year, over 15,000 university, industry, and government sponsored scientists conduct cutting edge experiments at these particle accelerators, high-flux neutron sources, synchrotron radiation light sources, and other specialized facilities, such as the Combustion Research Facility (CRF) at Sandia National Laboratories, Livermore, California. The CRF is an internationally recognized facility for the study of combustion science and technology, which will begin its first year of operation after its Phase II development project. The user community continues to be pleased with the results of the Science Facilities Initiative as evidenced by their many letters of support and by the positive results of surveys conducted at the facilities.

The Large Hadron Collider.—The foremost high energy physics research facility of the next decade will be the Large Hadron Collider (LHC) at CERN, the European Center for Particle Physics. The primary physics goals of the LHC will impact our understanding of the relation of mass, fundamental forces, and the structure and origin of the universe. U.S. participation in the LHC is required to provide U.S. access to the high energy frontier in order to maintain the U.S. as a world leader in this fundamental area of science.

The LHC is an outstanding example of international cooperation in large scientific projects, as well as interagency and inter-laboratory cooperation. An International Cooperation Agreement has been negotiated between CERN, DOE and NSF. The Agreement provides for U.S. participation in the construction of the accelerator, and of the two very large detectors, ATLAS and CMS. Carefully defined lists of deliverables and costs have been agreed upon for each of these areas of participation. U.S. costs are capped at $531 million ($450 million DOE and $81 million NSF), consistent with Congressional guidance. In return, participating U.S. universities and laboratories will join, as full partners, in LHC experiments. In addition, a Memorandum of Understanding (MOU) has been executed between DOE and NSF that defines the relationship between the agencies relative to programmatic coordination of U.S. LHC activities including joint oversight and execution of the U.S. LHC Construction Program.

Under the terms of this MOU, Fermilab is the Lead Laboratory for the accelerator portion of the program, which it will execute in cooperation with Brookhaven (BNL) and Lawrence Berkeley (LBNL) National Laboratories. BNL is the host laboratory for the ATLAS portion of the program, which also involves Argonne National Laboratory (ANL) and LBNL along with 28 university groups. Similarly, Fermilab is the host laboratory for the CMS detector portion of the program, along with 33 university groups. Cost and schedule baselines have been reviewed and validated for each of the three programs and management systems are in place to monitor progress against baselines.

The Next Generation Internet (NGI).—The program is creating the foundation for more powerful and versatile networks of the Twenty-first century, just as previous federal investments in information technology R&D created the foundation for today's Internet. This program is critical to DOE's science and technology missions because enhancements to today's Internet from commercial R&D will not be sufficient to enable: effective use of petabyte/year (would fill the hard drives of millions of to-

day's desktop PCS) High Energy and Nuclear Physics facilities such as the Relativistic Heavy Ion Collider (RHIC); remote visualization of terabyte to petabye data sets from computational simulation; development of advanced collaboratories; and effective remote access to tomorrow's advanced scientific computers.

For example, typical RHIC experimental collaborations involve hundreds of scientists at dozens of institutions across the country and the world. Using the current Internet, it would take about 2,500 hours to transmit one day's data from RHIC to one remote site for analysis. Using NGI it would take 25 hours.

Thus, DOE's NGI research program is focused on discovering, understanding, developing, testing and validating the networking technologies needed to enable wide area, data intensive and collaborative computing. The DOE applications share two important characteristics. They all involve extremely large data sets and they all require that scientists be able to interact with the data in (nearly) real time. Current network technology limitations significantly limit our ability to address these characteristics.

The DOE program includes research in advanced protocols, special operating system services for very high speed, and very advanced network control, the components needed to enable wide area, data intensive and collaborative computing. In addition the DOE program addresses issues that result from the many different kinds of network devices, network-attached devices, and services that need to be integrated together. Examples of the components and services that need to be integrated include: network resources, data archives on tape, high performance disk caches, visualization and data analysis servers, authentication and security services, and the computer on a scientist's desk. This type of integration, as well as the issues of improving the performance of the individual components, all require significant research because the issues are currently not well understood. Indeed, the first identification of many of these issues is the result of previous work in collaboratories and visualization supported by DOE.

Thus, DOE's participation in the NGI builds on previous DOE research and its over two decades of success in using advanced networks as tools for science. Furthermore, the differences between the requirements of commercial networks and networks for scientific research require DOE to conduct this research because these tools and technologies will not be developed by commercial R&D. However, the results and "spinoffs" of this research, after testing and prototyping by the scientific community, will impact broad commercial use of networks. DOE's fiscal year 2000 NGI program will build on the results of the competitive research solicitations conducted in fiscal year 1999.

Climate Change Technology Initiative (CCTI).—Eighty-five percent of our Nation's energy results from the burning of fossil fuels, a process that adds carbon to the atmosphere. Because of the potential environmental impacts of increases in atmospheric carbon dioxide, carbon management has become an international concern and is a focus of the CCTI.

The Office of Science is well positioned to make significant contributions to the many solutions needed to address this problem. SC can build on the fundamental discoveries of core research programs in carbon and non-carbon energy sources, carbon sequestration, and carbon recycling, extending them to the new discoveries needed to make carbon management practical and efficient.

Activities in both Basic Energy Sciences and Biological and Environmental Research support the DOE and Administration CCTI efforts in: science for efficient technologies; fundamental science underpinning advances in all low/no carbon energy source; and sequestration science.

The SC portion of the CCTI leverages the foundation of excellent research already underway. The additional SC effort will also have a major impact on many scientific disciplines by advancing the state of knowledge in such fields as genome science, molecular, cellular and structural biology, biochemistry, chemical dynamics, solid state chemistry, photochemistry, ecology, nano- and meso-phase materials science, condensed matter physics, engineering, theoretical chemistry and physics.

For example, the BER microbial genome program has made significant investments in the technology that enables genome sequencing at rates previously unattainable. Capitalizing on these investments, the genomes of microbes that produce methane and hydrogen from carbonaceous sources will be sequenced as part of the first awards under CCTI. This will enable identification of key genetic components of the organisms that regulate the production of these gases. The carbon sequestration research program will focus on understanding the natural terrestrial sequestration cycle and the natural oceanic sequestration cycle as part of the first awards under the CCTI. The ultimate goal is to enhance the natural carbon cycle in both the terrestrial and oceanic systems. The search for new fuel sources and carbon sequestration research are key elements of the carbon management science program.

CCTI research and related activities within the Office of Science will continue to be coordinated with the Office of Fossil Energy. Fiscal year 1999 integration efforts include the coordination of new CCTI proposal solicitations and preparation of a detailed carbon dioxide sequestration roadmap.

Genome.—In its first full year of operation, the DOE Joint Genome Institute (JGI) became a leading producer of high quality human DNA among U.S. sequencing centers. The JGI is scaling up its sequencing capacity from 21 million finished bases in fiscal year 1998 to 30 million finished bases and 40 million high quality draft bases in fiscal year 1999. In total, SC will complete sequencing of 50 million finished and 70 million high quality draft subunits of human DNA to submit to publicly accessible databases in fiscal year 2000. In addition, SC will complete the full genetic sequencing of more than 10 microbes that have significant potential for waste cleanup and energy production.

Improvements in high throughput human DNA sequencing technology and sequence data management are needed to complete the first human genome by 2003 and to efficiently and cost effectively use that sequence information for future medical diagnoses and scientific discovery. The Joint Genome Institute, in which the National Laboratories work as a system, are primarily focused on high throughput sequencing. Fiscal year 2000 is the third year of a major 3–5 year scale-up in DNA sequencing capability for this virtual institute. DOE will continue to work with the private sector, where appropriate, to accelerate progress and reduce cost in the Human Genome project. The SC program is actively involved with other federal agencies funding, human, plant and microbial research to encourage effective and efficient management of the total federal genome research portfolio. Genomics is the foundation for future biological research and is the reason that the next century has been called "the century of biology."

Program Direction.—The Science Program Direction budget funds the staff and related expenses that are necessary to develop, direct and administer a complex and broadly diversified program of mission-oriented basic and applied research. The Office of Science continues to achieve technical excellence in its programs despite managing one of the largest and most diversified and complex basic research portfolios in the Federal Government with a relatively small Federal and support contractor staff compared to other programs both within and outside the Department and will strive to meet staffing levels as outlined in its Workforce Management Plan. Enhanced business processes that are built from our Activity Based Management activities and Strategic Information Planning will enable the staff to carry out the mission and functions of the organization effectively and efficiently. Work will continue on piloting the transfer of management responsibility of newly generated wastes at SC sites from Environmental Management to the Office of Science. I am proud to recognize SC efforts that have resulted in: lower prior year uncosted balances; reduced unnecessary duplication through external peer review; support for new initiatives, such as the Scientific Simulation Initiative (SSI); and more than six years of on-time, on-budget construction projects due to an effective SC construction management review program that has been recognized by both the Government Accounting Office (GAO) and the National Association of Public Administrators (NAPA).

The scientific and technological challenges of the Department's missions demand an adequate supply of scientists, engineers and technicians. For over 50 years, DOE and its predecessor agencies have supported science and engineering education programs involving university faculty as well as pre-college teachers and students. Tapping the significant human and physical resources of the DOE National Laboratories is perhaps the most distinguishing feature of the agency's contribution to science education. Within the fiscal year 2000 request for Program Direction is SC's core program for science education, supporting such activities as: the Undergraduate Research Fellowship Program, the National Science Bowl, and the Albert Einstein Distinguished Educator Fellowship. In addition, two new initiatives, developed in partnership with NSF, will be supported through the five SC scientific programs. The first initiative will be focused on providing pre-college science and math teachers with research opportunities that will improve their knowledge and skills of scientific discovery and enhance their ability to apply them in their classrooms. The second initiative will allow university faculty and undergraduate student teams to participate in long-term research projects at DOE Laboratories. Historically, over two-thirds of undergraduates who have participated in DOE programs have gone on to graduate school in disciplines directly related to DOE missions. These activities will help to fulfill SC's responsibilities in developing the next generation of scientists and engineers and to address the daunting demographic trends that suggest these new scientists will have to come from the ranks of women and minorities, two groups traditionally under-represented in scientific fields.

SCIENCE PROGRAMS—BASIC ENERGY SCIENCES

Fiscal Year 1999 Appropriation—$799.5 M; Fiscal Year 2000 Request—$888.1 M

The Basic Energy Sciences (BES) program is one of the Nation's primary sponsors of fundamental research in materials sciences, chemical sciences, geosciences, plant and microbial sciences, and engineering sciences. Performance measurement helps determine the distribution of activities supported within BES. All BES research programs undergo rigorous peer evaluation through competitive grant proposals, program reviews, and advisory panels. The program funds more than 2,400 researchers at 200 institutions nationwide. BES-supported research also underpins the Department of Energy missions in energy, the environment, and national security. Strategic directions are set through working relationships with other DOE programs, research workshops with public and private scientific communities nationwide, and policy directives.

Within the base research effort in fiscal year 2000, a program in Complex and Collective Phenomena will continue to support work at the frontiers of basic research that hold the promise of delivering revolutionary breakthroughs. This effort is designed to obtain fundamental knowledge of increasingly complex systems in order to help bridge the gap in our understanding between the atomic and molecular properties and the bulk structural and mechanical properties of materials, for example. In addition, BES will continue its Partnership for Academic-Industrial Research (PAIR) program to facilitate research partnerships between academic researchers, their students, and industrial researchers.

In fiscal year 2000, BES also plays a major part in the Climate Change Technology Initiative (CCTI) and the Scientific Simulation Initiative (SSI). The BES research under CCTI will primarily focus on carbon recycling, improved efficiency in the use of fossil carbon energy sources, and new and improved non-carbon energy sources. Examples of the types of research areas in each of the four BES subprograms are: high-temperature materials for more efficient combustion; electrochemical energy storage; mechanical stability of porous and fractured reservoirs/aquifers; and the biological process of photosynthesis. The BES research under SSI includes Combustion Systems Integrated Applications, an integrated effort bringing together computational and communication resources, focused research in scientific disciplines, and research in computer science and other enabling technologies to solve the complex problems that characterize DOE's scientific research needs.

In addition to directly supporting research performers, BES is also the steward of 17 major national user facilities. Included among these facilities are the four major synchrotron radiation light sources, four high-flux neutron sources, and a number of specialized facilities for electron beam microcharacterization, materials synthesis and processing, combustion research, pulsed radiolysis, and ion beam studies. The facilities are planned in collaboration with the scientific community and permit scientists to carry out forefront experiments that cannot be done in any other way. A major part of the fiscal year 2000 BES budget request is for the continuation of the Spallation Neutron Source project to provide the Nation with a next-generation short-pulse spallation neutron source for neutron scattering and related research in broad areas of the physical, chemical, materials, biological, and medical sciences.

BES scientific user facilities enable researchers to gain the new knowledge necessary to achieve the Department's missions and, more broadly, to advance the Nation's entire scientific enterprise. The number of scientists conducting research at the BES user facilities has grown dramatically in recent years. BES user facilities are open to all qualified investigators in academia, industry, and government laboratories on a no-charge basis to all qualified researchers whose intention is to publish in the open literature. Over 6,000 users were accommodated at the BES scientific user facilities in fiscal year 1998. These facilities have an enormous impact on science and technology, ranging from determinations of the structure of superconductors and biological molecules to the development of wear-resistant prostheses, from atomic-scale characterization of environmental samples to elucidation of geological processes, and from the production of unique isotopes for cancer therapy to the development of new medical imaging technologies.

Materials Sciences.—The Materials Sciences subprogram supports basic research in condensed matter physics, metals and ceramics sciences, and materials chemistry. This basic research seeks to understand the atomistic basis of materials properties and behavior and how to make materials perform better at acceptable cost through new methods of synthesis and processing. Basic research is supported in corrosion, metals, ceramics, alloys, semiconductors, superconductors, polymers, metallic glasses, ceramic matrix composites, catalytic materials, non-destructive evaluation, magnetic materials, surface science, neutron and x-ray scattering, chemical

and physical properties, and new instrumentation. Ultimately the research leads to the development of materials that improve the efficiency, economy, environmental acceptability, and safety in energy generation, conversion, transmission, and use. These material studies affect developments in numerous areas, such as the efficiency of electric motors and generators; solar energy conversion; batteries and fuel cells; stronger, lighter materials for vehicles; welding and joining of materials; plastics; and petroleum refining.

Chemical Sciences.—The Chemical Sciences subprogram has two major components. The disciplinary areas within each component are connected to and address needs of the principal DOE and BES mission goals and objectives. One major component is comprised of atomic, molecular and optical physics; chemical physics; photochemistry; and radiation chemistry. This research provides a foundation for understanding fundamental interactions of atoms, molecules, and ions with photons and electrons. This work also underpins our fundamental understanding of chemical reactivity. This, in turn, enables the production of more efficient combustion systems with reduced emissions of pollutants. It also increases knowledge of solar photoconversion processes resulting in new, improved systems and production methods. The other major component of the research program is comprised of inorganic chemistry, organic chemistry, analytical chemistry, separations science, heavy element chemistry, and aspects of chemical engineering sciences. The research supported provides a better molecular level understanding of homogeneous and heterogeneous reactions occurring at surfaces, interfaces, and in bulk media. This has resulted in improvements to known heterogeneous and homogeneous catalytic systems and to new catalysts for the production of fuels and chemicals, better analytical methods in a wide variety of applications in energy processes and environmental sciences, new knowledge of actinide elements and separations important for environmental remediation and waste management, and better methods for describing turbulent combustion and predicting thermophysical properties of multicomponent systems.

Engineering and Geosciences.—The Engineering and Geosciences subprogram conducts research in two disciplinary areas, engineering and geosciences. In Engineering Research, the goals are to extend the body of knowledge underlying current engineering practice to create new options for improving energy efficiency and to broaden the technical and conceptual knowledge base for solving the engineering problems of energy technologies. In Geosciences Research, the goal is on fundamental knowledge of the processes that transport, concentrate, emplace, and modify the energy and mineral resources and the byproducts of energy production. The research supports existing energy technologies and strengthens the foundation for the development of future energy technologies. Ultimately the research impacts control of industrial processes: to improve efficiency and reduce pollution; to increase energy supplies; and to lower cost and increase the effectiveness of environmental remediation of polluted sites.

Energy Biosciences.—The Energy Biosciences subprogram supports mechanistic research on fundamental biological processes related to capture, transformation, storage and utilization of energy. The research focuses on plants and non-medical microorganisms to form a broad scientific foundation for support of Department of Energy's goals and objectives in energy production, environmental management, and energy conservation. Basic research on plants includes photosynthetic mechanisms and bioenergetics in algae, higher plants, and photosynthetic bacteria; control mechanisms that regulate plant growth and development; fundamental aspects of gene structure, function, and expression; plant cell wall structure, function and synthesis; and mechanisms of transport across membranes. Research supported in these areas seeks to define and understand the biological mechanisms that effectively transduce light energy into chemical energy, to identify the biochemical pathways and genetic regulatory mechanisms that can lead to the efficient biosynthesis of potential fuels and petroleum-replacing compounds, and to elucidate the capacity of plants to remediate contaminated environments by transporting and detoxifying toxic substances. The research focus in the microbiological sciences includes the degradation of biopolymers such as lignin and cellulose, anaerobic fermentations, genetic regulation of microbial growth and development, thermophily, e.g., bacterial growth under high temperature, and other phenomena with the potential to impact biological energy production, conversion and conservation. Organisms and processes that offer unique possibilities for research at the interface of biology and the physical, earth and engineering sciences are also studied.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

Fiscal Year 1999 Appropriation—$436.7 M; Fiscal Year 2000 Request—$411.2 M

For over 50 years, the Biological and Environmental Research (BER) program has been bringing revolutionary solutions to energy-related biological and environmental challenges. Through its support of peer-reviewed research at the Department's national laboratories, universities, and private institutions, the program develops the fundamental knowledge needed to identify, understand, and anticipate the long-term health and environmental consequences of energy production, development, and use. The BER program contributes to a healthy citizenry, cleanup of the environment, and understanding global environmental change, and operates the world class facilities essential to the scientific breakthroughs of the future.

As part of the President's Scientific Simulation Initiative, the BER request includes funding to accelerate the development of advanced global climate models with the high regional resolution needed for definitive predictions. This fundamental research will support the U.S. Global Change Research Program.

The BER request also includes funding for the President's Climate Change Technology Initiative. The BER contribution to the initiative includes research to sequence microbes for alternative fuel production (methane and hydrogen production) and to develop natural carbon sequestration processes in terrestrial and ocean systems.

Life Sciences.—The Human Genome Program continues to be the centerpiece of our Life Sciences Research program, both in terms of its contribution to the international effort to sequence the human genome, and in terms of the spin-off technologies. Through efforts at the Joint Genome Institute and its Production Sequencing Facility, DOE does its share of high-throughput human DNA sequencing and develops, validates, and integrates new DNA sequencing technologies into the production of DNA sequencing. Fiscal year 2000 is the third year of a 3–5 year scale-up in DNA sequencing capacity for the Joint Genome Institute. The DOE's share of the funding for the U.S. Human Genome Program is about 25 percent of the national effort.

The field of microbial genomics continues to be one of the most exciting and high profile fields in biology today. Initiated by DOE in 1994, microbial genomics and microbial genomic sequencing were identified by Science Magazine as one of the top 10 fields of discovery each of the past two years. The broad impacts of this research emphasizes a central principle of the BER genome programs—complete genomic sequences yield answers to fundamental questions in biology. Microbes are being sequenced and characterized in several parts of the BER program because of potential impacts across several DOE missions. These include the Climate Change Technology Initiative (sequencing methane or hydrogen producing microbes or microbes involved in carbon dioxide sequestration), environmental cleanup (microbes for bioremediation), alternative fuel sources (methane production or energy from biomass), industrial processes (industrial useful enzymes), and biological nonproliferation (understanding and detecting biowarfare agents). The fiscal year 2000 request includes funds for determining the DNA sequence of 10 microbes with significant potential for waste cleanup, energy production, or carbon sequestration.

The fiscal year 2000 request provides continuing support for both the national user facilities for scientists and the research support needed to determine the molecular structure and function of enzymes, antibodies, and other important biological molecules. Computational structural biology research combines computer science, structural biology, and genome research to predict the functions of biological molecules. This information will enable the design or more efficient use of biological molecules for drugs to control or treat a great variety of diseases, environmental cleanup, or energy-production and use.

The low dose radiation research program uses molecular level knowledge gained from the Department's human genome and structural biology research to determine the human health impacts, all the way from effects on single molecules to people, of exposures to low doses of energy and defense-related radiation. This information will provide an improved scientific basis for remediating contaminated DOE sites and achieving acceptable levels of human health protection, both for cleanup workers and the public, in a more cost-effective manner that could save billions of dollars. A key aspect of this program is the regular communication between scientists who propose and conduct the research and regulators who develop and implement risk policy.

Environmental Processes.—The Environmental Processes subprogram conducts research on a range of issues related to the mission of the U.S. Global Change Research Program (USGCRP). Activities are focused on understanding and predicting the potential consequences on climate and ecological systems and resources of the

emissions of aerosols and trace gases, especially carbon dioxide from fossil fuel combustion. Additional efforts support the Climate Change Technology Initiative (CCTI).

As the major federal agency supporting research into climate predictions on the decade-to-century time scale, the DOE continues an integrated observational and modeling program focused on predicting climate variability and climate change 10 to 100 years in the future. The BER Climate Change Prediction Program will continue to extend its modeling breakthrough in ocean simulation to develop a fully coupled atmosphere-ocean model useful for climate prediction. Because of the limited high-end computational resources, computer-intensive climate modeling at regional spatial resolution has been difficult to perform. To address this need, BER will support a Scientific Simulation Initiative (SSI) in collaboration with other agencies, including the National Science Foundation, National Oceanic and Atmospheric Administration, and National Aeronautics and Space Administration to accelerate the development of advanced global climate change models with higher spatial resolution than currently available. The SSI will make high-end computational resources more available to the climate modeling community than at present, improve climate models capable of simulating the principal components of a coupled atmosphere-ocean climate system, and increase the availability and usability of climate change projections to the broader climate change research and assessment communities.

The BER request includes funding to operate three Atmospheric Radiation Measurement sites and eighteen AmeriFlux sites to provide data to improve climate models and understand the magnitude and variation in carbon sequestration in major terrestrial ecosystems in North and Central America. The BER Environmental Processes subprogram will also continue to support major experimental studies to develop data to improve understanding of the ecological effects of climate and atmospheric changes.

As part of the CCTI, BER will support research to better understand the biophysical processes controlling carbon sequestration in terrestrial and ocean systems, with the long term objective of both developing approaches to manipulate these processes to enhance carbon sequestration on land and in the ocean and understand the environmental and economic implications of implementing such approaches. These studies will complement previously noted efforts to sequence the microbial genomes as part of the BER CCTI program.

The Environmental Processes subprograms provide a scientific basis for assessing both the effects of human activities on the Earth's climate and the need for action to mitigate any adverse effects. They also provide information needed to determine the potential of natural processes in terrestrial and ocean systems to help mitigate the increase in atmospheric carbon dioxide from fossil fuel combustion. The Environmental Processes subprograms are coordinated with other agencies through the National Science and Technology Council's Committee on Environment and Natural Resources.

Environmental Remediation.—Research in the Environmental Remediation subprogram is focused on understanding the fundamental physical, chemical, geological, and biological processes that must be marshaled for the development and advancement of new, effective, and efficient processes for the remediation and restoration of the Nation's nuclear weapons production sites. The two highest priorities of this subprogram are bioremediation research and operation of the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL) as a national scientific user facility to investigate fundamental molecular processes and properties that affect the environmental transformation, mobility, and biological availability of contaminants. The EMSL focuses on molecular-level collaborative research in the environmental sciences, and provides support to over 600 users, with over half of those from academia. The subprogram also addresses both natural bioremediation, which relies on naturally occurring microbial and plant processes, and accelerated bioremediation, which seeks to accelerate desirable processes through, for example, environmental modifications or the addition of amendments to contaminated environments.

The Environmental Remediation subprogram request also includes the infrastructure funding for BER program activities. The funding enables minor construction activities associated with upkeep of buildings and building systems at these research facilities. It includes such items as new roofs and heating, ventilation, and air-conditioning upgrades and replacements.

Medical Applications and Measurement Science.—The Medical Applications program fosters research to enable beneficial applications of nuclear and other energy-related technologies for medical diagnosis and treatment. The program promotes a fertile partnership among the sciences, advanced technologies and medicine in three major research areas: nuclear medicine; boron neutron capture therapy (BNCT); and

instrumentation. Research in radiopharmaceutical chemistry and imaging techniques and investigation of a broad range of potential diagnostic and therapeutic applications provide the scientific and technological foundation for the expansion of nuclear medicine as a major medical specialty and for the continued vitality of the national industries for radiopharmaceutical development and production and medical imaging instrumentation. The technologies developed under this program are directed at solving major problems in medicine, such as the non-invasive detection and localization of small malignant lesions in the body, the quantitative measurement of dynamic organ function, and the treatment of cancers that resist conventional therapies. Nuclear medicine at the Department has accelerated with many recent contributions in areas as diverse as medical imaging technologies for improved diagnostic accuracy and radiopharmaceuticals for the study and treatment of substance abuse. Medical Applications research, in partnership with the Department's human genome and life sciences research, is forging new technologies to find not only where disease-causing processes take place, but to locate and study the action of genes involved in still-mysterious normal functions such as learning and memory.

Our measurement science program focuses on research and development of new instrumentation to meet the needs of our environmental and life sciences programs for better ways of characterizing samples ranging from living cells to subsurface contaminants. The fiscal year 2000 request provides for a variety of activities, with particular emphasis on using the advanced technologies developed in the Department's National Laboratories for environmental and biomedical research.

HIGH ENERGY PHYSICS

Fiscal Year 1999 Appropriation—$695.5 M; Fiscal Year 2000 Request—$697.1 M

High energy physics research seeks to understand the nature of matter and energy at the most fundamental level, as well as the basic forces which govern all processes in nature. The Department of Energy provides more than 90 percent of the Federal support for the Nation's high energy physics (also called elementary particle physics) research program. The balance is provided by the National Science Foundation (NSF). Our knowledge of the universe, the fundamental constituents of matter, and the laws of nature that underlie all physical processes continues to grow as a result of this research.

High energy physics research not only helps us learn how the world works, it also contributes to the Nation's economic competitiveness in the high-technology marketplace. High energy physics research requires accelerators and detectors utilizing state-of-the-art technologies in many areas, including fast electronics, particle detectors, high speed computing, superconducting magnets, and high power radio-frequency devices. In these areas, high energy physics research frequently drives the technology, which not only contributes to other scientific disciplines, but also has led to many practical applications having major economic and social impacts. Who could have predicted that research that went into the building of accelerators and particle detectors and the subsequent technology would contribute so much to today's medical imaging capabilities. And who could have predicted that particle physicists seeking new ways of communicating and sharing large amounts of data would change the way in which the world communicates—yet that is just what the World Wide Web has done.

The High Energy Physics program also has a history of attracting and training some of the best and brightest young minds. The training they receive prepares them for careers not just in high energy physics, but also in other disciplines as well, including computer sciences, teaching, industrial research. It is the unique problem solving abilities learned from this scientific discipline that make them attractive. More than half of the Ph.D.'s trained for high energy physics find permanent employment outside the field.

Carrying out high energy physics research effectively depends on many elements including the availability of forefront experimental capabilities, effective use of specialized facilities, and the availability of new and upgraded facilities to take advantage of new technologies and research opportunities. The Department supports two major high energy physics accelerator centers—the Fermi National Accelerator Laboratory (Fermilab) and the Stanford Linear Accelerator Center (SLAC). Each of these laboratories provides unique capabilities and is operated as a national facility available to qualified experimenters around the Nation and abroad on the basis of the scientific merit of their research proposals. In addition, the high energy physics program makes limited use of the AGS at BNL. (The AGS will be transferred to the nuclear physics program, at the end of fiscal year 1999, to be operated as an integral part of the RHIC facility). Approximately 2,000 U.S. scientists and 200–300 foreign scientists work at these facilities at any given time.

Experimental and theoretical researchers from more than 100 universities conduct about three fourths of the research, with the remainder being done by national laboratory staff. In general, the laboratories and universities perform different, but complementary, activities. University scientists provide the primary intellectual base for the program, performing experimental research at accelerators and non-accelerator facilities, technology R&D, and theoretical research. University grantees are selected and retained based on the quality, appropriateness, and performance of their research activities. All research proposals received are subjected to a rigorous multi-stage review, especially including peer review by technical experts from the high energy physics community.

National laboratories primarily provide major accelerator facilities at which university scientists perform their research. In addition, the laboratories provide the related technical and scientific expertise, as well as day-to-day liaison between university researchers and laboratory experts and management. Responsibility and authority for setting the program at a national laboratory and for determining which experiments are awarded running time rest primarily with the laboratory directorate within the general guidelines provided by the Department. Research requiring the use of a facility at one of the laboratories is reviewed extensively by the laboratory including by the laboratory's Program Advisory Committee (PAC), another form of peer review. The Department carries out its oversight responsibilities by conducting annual reviews of the laboratories' scientific programs. In addition, the Department tracks project progress against budget and schedule milestones using semiannual project reviews.

The Fermi National Accelerator Laboratory (Fermilab) is home to the world's highest energy superconducting accelerator, the Tevatron, which provides both fixed target and colliding beam research programs. The colliding beam research program has two major detector facilities, the Collider Detector at Fermilab (CDF) and the D-Zero Detector, which complement each other in their different technical capabilities. Fermilab completed a very successful fixed target run this past year prior to shutting the Tevatron down to bring the Main Injector on line. These two collaborations continued to produce new scientific knowledge during this run. The CDF collaboration of university and laboratory scientists from around the world observed the predicted B meson which contains a charm quark; this discovery completes the theoretically predicted family of B mesons. In addition, the KTeV experimental collaboration of university and laboratory scientists made the first observation of the decay of a kaon into two charged pions plus an electron-positron pair. This collaboration also made the first observation of violation of time-reversal invariance (T-violation), by making precise measurements of these decays. T-violation had been predicted on the basis of other results, but had never been directly observed.

Construction of the Fermilab Main Injector project was completed on schedule and within budget. Commissioning is proceeding very well, and the first physics run is expected later in fiscal year 1999. The CDF and D-Zero upgrades are progressing well; and the upgraded detectors will be moved back into position on the Tevatron beam line and commissioning will begin with them late in fiscal year 2000. This project will provide a fivefold increase in collider luminosity and a doubling of intensity for the fixed target program, as well as allowing simultaneous operation of the collider and fixed target programs, a capability previously not possible. The Main Injector will greatly enhance the physics capabilities of the Tevatron accelerator and its detector facilities and increase the likelihood for major new scientific developments early in the next century.

Also at Fermilab, the NuMI/MINOS (Neutrinos at the Main Injector) project design got underway in fiscal year 1998. The experiment will study the possible oscillations between different types of neutrinos to determine if neutrinos have mass. The beam of neutrinos for the project will be produced at Fermilab and aimed at two detectors—one on site and the other at the Soudan Underground Laboratory in northern Minnesota. The project baselines for cost, scope, schedule, and management were established in November 1998. Detailed design for the NuMI underground enclosure and technical components will be developed in 1999, and excavation of the cavern in Minnesota for the MINOS detector is also expected to begin later this year.

In addition, Fermilab continues to play an active role in the Large Hadron Collider. Fermilab is the host and center of the U.S. CMS detector effort of university and laboratory scientists, and host and center of the U.S. LHC accelerator collaboration, with specialized expertise in the design and fabrication of superconducting magnets.

At the Stanford Linear Accelerator Center (SLAC), the Stanford Linear Collider (SLC), the world's only high energy linear collider, continued during fiscal year 1998 to achieve record high luminosities in positron-electron collisions, and the SLD de-

tector reached more than 20,000 Zo events per week. Researchers from universities and laboratories conducting research at SLAC are in the process of analyzing the large amounts of data collected. In fiscal year 1999, the SLC was shut down to allow for the B-factory to be brought on line. Construction of the B-factory PEP–II storage rings was completed in fiscal year 1998 on schedule and within budget. Commissioning began in mid-May 1998, resulting in first electron-positron collisions in July 1998. Commissioning has continued to go very well, and substantial progress toward achieving design luminosity has already been made. Data-taking with the BaBar detector will begin later in fiscal year 1999, and about 39 weeks of operation is planned for fiscal year 2000. The B-factory will provide a high luminosity, asymmetric electron-positron colliding beam facility to study the preponderance of matter over anti-matter in our universe. It will also provide opportunities for university and laboratory scientists to pursue a rich program of experiments in a large number of other areas of intense interest in high energy physics. In addition to all-out running of the B-factory in fiscal year 2000, emphasis will continue on R&D in support of a future linear collider. Participation with NASA and university scientists in a non-accelerator-based experiment, the Gamma-ray Large Area Space Telescope (GLAST), is also planned.

The Alternating Gradient Synchrotron (AGS) at Brookhaven National Laboratory (BNL) will be transferred later in fiscal year 1999 to the Nuclear Physics program to be operated as the injector for RHIC. Operation of the AGS for the high energy physics program in fiscal year 2000 and beyond will be on an incremental cost basis. Recently, U.S. university and laboratory researchers working at the AGS recorded a first observed decay of a charged kaon to a pion and two neutrinos, first observation of the decay of a neutral kaon to an electron-positron pair, as well as evidence for the existence of an unusual meson. AGS operation for high energy physics in fiscal year 2000 will be for the high precision measurement of the anomalous magnetic moment of the muon. Brookhaven is also a key participant in the LHC project as host and center of the U.S. ATLAS detector collaboration of university and laboratory scientists, as well as a participant in the U.S. accelerator collaboration. BNL's Accelerator Test Facility (ATF), a small, low energy electron linac, has achieved one of the brightest electron beams in the world. It is used by universities, national laboratory groups, and industry for testing new advanced accelerator concepts.

The Large Hadron Collider (LHC), a machine that will be about seven times the energy of the Fermilab Tevatron, is in the process of being built at the European Laboratory for Particle Physics (CERN) in Geneva, Switzerland. The U.S. and CERN have signed an agreement that provides for U.S. support and participation in the project. The LHC will become the foremost high energy physics facility in the world around the middle of the next decade. With the LHC at the energy frontier, American scientific research on the frontier depends on participation in the LHC. It will ensure continued world class excellence of our university and national laboratory scientists and will provide training to many students in leading edge science and technology.

The Department will provide a total contribution of $450 million for the specifically agreed to components of the two detectors and the LHC accelerator over the period fiscal year 1996 through fiscal year 2004. Of the $450 million, $250 million will support U.S. activities on the LHC detectors, while $200 million will support U.S. activities working on the LHC accelerator. NSF will provide approximately $81 million for U.S. work on the detectors. Almost all of this funding will be spent in the U.S. for in-kind contributions from U.S. laboratories, universities, and industry. Funding in the amount of $70 million is being requested by the Department in fiscal year 2000.

During the past year, progress continued to be made on the technical components for the LHC and many management details were finalized. Technical, cost, and schedule baselines for the three subprograms—ATLAS detector, CMS detector, and the accelerator—were reviewed and approved; a Memorandum of Understanding between DOE and NSF on U.S. participation in the LHC project was negotiated and signed; and Project Management Plans were finalized and put in place for the accelerator, ATLAS detector, and the CMS detector, as well as the overall U.S. LHC Project Execution Plan. In fiscal year 2000, the fabrication of components for the LHC continues. The U.S. LHC project continues to be on schedule and within budget.

NUCLEAR PHYSICS

Fiscal Year 1999 Appropriation $334.6 M, Fiscal Year 2000 Request $342.9 M

The primary goal of nuclear physics research is to understand the structure and properties of atomic nuclei and the fundamental forces between the constituents that form the nucleus. Nuclear processes determine essential physical characteristics of our universe and the composition of the matter that forms it.

Beyond maintaining world leadership in basic research, the Nuclear Physics program develops and transfers knowledge to enhance the Nation's technological and economic competitiveness in such fields as nuclear medicine. The Nuclear Physics program continues to be a vital source of trained people for fundamental research and for these applied technology areas. The program supports the graduate training of approximately 450 students per year, and typically 100 Doctorates in nuclear physics are awarded each year in DOE-supported nuclear physics programs. A majority of these highly trained researchers will take positions in high-technology private industry.

Many future nuclear physics investigations will study questions related to the quark presence in composite nuclei. Until the last few years, the fundamental understanding of nuclear properties has been based on the idea of a nucleus composed of protons and neutrons that interact through a combination of weak, strong, and electromagnetic forces. It became clear that achieving a real knowledge of many nuclear properties depends on understanding nuclear structure based on quarks, and particles called gluons that bind the quarks together. Quarks and gluons are the building blocks of protons and neutrons (nucleons). The Long Range Plan for the U.S. Nuclear Physics Program, prepared by the nuclear physics community every five years, provides the definition of the pressing issues in nuclear science and the priorities for pursuing important scientific problems in various budget scenarios.

Studies of nuclear structure require ultra-high resolution "microscopes", accelerators that produce particle beams of various energies, depending on the problems to be studied. The request is designed to provide the sufficient hours for these facilities, so that researchers may take advantage of their unique capabilities.

Research programs at the Thomas Jefferson National Accelerator Facility (TJNAF), formerly CEBAF, are studying effects due to the presence of quarks in nucleons in the nucleus. Two principal focuses of these studies are to continue to develop an understanding of how the "spin" of a nucleus originates in the quarks, and how the size of a quark cluster in a nucleus affects the strength of the interaction of that cluster with other nucleons in the nucleus. It is interesting to note that no one has ever observed a single free quark; they always travel in closely knit groups of threes within nucleons and twos within mesons. In fiscal year 2000, TJNAF will operate for 4,500 hours to allow several high priority experiments to study the quark presence in nuclei. The laboratory is fully operational, and all three experimental halls are being utilized for experiments.

In fiscal year 2000, the new Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory, a second major facility for the study of new "quark-based" nuclear physics, will be searching for a predicted quark-gluon plasma. Construction of RHIC will be complete in the third quarter of fiscal year 1999, and the new facility will be fully operational in fiscal year 2000. It is predicted that if a collection of nucleons could be compressed and heated to a very high temperature by collisions of high energy heavy nuclei, there would be a phase transition to a new state of nuclear matter in the collision region where the quarks are "freed" from their nucleon boundaries to form a so-called quark-gluon plasma.

RHIC will be a unique, world-class facility with colliding relativistic heavy ion beams that will permit exploration of this hot, dense nuclear matter and recreate the transition from quarks to nucleons which characterized the early evolution of the universe. Studies with colliding heavy ion beams will provide researchers with their first laboratory opportunity to explore this new region of nuclear matter and nuclear interactions which up to now has only been studied theoretically. In fiscal year 2000, RHIC will begin its first full year of operations with a 33 week running schedule and a goal of 22 weeks (3,300 hours) for research and 11 weeks for accelerator studies.

Some of the most critical nuclear reactions in stellar burning processes involve nuclei which, because of their short lifetimes, have not been available for laboratory studies. Three Nuclear Physics facilities will be investigating these reactions by generating radioactive beams as new probes of nuclear structure.

Another new generation facility, the Holifield Radioactive Ion Beam Facility (HRIBF) at Oak Ridge National Laboratory is now producing some of the previously unavailable nuclear beams so that these important stellar processes can be studied in the laboratory. Beams for experiments became available in fiscal year 1998 and

it is possible for the first time to study many processes which are crucial to our understanding of how nuclei were synthesized in the Big Bang. In fiscal year 2000, the HRIBF will operate for 2,400 hours for studies of these processes and for studies of very proton rich nuclei far from stability. Radioactive ion beams, in addition to the stable beams normally provided, are also being produced at the ATLAS accelerator at Argonne National Laboratory and the 88-inch Cyclotron at Lawrence Berkeley National Laboratory. These laboratories are pursuing research as well as developing new techniques for the generation of radioactive beams. The experience gained and ideas generated at all three laboratories will provide important input to the design of a proposed new Isotope Separator On Line (ISOL) radioactive beam facility presently being studied by the Nuclear Physics Program.

Subsequent to submission of the fiscal year 2000 budget request, the Department has determined that the MIT/Bates accelerator will continue to operate. The Department will work with the Administration to submit a budget amendment and an amended budget request.

The solar neutrino problem remains one of the great challenges in astrophysics. The predicted rate of neutrino production by the sun is significantly higher than the observed rate. There are two possible explanations for the discrepancy. Either our understanding of solar burning is very wrong, or the neutrino has a small mass, in contradiction to the long-held belief that it is massless. Construction of a third major new facility to study this problem, the Sudbury Neutrino Observatory (SNO), 7000 feet below the surface of the earth in Canada, was completed in fiscal year 1998. In fiscal year 1999, preliminary data is being accumulated as the detector is being filled with "heavy water". SNO, which will be fully operational in fiscal year 2000, is designed to sort out this long standing solar neutrino problem. The project involves an international collaboration among the U.S., Canada, and the United Kingdom.

FUSION ENERGY SCIENCES

Fiscal Year 1999 Appropriation—$222.6 M, Fiscal Year 2000 Request—$222.6 M

The fiscal year 2000 budget request for the Fusion Energy Sciences program continues a broad-based, fundamental research effort to acquire the knowledge base needed for an economically and environmentally attractive fusion energy source.

Fusion research provides two major benefits—in the near term there are advances in plasma science and technology spinoffs and in the long term there is the basis for development of a new energy source. Advances in plasma science have contributed to numerous other areas of science. In astrophysics, it has allowed an understanding of the behavior of plasma and magnetic fields in the earth's magnetosphere, in the sun and other stars and the galaxies. Plasma physics is integral to our understanding of magnetic storms, solar flares, shock waves in space, magnetic fields, black holes, and star formation. In the area of large-scale scientific computing, fusion research pioneered the use of supercomputers to solve complex problems. Novel optical and magnetic diagnostics have been created to provide access to the extreme temperature, density, and magnetic fields prevalent in fusion experiments. In addition, fusion and other plasma based research has provided a stimulus to the development of large superconducting magnets, development of advanced materials, advancement in pulsed-power technology, and plasma aided manufacturing processes such as those used in semiconductor device fabrication.

Although there is no schedule for developing and deploying fusion energy systems, the availability of fusion, as an option for large central station power plants, would be valuable insurance against possible environmental concerns about fossil and nuclear energy. As fusion is one of the few potential sources capable of providing an appropriate energy intensity for urbanized society in an environmentally sustainable fashion, development of fusion as a practical energy source may be essential for the longer term. In addition, there may also be non-electric applications of fusion in the transmutation of wastes and isotope production.

The quality of the research in this program is continuously evaluated through the use of merit based peer review and scientific advisory committees. In addition, the Department has requested the National Academy of Sciences to review the quality of science in the fusion program in fiscal year 1999. We will also be carrying out a review of fusion energy technologies using the Secretary of Energy Advisory Board. The Fusion Energy Sciences Advisory Committee has also been asked to assess program restructuring and the overall balance of research efforts. A program plan/roadmap for fusion, including both magnetic and inertial and based on the above reviews, will be completed by the end of 1999.

As a part of the ongoing restructuring of the program, the major U.S. experimental facilities—the DIII–D at General Atomics, the Alcator C-Mod at the Massa-

chusetts Institute of Technology, and the new National Spherical Torus Experiment (NSTX) at the Princeton Plasma Physics Laboratory (PPPL)—are being managed as national resources with multi-institutional topical teams addressing the scientific issues and coordinating efforts on relevant facilities. The fiscal year 2000 budget request provides for substantial operation of all three facilities, along with modest upgrades.

The Tokamak Fusion Test Reactor (TFTR) located at PPPL was closed down in fiscal year 1997 after 13 years of pioneering experiments yielding significant scientific results from producing actual fusion power in a laboratory. In fiscal year 2000 we will begin a 3-year program to decontaminate and decommission the TFTR facility. This will provide for the removal of the TFTR tokamak and activated components from the experimental test cell and basement.

Fabrication of the NSTX, a vital new device of a much smaller scale than TFTR, will be completed in April 1999. This proof-of-principle facility will provide the scientific basis for an innovative magnetic confinement concept that has indicated the potential for reactor-scale plasma performance in earlier very small experiments.

In fiscal year 2000 a conceptual design will be completed for a novel compact stellarator-tokamak experiment that combines the best features of the two leading magnetic fusion concepts. Critical computing codes will be modernized to take full advantage of the President's Information Technology Initiative. In addition, three new innovative concept exploration experiments will become fully operational.

In accordance with congressional direction and with the cooperation of our International Thermonuclear Experimental Reactor (ITER) partners, the Department will complete an orderly closeout of our ITER activities in fiscal year 1999. The R&D activities to complete the U.S. Model Coil and to be involved in its test in Japan are proceeding through fiscal year 1999 consistent with congressional direction. The Model Coil is part of the largest superconducting magnet ever built to operate with a changing magnetic field. It was recently completed and is now en route to Japan where the testing will be done.

The European Union, Japan, and the Russian Federation are proceeding with a 3-year extension of the ITER program to complete the design of a reduced cost and reduced objectives facility, and to decide in 2–3 years whether and where to construct ITER. We will be involved only on the periphery of the project consistent with traditional exchange of scientific information. If the other Parties decide to construct a burning plasma facility like ITER, the United States will then consider whether to propose to be involved.

With the closeout of the ITER activities, we are restructuring the fusion technology development activities to focus on our domestic needs in advancing the science of fusion. Emphasis will be placed upon R&D that will enable existing and near-term U.S. fusion facilities to achieve their ultimate performance capability. New methods of modeling and predicting the behavior of fusion materials will be investigated. R&D will continue on novel methods of enabling the new, innovative U.S. fusion concepts to achieve their full performance. This will include applied scientific research on issues such as the use of flowing liquid walls to handle heat and particle flux in magnetic or inertial systems and the study of advanced heating and fueling techniques. Some international R&D collaboration will continue at foreign facilities that have scientific research capabilities beyond those in the United States. Also, as part of the restructuring of this element of the fusion program, a Virtual Laboratory for Technology has been established to improve the governance of the various, diverse enabling R&D elements through improved advocacy, coordination, and communication.

In conclusion, the U.S. Fusion Energy Sciences program has made excellent scientific progress and has been responsive to the congressional request to restructure the program. Fusion and plasma science make a unique contribution to the nation's scientific infrastructure in the near-term and provide a vital energy option for the future. Europe and Japan are making large investments in this area. The challenge to the United States is to continue a strong scientific base program, including making effective use of existing facilities, and to sustain a meaningful participation in the world program.

COMPUTATIONAL AND TECHNOLOGY RESEARCH

Fiscal Year 1999 Appropriation—$157.5 M; Fiscal Year 2000 Request—$198.9 M

Some of the pioneering accomplishments of the Computational and Technology Research (CTR) program are: development of the technologies to enable remote, interactive access to supercomputers; research and development leading to the High Performance Parallel Interface (HiPPI) standard; and research leading to the development of the slow start algorithm for the Transmission Control Protocol (TCP),

which enabled the Internet to scale to today's worldwide communications infrastructure. This long history of accomplishments in the CTR program continued in fiscal year 1999 including: the 1998 Gordon Bell Prize for Best Performance of a Supercomputing Application, the 1998 IEEE Fernbach Award for outstanding contribution in the application of high performance computers using innovative approaches and four R&D 100 Awards to CTR researchers in areas ranging from parallel numerical libraries to near frictionless coatings.

The CTR program supports advanced computing research—applied mathematics, high performance computing, networking, and operates supercomputer and associated facilities that are available to researchers 24 hours a day, 365 days a year. The combination of support for fundamental research, computational and networking tools development, and high-performance computing facilities provides scientists with the capabilities to analyze, model, simulate, and—most importantly—predict complex phenomena of importance to the Office of Science and the Department of Energy.

Experiments at Office of Science facilities may generate millions of gigabytes (petabytes) of data per year (which would fill the disk drives of millions of today's personal computers) presenting significant computational and communications challenges in analyzing and extracting information from the data. The wide-area, data-intensive collaborations of the Department are the focus of DOE's efforts in the Next Generation Internet (NGI) Initiative. CTR is responsible for DOE participation in the NGI program to create the foundation for more powerful and versatile networks of the Twenty-first century.

CTR also heads the Department's Scientific Simulation Initiative (SSI) as a competitive, peer-reviewed program with the other program offices in SC. CTR's role in the SSI includes management of the selection process for the two basic science application efforts initiated in fiscal year 2000, management of the SSI Advanced Computing and Communications Facilities, and management of the Computer Science and Enabling Technology component.

In addition to these computing related activities CTR also manages the Laboratory Technology Research (LTR) program for the Office of Science. The mission of this program is to support high risk, energy related research that advances science and technology to enable applications that could significantly impact the Nation's energy economy. LTR fosters the production of research results motivated by a practical energy payoff through cost-shared collaborations between Office of Science laboratories and industry.

MULTI PROGRAM ENERGY LABORATORIES

FACILITIES SUPPORT

Fiscal Year 1999 Appropriations—$21.3 M; Fiscal Year 2000 Request $21.3 M

Fulfillment of the DOE's science and technology goals depends heavily on the existence and operating efficiency of the five multiprogram SC laboratories. The five multiprogram energy laboratories are: Argonne National Laboratory-East, Brookhaven National Laboratory, Lawrence Berkeley National Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory. These laboratories have over 1000 buildings with 14.7 million gross square feet an average age of 35 years. Their estimated replacement value is over $8.7 billion. All facilities at these laboratories are government-owned, contractor-operated (GOCO). Total operating funding for these laboratories including work-for-others is over $3 billion a year.

Portions of the infrastructure of these laboratories are old, deteriorating, and, in some cases, obsolete. Improvements are needed to comply fully with the environment, safety and health requirements in effect today as well as to meet everyday operational needs.

The Office of Science established the Multiprogram Energy Laboratories-Facilities Support (MEL–FS) program in 1981 to provide a systematic approach to its stewardship responsibility for the general purpose support infrastructure of these laboratories. The MEL–FS program helps to preserve the government's investment in infrastructure and to maintain infrastructure integrity in a reasonable and economic manner at these laboratories.

The program supports line item construction projects to refurbish and replace inadequate general purpose facilities and infrastructure. This budget request provides for continuation of six on-going projects and for two new projects. Projects are selected based on the Life Cycle Asset Management the Cost-Risk-Impact Scoring Matrix. The new starts are:

Fire Safety Improvements—Phase IV, (ANL–E).—This project will bring 30 major facilities into compliance with the Life Safety Code and the National Fire Alarm Code. It will significantly improve the fire detection, suppression, and reporting capabilities at the lab, thereby reducing the possibility and magnitude of personnel or property loss during a fire.

Electrical Systems Upgrade, (ORNL).—This project will upgrade the 30–50 year-old electrical system to include: replacing overhead feeders; installing advanced protective relaying capabilities at major substations; and replacing major switchgear and transformers. This project will increase system reliability and capacity, while reducing the possibility of personnel injury or lost productivity due to system failures.

The program also provides funding for Payments in Lieu of Taxes (PILT) as authorized by the Atomic Energy Act of 1954, as amended. These discretionary payments are made to state or local governments where the Department or its predecessor agencies have acquired property previously subject to state or local taxation.

ENERGY RESEARCH ANALYSES

Fiscal Year 1999 Appropriation—$1.0 M; Fiscal Year 2000 Request—$1.0 M

The mission of the Energy Research Analyses (ERA) program is to conduct technical assessments of the Department's civilian research and development programs and to provide direction to future research and development activities. Energy Research Analyses also conducts science policy analyses, and coordinates the development of the Office of Science Strategic Plan and the DOE Science Portfolio.

The fiscal year 2000 budget request will provide funding for peer reviews of projects in the Office of Science, Fossil Energy, and Energy Efficiency to continue to improve the quality and relevance of DOE research and development. Other activities will include evaluation of critical planning and policy issues of DOE science and technology using expert groups at the National Academy of Sciences, the JASON group, etc., as appropriate.

SCIENCE PROGRAM DIRECTION

Fiscal Year 1999 Appropriation—$49.8 M; Fiscal Year 2000 Request—$52.3 M

Science Program Direction provides the Federal staffing resources and associated costs required to provide overall direction of activities carried out under the Office of Science. This program supports staff in the High Energy Physics, Nuclear Physics, Biological and Environmental Research, Basic Energy Sciences, Fusion Energy Sciences, Computational and Technology Research, Multiprogram Energy Laboratories-Facilities Support, and Energy Research Analyses programs, including management and technical support staff.

Science Program Direction also supports staff at the Chicago, Oakland, and Oak Ridge Operations Offices directly involved in program execution. The management and technical support staff includes scientific and technical personnel and program management support in the areas of budget and finance, general administration, grants and contracts, information resource management, policy review and coordination, infrastructure management and construction management.

At the direction of Congress in fiscal year 1999, funds were also provided in Science Program Direction for Science Education. These funds will support the Undergraduate Laboratory Fellowship, National Science Bowl and the Albert Einstein Distinguished Educator Fellowship programs. These programs utilize the Department's scientific and technical resources to enhance the development of a diverse, well-educated and scientifically literate workforce.

SCIENCE EDUCATION

For fiscal year 2000, DOE proposes new science education activities focusing on assets at our laboratories to build a partnership with universities and educational institutions. These proposed science education activities will allow university faculty and student teams, at the undergraduate level, to participate on long term research projects at DOE laboratories. In addition, pre-college science and math teachers will be provided with laboratory research experience to improve their knowledge and skills of scientific discovery and to enhance their ability to apply them in a classroom environment. Funds for these activities are included in the line program budgets.

There is a national need to maintain worldwide leadership in science and technology and to stay competitive in critical research areas such as high energy and nuclear physics, computational science, and renewable energy technologies. Our outstanding National Laboratories help to drive the progress of science and technology

development in the United States. To replenish our stocks of scientists and engineers for the next century, we must invest in our nation's youth to encourage interest in science and scientific careers. A proven method to achieve this is by introducing students to the excitement of scientific research through exposure to the National Laboratories. Historically, over two-thirds of undergraduates who have participated in DOE programs have gone on to graduate school in disciplines directly related to DOE missions.

According to the latest research, trends show a declining number of graduates in the natural sciences and engineering from the early eighties to 1996. This trend is especially true among women, even those who have displayed a natural aptitude for science and math on standardized test scores. By instituting a program that effectively promotes proficiency and inspires students, we can help to ensure our future in science to develop the technologies that help us meet our mission and contribute to economic growth.

The proposed science education activities will provide hands-on experience to both students and faculty. Working with laboratory researchers links this work to real world, mission driven challenges while improving communications and connections between Academe and the National Laboratories. Undergraduate students and college faculty will be able to participate in and contribute to long-term research projects at the National Laboratories, providing unique opportunities for hands on experience with state-of-the-art equipment. This experience allows the student to develop technical skills that build confidence and reinforce classroom learning. This, in turn, will support a productive relationship between the national laboratory and the participating college or university while strengthening the research at both institutions. This activity efficiently connects academia and industry with the excellent resources of the DOE laboratories and the enormous intellectual resources of the nation's universities. $5 million of the SC request will provide over 1000 student and 200 faculty with fellowships for the Faculty/Student Science Teams during academic year 2000–2001.

The second new activity involves the training of pre-college teachers as part of a national effort to strengthen K–12 student performance in science, mathematics, and technology. The Department of Energy has a vested interest and vital role to play if Federal efforts, to ensure science literacy for all Americans and to develop future generations of scientists, are to be successful. This activity will provide high school and pre-college teachers with 8-week appointments at DOE's Office of Science Laboratories. In these settings, teachers will work in teams with scientists and engineers and will participate in and contribute to the ongoing research of the Laboratories. Teachers will participate in designing experiments, creating mathematical models, and collecting and analyzing data. Experience has shown that allowing teachers to experience being treated as research colleagues provides a sense of renewal, and increases connection to their field and profession. Therefore, this activity includes additional follow-up such as remote mentoring and opportunities for teachers to attend and make presentations at regional and national meetings of scientific and teacher organizations. It also includes loans and grants of equipment and materials, assistance in translating their research experience into investigations, activities, and demonstrations applicable to their classroom settings, and sharing research experiences with their colleagues. $5 million of the SC request will reach over 200 teachers nationwide annually through this activity.

ENERGY SUPPLY R&D PROGRAMS

TECHNICAL INFORMATION MANAGEMENT

Fiscal Year 1999 Appropriation—$8.6 million; Fiscal Year 2000—$9.1 million

The Technical Information Management (TIM) program provides timely, accurate technical information to DOE's researchers and the public by collecting, preserving, and disseminating scientific and technical information, the principal product resulting from DOE's multi-billion dollar research and development programs. The TIM program also provides worldwide energy scientific and technical information to DOE researchers, U.S. industry, academia, and the public through interagency and international information exchange agreements and coordinates technical information-related activities across DOE and its laboratories.

In fiscal year 2000, TIM will build on the huge success of the Information Bridge (www.doe.gov/bridge) and use digital information technology to complete a virtual library of energy science and technology. Specifically, the Information Bridge, already with over 2 million pages of searchable full-text R&D information, will be expanded to include both the most current research findings as well as historic records. To complete the virtual library capability, collaborative agreements with

U.S. science journal publishers will be forged to establish hyper-text linkages between TIM's electronic journal citations and the publishers' full-text on-line journal articles. This capability will potentially save the Department millions of dollars in duplicate paper journal subscriptions.

CLOSING

The significant increase in the fiscal year 2000 budget request for the Office of Science recognizes the critical role that fundamental knowledge plays in achieving the DOE missions and for the general advance of the Nation's economy and the welfare of its citizens. The Scientific Simulation Initiative represents a major investment in producing the necessary scientific computation and information infrastructure for DOE science applications as part of a multi-agency initiative. This request will also provide the U.S. scientific community with increased research capability and new opportunities at the DOE scientific user facilities, including progress on SNS, a new forefront neutron source, and upgrades of existing facilities. On behalf of the Administration and the Department, I am pleased to present this budget for the Office of Science and welcome the challenge to deliver results.

This concludes my statement. I would be happy to answer your questions.

FISCAL YEAR 2000 CONGRESSIONAL BUDGET REQUEST—OFFICE OF SCIENCE

[In millions of dollars]

Program	Fiscal year		
	1998 Appropriation	1999 Appropriation	2000 Request
Basic Energy Science	651.8	799.5	888.1
Biological and Environmental Research	395.7	436.7	411.2
Fusion Energy Sciences	224.2	222.6	222.6
Computational and Technology Research	146.8	157.5	198.9
High Energy Physics	668.6	695.5	697.1
Nuclear Physics	314.7	334.6	342.9
Multiprogram Energy Labs-Facilities Support	21.3	21.3	21.3
Energy Research Analysis	1.4	1.0	1.0
Sciences Program Direction	37.6	49.8	52.3
SBIR/STTR	80.7	.....	.....
Subtotal	2,542.8	2,718.5	2,835.4
General Reduction for Use of Prior Year Balances	(15.3)	(13.0)	.....
Superconducting Super Collider	(35.0)	(7.6)	.....
Total	2.492.5	2,697.9	2,835.4
Technical Information Management	10.1	8.6	9.1
General Reduction for Use of Prior year Balances	(0.1)	(0.2)	.....
Total	10.0	8.4	9.1

STATEMENT OF WILLIAM D. MAGWOOD

Senator DOMENICI. I think what I am going to do, Dr. Krebs, is let everyone testify and then ask questions. So let us proceed.

I think Mr. Magwood, you are next. If you have prepared remarks that you do not plan to give in their entirety, they will be made part of the record.

NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

Mr. MAGWOOD. Thank you, Mr. Chairman. I will try to be brief.

Mr. Chairman, I am Bill Magwood, Director of the Office of Nuclear Energy, Science and Technology, at the Department of En-

ergy. I am pleased to be here before you today to discuss our fiscal year 2000 budget request.

Over the last year my office has worked very hard to focus and prioritize our program activities among two primary goals; first, to reassert U.S. leadership, nuclear technology nationally, second, to conduct research and other activities that we believe are required to prepare the country for the next century. I believe we have made considerable progress toward both goals.

Much of our recent progress would not have been possible without the leadership demonstrated by this subcommittee in advancing nuclear research as part of the Department's technology portfolio. We have appreciated the interest and support you have shown in nuclear technologies and look forward to working closely with you as we continue our efforts to maintain a viable nuclear energy future for the nation.

Before discussing our fiscal year 2000 request, I would first like to highlight a few points. I think it is important to reflect on some of our past accomplishments to understand how the federal nuclear R&D program can best serve the American people in the future. The Department of Energy has a rich and successful history in development of nuclear technologies, dating back to the Manhattan Project and the Atoms for Peace Program. Our accomplishments have benefited the nation in many ways.

As we all know, nuclear power technology itself was born in federal research programs, but fewer people know that our programs have given birth to nuclear medicine, which saves lives and reduces health care costs, and further, as shown in the first chart, even after nuclear power is launched as a commercial business, our past work has resulted in accomplishments and improvements to save American rate payers millions of dollars every year.

NUCLEAR ENERGY RESEARCH AND DEVELOPMENT

We also are very proud of our work in the advanced light water reactor program, which concluded a few years ago. Working with industry we helped make a new generation of safe reactors available to utilities in the United States and around the world. Today, three companies have brought three advanced nuclear power plant technologies to the market.

Any doubt that anyone may have harbored about whether these technologies will perform as advertised need only to go to Japan or look at my next chart to see the first two advanced boiling water reactors in operation at the Kashiwazaki Kariwa Nuclear Power Station. This seven-unit facility is, I believe, the largest power plant of any type in the world, and it supplies 23 percent of Tokyo Electric's capacity.

These advanced plants can now be routinely built in Japan in less than 4 years. A similar U.S. Standard plant will be built soon in Taiwan. Many U.S. jobs will be generated by these activities and by other advanced nuclear power plant projects in Korea and quite likely other nations over the next few years.

These examples demonstrate how our past accomplishments have enabled the United States to maintain its leadership role in nuclear technology. However, the outlook for the future is uncertain. As you can see in this next chart, the U.S. has dramatically de-

creased its funding for nuclear R&D over the last 20 years. In fact, an event that reverberated throughout the international community, our R&D budget reached essentially zero in fiscal year 1998.

This next chart shows that we have been out of step and outpaced by many of our economic competitors. The blame for this, I believe, rests largely with us. We did not change with the times and we did not plan well for the future, but now I believe we are on a positive track. I think we now know what is needed and what our role should be in the future.

While we do not provide Federal research dollars overseas, through our research initiative, we are able to show considerable leadership in the international community by holding various discussions and meetings. Our R&D funding is essential in showing that we are serious and credible participants in the international exploration of nuclear technology.

NUCLEAR ENERGY RESEARCH INITIATIVE

We were very pleased that Congress approved our proposed Nuclear Energy Research Initiative for fiscal year 1999. Universities, laboratories, industry, and the international research community have shown great interest and excitement about the NERI program.

For NERI's first year, we have received over $300 million worth of research proposals for work conducted over 3 years, and we have found that research organizations are anxious to reestablish cooperation with the United States through the NERI program. As a matter of fact, Deputy Secretary T.J. Glauthier met just last week with a large delegation from Japan who had a long list of projects they would like to cooperate with us on using the NERI program as the basis.

For the coming fiscal year we are requesting a modest increase for NERI from $19 million in its first year to $25 million in fiscal year 2000 to continue important work begun this year and initiate a modest number of new and innovative ideas coming from universities, our national laboratories, and industry.

We are also proposing two new programs. One, the Advanced Nuclear Medicine Initiative, is needed to apply the Department's unique expertise in isotopes and large inventory of alpha-emitting isotopes to fight against cancer, arthritis, and many other illnesses.

NUCLEAR ENERGY PLANT OPTIMIZATION

The other is the Nuclear Energy Plant Optimization [NEPO] program. The NEPO program is designed to conduct research and develop technologies that will be needed to optimize the efficiency and safety of today's nuclear power plants as they continue to operate for the long term. NEPO can help assure that existing operating nuclear power plants continue to serve our national interest by producing electricity in all weather conditions, while reducing harmful air emissions.

As you can see in this chart, efficiency-enhanced nuclear power plants comprise the largest contribution to utility plant to reductions in CO_2 emissions.

The next chart demonstrates that the operation of nuclear plants——

Senator DOMENICI. Can you leave that one up for a moment? What is this again?

Mr. MAGWOOD. This represents the pledges made by the utilities in the United States, leading up to the year 2000. I think this covered approximately a 10-year period. It shows that in efficiency improvements, the existing nuclear power plants made up 33 percent of all the pledges that utilities made in their reduction of CO_2 emissions, compared to fossil plants which only contributed 14 percent, and even improvements in energy efficiency, which contributed 18 percent.

So even though we are not building nuclear power plants, making the existing plants more efficient has proven to be a major contributor to reducing offsetting CO_2 emissions.

The next chart shows that the operational nuclear plants were essential to states striving to meet the Clean Air Act requirements. Increased generation of nuclear plants in these states enabled these states to meet 37 percent of the emission reduction targets required by the Clean Air Act. Operation Nuclear Plants can continue to provide these benefits into the middle of the next century.

While at $5 million, our request for NEPO is very modest, we believe that it will enable us to demonstrate the needed leadership at a time of great uncertainty in the electric utility industry. You need only look at our joint comprehensive DOE Electric Power Research Institute Strategic R&D plan to see how even the possibility of a new DOE program in this area has helped the industry define and organize the long-term research needs for existing nuclear power plants.

Further, industry has committed to match our investments, at least on a dollar-for-dollar basis, and we believe this effort is a vital component of our effort to maintain nuclear power for now and also in the long term. I would also like to note that we are relying more than at any other time in our history on independent external advice. The best example of this was when in October 1998, Secretary Richardson established the Nuclear Energy Research Advisory Committee, or NERAC, to help us plan for the future.

NUCLEAR ENERGY RESEARCH ADVISORY COMMITTEE

As you can see in this last chart, we have 28 independent prominent individuals on NERAC, including experts in fields such as nuclear technology, medicine, education, policy, economics, and nonproliferation. NERAC is chaired by Dr. James Duderstadt, a former professor and President of the University of Michigan.

This group is working with us to develop a nuclear energy R&D long-term plan, a road map on the nation's nuclear science and technology infrastructure, and a long-term isotope research and production plan. In addition, NERAC has formed a special subcommittee to help us guide the NEPO program and plan for the long-term technology needs of existing nuclear power plants.

I think you will probably note that we still have Dr. Glenn T. Seaborg listed, although I think we did footnote that he is deceased. I could not just bring myself to quite take his name off the list at this point, but I guess I will get around to that at some point, we will miss his counsel greatly.

In closing, nuclear power and nuclear technology benefit Americans in many ways. U.S. nuclear plants provide a fifth of our electricity. Nuclear medicine is a part of every day life, with over 40,000 diagnostic imaging procedures performed at U.S. hospitals every day.

We believe that nuclear technology can continue to benefit the American people in the future and with your help, support, and counsel, the Department will play a role in pointing the way.

PREPARED STATEMENT

I know there are many issues that interest the subcommittee, ranging from the depleted uranium hexafloride to the future of Argonne National Laboratory and the Fast Flux test facility, and I look forward to discussing all of these issues with you today.

[The statement follows:]

PREPARED STATEMENT OF WILLIAM D. MAGWOOD

Mr. Chairman and Members of the Subcommittee, I am William D. Magwood, IV, Director of the Department of Energy's Office of Nuclear Energy, Science and Technology. I am pleased to have this opportunity to present our fiscal year 2000 budget request to you today. As you know, this is my first time before this committee as Director and I look forward to working with the Committee as you review our priorities and allocate resources for the next fiscal year.

As we stand at the threshold of a new century, the United States remains the most powerful force for peace, prosperity, and democracy in the world. We remain a nation with abundant resources and capabilities. The United States remains at the forefront of technological and scientific advancement—ranging from air flight and space exploration, harnessing the atom, to medicine and computing. Throughout, government has been a partner in developing technology for the American people—meeting vital national security interests and providing for the well being and prosperity of the nation and its people. For the Office of Nuclear Energy, these interests are represented by the following strategic objectives:

—providing for energy diversity and security,
—developing Department of Energy mission critical technologies,
—maintaining vital nuclear research facilities and supporting a strong knowledge base for nuclear technology in the 21st century, and
—securing our nation's environmental future.

This program has a rich history, dating back to the Manhattan Project and the Atoms for Peace Program. For over 50 years, we have supported research and development that produced the prototypes for reactor technologies that are in commercial use throughout the world today. Similarly, for over 50 years, the Department, with its infrastructure of reactors, accelerators, and hot cells, has developed and brought to the American people, vital isotopes used for medicine, research and industrial applications. Today, we are working in partnership with clinicians, researchers, and industry to respond to the needs of the 21st century. For almost 40 years, we have produced radioisotopic generators and heat sources for space and for national security missions—missions that we expect to continue well into the next century. And as leaders in development and operation of nuclear reactor technology, for over 50 years we have managed the safe operation of nuclear energy's research reactors. Today, we support the important work of the Office of Science and others by managing the safe operation of all of the Department's research reactors. Finally, we take seriously our stewardship responsibilities associated with prior missions of Nuclear Energy, Science and Technology and our landlord responsibilities at the Test Reactor Area at the Idaho National Engineering and Environmental Laboratory and the former government gaseous diffusion sites.

Overarching our strategy for the 21st century is the fundamental belief that the United States must retain its leadership position in nuclear energy—to be a player in shaping the international landscape and advancing the interests of the American people at home and abroad.

ROADMAP FOR THE 21ST CENTURY

Our strategic framework, which flows down from the President's *National Security Strategy for a New Century*, October 1998 and the Department's *Comprehensive National Energy Strategy,* April 1998, provides the basis for our fiscal year 2000 budget request. In addition, the resources applied to implement this strategy are shaped in part by the recommendations of the President's Committee of Advisors on Science and Technology (PCAST) [1] and by the response to these recommendations provided by the laboratory directors of seven of our national laboratories.[2]

In 1997, the PCAST panel on Federal Energy Research and Development (R&D) identified nuclear energy as one of the technologies that could alleviate global climate change and address other energy challenges, including reducing dependence on foreign oil, diversifying the U.S. domestic electricity supply system, expanding exports of U.S. energy technologies, and reducing air and water pollution. PCAST recommended that the Department establish nuclear energy R&D programs initially funded at $60 million, growing over five years to over $100 million. Although our funding levels do not approach the levels recommended by PCAST, we are optimistic about the future of our nuclear energy research and development activities as we demonstrate the value of this work to the Nation. Today, the Office of Nuclear Energy, Science and Technology remains focused on its core R&D missions and we are working hard to establish meaningful plans and direction for the future.

This past October, Secretary of Energy Richardson established the Nuclear Energy Research Advisory Committee (NERAC) to provide advice to the Department on the direction of our nuclear technology and research programs in the 21st century. This committee, chaired by Dr. James Duderstadt, former President of the University of Michigan, is comprised of 28 eminent senior policy, science and technology experts from academia, industry, and our national laboratories with expertise ranging from reactor operations and nuclear engineering to biological sciences and nuclear medicine, to environmental sciences, economics and strategic planning. The membership of this committee is diverse, including an environmental advocate, senior officials from industry, researchers in nuclear medicine, laboratory directors, and a former Member of the Senate.

As their initial charges, I have asked this group to help us formulate our Nuclear Science and Technology Infrastructure Roadmap, to help us develop long-term plans for our nuclear energy research program and our medical isotope production and research programs, and to help us identify the technology needs of current U.S. nuclear power plants.

This spring, the NERAC will complete the Nuclear Science and Technology Infrastructure Roadmap, evaluating our present and future requirements for neutron generating facilities and assessing the viability of our existing infrastructure of hot cells, accelerators, and reactors to meet the Nation's needs for basic science research, applied technology research, national security, space nuclear power, and isotope production and related missions over the next 20 years. This roadmap represents the first step in managing our long-term nuclear R&D infrastructure and in the short-term, it is an important tool in balancing future missions at our nuclear R&D facilities and in identifying strengths and weaknesses in our current infrastructure. Additionally, Secretary Richardson has tasked NERAC to provide in the roadmap, their recommendations on whether the Fast Flux Test Facility should be considered to meet the Nation's requirements for isotope production or other important and enduring missions of the Department.

The expertise of NERAC is deep and their mandate broad, ranging from helping us to define the direction and character of our future programs, to providing independent oversight of our research programs, to providing recommendations on our priorities.

PROVIDING FOR ENERGY DIVERSITY AND SECURITY

Today, as in the past, our research and development initiatives are the centerpiece of our program. Although our focus has changed over time, our R&D is based on the fundamental belief that nuclear energy and technology is and will remain an important element in our energy mix and will continue to provide important technological benefits and advancements for the nation. Today, with increasing pressure to reduce the discretionary spending and with R&D dollars more constrained

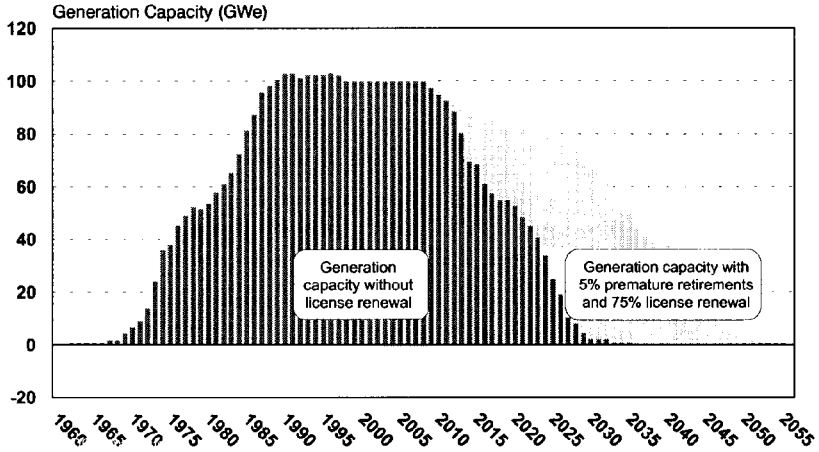
[1] The President's Committee of Advisors on Science and Technology, *Federal Energy Research and Development Challenges of the Twenty-First Century, Report of the Energy Research and Development Panel,* November 5, 1997.

[2] U.S. Department of Energy National Laboratory Directors, *Recommendations for a Department of Energy R&D Agenda,* December 1997.

in both government and industry, we must adopt new approaches to advance nuclear technology—through leveraging our federal R&D dollars with others and greater collaboration among our universities, our laboratories, and the private sector—to get the best return on investment for the nation. And to further leverage our investment, I am committed to expanding international cooperation.

Today, 104 reactors are operating to provide about 20 percent of the electricity generated for the American people. This is the second largest source of electricity behind coal. As we look to the future, these plants are critical to maintaining compliance with our existing emission laws and to assuring the nation maintains a flexible portfolio of energy supply options. By 2010, about 10 percent of plants will reach the end of their operating lifetimes, about 50 percent by 2020, and the remainder by 2030. Re-licensing and extending operations for these plants for another 20 years can have a dramatic impact on sustaining generating capacity, with the added benefit of offsetting carbon emissions from other sources. Without re-licensing, we face a significant decrease in capacity and dramatic increases in emissions in the near term. With the right strategies by government and industry, these plants can continue to operate safely, reliably, and efficiently well into the next century.

As you know, in the 1980's and 1990's, Congress funded nuclear energy research that the Department cost-shared with industry to develop the advanced light water reactors, a program established to ensure the viability of nuclear energy and to advance energy security and diversity in the 21st century. Today, three vendors have brought two "evolutionary" designs and one "passive design" technology to commercialization, with the first two advanced boiling water reactors in operation today overseas. In November, I visited the Kashiwazaki Kariwa Nuclear Power Station, where the first General Electric Advanced Boiling Water Reactors are operating. An impressive sight, this is the world's largest nuclear power station, with seven units supplying about 23 percent of Tokyo Electric's total capacity. In addition, the two GE boiling water reactors represent today's state-of-the-art technology.



U.S. Nuclear Generation Capacity

Today, with the completion of the advanced reactor design program, our R&D initiatives are focused on two primary areas:

—The Nuclear Energy Research Initiative (NERI), a new program funded in fiscal year 1999 by the Congress at a level of $19 million, aimed at reducing the barriers to the long-term use of nuclear energy at home and abroad. I am pleased to report to you that the response to this program has been exceptional. The Department received 307 proposals for this program, representing over $300 million in potential research. We are not only pleased with the number of proposals, but with the teaming occurring among the laboratories, our universities, and industry and with the innovative ideas coming forward. In fiscal year 2000, we are requesting an increase of this program to $25 million, to continue the important work begun this year and for a modest increase in the number of proposals that can be selected.

—The Nuclear Energy Plant Optimization (NEPO) program, a new program in fiscal year 2000 to meet our national interest for safe, secure, and reliable access

to energy in the 21st century. These plants are significant to our nation's energy portfolio and represent a critical infrastructure that is needed beyond the timeframes under which the existing plants are licensed. This program, aimed at reducing barriers to efficient and safe operation—increasing plant capacity from 71 percent in 1997 to 85 percent in 2010 and addressing issues associated with plant aging—would be 50–50 cost-shared with industry through the Electric Power Research Institute, guided by a joint EPRI/DOE strategic plan, and coordinated with the Nuclear Regulatory Commission.

These initiatives are based on the recognition of a clear distinction between the respective roles of government and industry in advancing nuclear technology in the 21st century. Industry must continue to carry the burden of short term research and they are meeting this challenge very well with an investment well in excess of $100 million annually. On the other hand, there is a clear role for the Department in providing for the longer term research of initiatives such as NERI and working with industry to fill the void on intermediate term research—research equally needed to protect our critical energy supply infrastructure.

DEVELOPING DEPARTMENT OF ENERGY

MISSION CRITICAL TECHNOLOGIES

For well over 50 years, we have been developing, producing, and delivering hundreds of types of stable and radioactive isotopes for research, industrial applications, and for medicine. The dramatic advancements made in nuclear medicine during the second half of this century are, in large part, because the Department and its predecessors had the foresight to pursue development of isotopes as a mission that was ancillary to other historical missions of the Department.

In medicine alone, the application of stable and radioactive isotopes for research, diagnosis, and therapies is an indispensable and growing component of our health care. Isotopes reduce health care costs and improve the quality of patient care. Each day, 40,000 patients benefit from isotope-based medical imaging techniques. In industry, isotopes are used for a multitude of applications, ranging from radiography, to sterilization of medical instruments, to lasers and smoke detectors. The NERAC projects that demand for medical isotopes can be expected to increase between 8 and 17 percent per year over the next 20 years.

Today, and in the future, our mission remains focused on bringing new and improved isotope applications, products, and services to the American people for use in medicine, industry, and research and on assuring that a reliable supply of isotopes exists for the nation. This program operates with a revolving fund, with about two-thirds derived from federal appropriations and one-third from annual sales. It is our policy to aggressively pursue opportunities for private sector involvement in production, distribution, and sales of isotopes, particularly commercial isotopes, and we have successfully privatized several key operations, which previously had required a federal appropriation. These privatizations allow us to decrease our cost of operations while providing a revenue stream from the royalties derived from the privatization.

In the last two years, we completed two important privatizations—one, of hot cell facilities for production and processing of iridium-192 and other isotopes in Idaho and another, of a technology developed and patented by the Department for production of a promising new cancer isotope, yttrium-90, derived from strontium left over from weapons production at Hanford. Although each of these privatizations were different, both are examples of DOE doing what it does best—developing an isotope for treatment of devastating illnesses or for other applications—and industry doing what they do best—bringing the product to market with no additional cost to the taxpayer.

PRIVATIZATION INITIATIVES

COMPLETED	♦ Hot cells operations to support reactor at Idaho National Engineering and Environmental Laboratory
COMPLETED	♦ Iridium target fabrication for Oak Ridge National Laboratory reactor
COMPLETED	♦ Yttrium-90 production at Pacific Northwest National Laboratory
IN PROGRESS	♦ Calutron operations at Oak Ridge National Laboratory
IN PROGRESS	♦ Molybdenum-99 production at Sandia National Laboratory and Los Alamos National Laboratory
9/1999	♦ Marketing, sales, billing, and collection to support all production sites
9/1999	♦ Hot cell operations at Oak Ridge National Laboratory
4/2000	♦ Hot cell operations to support accelerators at Brookhaven National Laboratory and Los Alamos National Laboratory

In fiscal year 2000, we are requesting funding to continue the construction of the beam spur at the Los Alamos Neutron Science Center (LANSCE) facility so that it can be accomplished while the facility is in an outage and can come on line in fiscal year 2001 with no significant interruption in the supply of isotopes. The beam spur enables us to continue to provide vital short lived isotopes that can only be produced in an accelerator of this size.

By the end of this fiscal year, modifications to the Annular Core Research Reactor and associated Hot Cell Facilities at Sandia National Laboratories will be completed and the facilities will be ready for private sector use as a backup source of molybdenum-99, a precursor isotope to the most widely used diagnostic imaging isotope, technetium–99m . With this accomplishment, the goal of achieving the capacity for an emergency backup supply will be met and no appropriation in fiscal year 2000 is requested.

Lastly, we propose to launch the Advanced Nuclear Medicine Initiative, a new program for fiscal year 2000, to apply the Department's unique expertise and capabilities in isotopes to advance nuclear medicine technology. This initiative will sponsor nuclear medical science through university scholarships and internships in nuclear medicine and support peer-reviewed research including use of the Department's large inventory of alpha-emitting isotopes available from DOE to fight a spectrum of illnesses, including various types of cancer. This initiative responds to a need not currently addressed by existing Departmental programs.

Additionally, we will continue to provide safe, proven, reliable, maintenance-free radioisotope power systems for use in deep space and national security applications as we have for 38 years. In 1997, the National Aeronautics and Space Administration (NASA) launched the Cassini spacecraft to Saturn using electric power from radioisotope thermoelectric generators provided by the Department. Previous NASA space exploration missions that have used radioisotope power systems include the Apollo lunar module and the Pioneer, Viking, Voyager, Galileo and Ulysses, Cassini and Mars Pathfinder spacecrafts.

Future NASA missions will require even lighter, lower power systems, more efficient energy conversion, and new materials. Efforts are underway to meet this requirement by developing an Advanced Radioisotope Power System that uses a new technology. In fiscal year 2000, the program will complete fabrication and initiate testing of module units of this technology, proceed to design and fabrication of a full-scale qualification unit. In fiscal year 2000, we will continue to develop the state-of-the-art power supplies that could cover a range of power levels required to support future NASA space missions. These technologies include advanced conversion concepts, new materials, and heat source technologies. Potential new NASA missions over the next six to eight years requiring radioisotope power systems include missions to Mars, Europa, and Pluto and the Solar Probe mission to the Sun.

Because our supply of plutonium-238 used in these systems will be exhausted in the first half of the next decade, we are conducting an environmental impact analysis. The EIS on re-establishing a plutonium-238 production capability will be completed early in fiscal year 2000. Facilities at Oak Ridge, Idaho, and Hanford are currently being evaluated and the Department has also sought expressions of interest from the private sector for irradiation services. Additionally, we are currently evaluating whether assembly and test operations performed at the Mound Site should remain at Mound or should be transferred to another site.

DEVELOPING DEPARTMENT OF ENERGY

MAINTAINING VITAL NUCLEAR RESEARCH FACILITIES AND SUPPORTING A STRONG EDUCATIONAL INFRASTRUCTURE

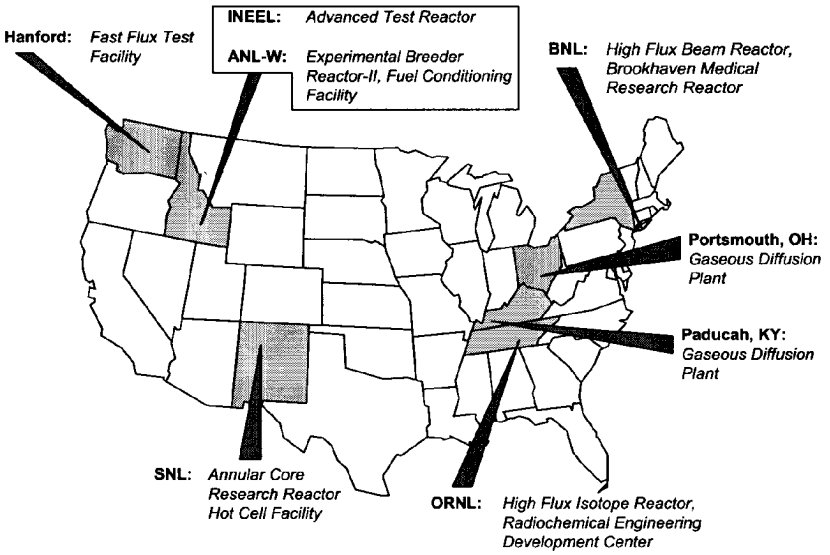
Government, industry, and academia alike face similar challenges today as we seek to sustain our critical nuclear science and technology infrastructures—our facilities and our human resources. Like much of the industrial base which took shape during and in the years following World War II, the nuclear industry is a mature industry, comprised of scientists and engineers, many of whom are currently retiring or will retire over the next decade. Along with this, our nuclear science and engineering programs at universities and colleges are challenged by declining enrollments and aging facilities. The Department as well faces these same challenges to our own workforce and our own facilities.

Inextricably linked with our R&D programs are our initiatives to arrest the eroding nuclear energy infrastructure. Opportunities for new and exciting R&D serves not just to advance breakthrough technologies for the American people, but serves to attract the best and brightest to our universities, our laboratories, and our industry in general. To strengthen our knowledge base, in fiscal year 2000 we propose to apply a total of $11.3 million to enhance nuclear research and education pro-

grams at universities and colleges across the country. This Committee has been a strong proponent for this program and we have seen it grow over the last several years. I am pleased to submit it again at about the level you appropriated last year. I am also pleased to include in it, the Nuclear Engineering Education Research (NEER) program, vital to attracting and retaining faculty, at the same level as appropriated last year. These initiatives under the university programs will help ensure the future ability of the U.S. to continue to apply the nuclear sciences to medical research, the development of new materials, and future environmental and energy challenges.

To strengthen the infrastructure at our universities and ensure that university research reactors are available into the next decade, we are proposing a modest increase in the program in fiscal year 2000 to assist in the maintenance and modernization of university research reactors by replacing outdated equipment and upgrading experimental capabilities under the reactor upgrade activity. University research reactors are a little-known but essential part of the nation's scientific infrastructure. Currently, there are 28 university research reactors at 26 universities in 21 states. These research reactors have contributed to innumerable important scientific discoveries ranging for analysis of moon rocks to dating of dinosaur bones, to new methods of targeting and destroying rare brain tumors. Quoting John Bernard from the Massachusetts Institute of Technology, "the public thinks they are all producing electricity, but these research reactors are much like a microscope. You're producing a beam of neutrons to see the world."

In the 1990's the Department concentrated the responsibility for management of the Department's reactors in the Office of Nuclear Energy, Science and Technology, where the core of the U.S. government's expertise in nuclear energy research, technology and engineering resides. Among the reactors under our purview are the High Flux Isotope Reactor, the High Beam Flux Reactor, our Annular Core Research Reactor, the Advanced Test Reactor (ATR), and the Fast Flux Test Facility. We also serve as landlord for the Test Reactor Area site at Idaho National Engineering and Environmental Laboratory, where the ATR is located, and where we are responsible for providing utility services and maintaining the site area in a safe and environmentally compliant configuration. As many of you know, there was an accident last year at the TRA during a maintenance operation at a facility occupied by another DOE program in which carbon dioxide inadvertently discharged from a fire suppression system. The accident caused one death and several life-threatening illnesses. I want to underscore the sincere regret expressed by Secretary Richardson when he said, "our hearts go out to the family and friends of Kerry Austin." This is an accident that never should have happened and I pledge that the Office of Nuclear Energy, Science and Technology will work hard to ensure that safety remains at the forefront of all of our activities.



Locations Of NE-Managed Facilities

My office is also responsible for the Fast Flux Test Facility (FFTF), the most recently deployed reactor in the Department, operating between 1982 and 1992. Today, it is shutdown and maintained in standby and this spring Secretary Richardson will decide whether to shut it down permanently or pursue civilian missions for the reactor. To provide a more informed decision, NERAC will complete this month, the Nuclear Science and Technology Infrastructure Roadmap, to assess our present and future requirements for neutron generating facilities in light of our existing and currently planned infrastructure of hot cells, accelerators and reactors. This roadmap will include recommendations on whether there is a future need for FFTF to meet mission critical requirements.

SECURING OUR ENVIRONMENTAL FUTURE

The Department is responsible for safe storage and disposal of approximately 8,000 tons of spent nuclear fuel containing about 2,700 metric tons of uranium and transuranic elements from various civilian and defense-related programs. Some of this fuel contains materials that are highly reactive or are in a condition that precludes their disposal in a geologic repository. A technology which may someday assist the Department in dealing with this spent fuel challenge is the electrometallurgical treatment technology under development at Argonne National Laboratory (ANL). The demonstration of this technology will be completed this August on a portion of sodium-bearing spent fuel removed from the Experimental Breeder Reactor-II (EBR–II) located at ANLWest in Idaho. In fiscal year 2000, we expect to complete an Environmental Impact Statement on the use of this technology for the remaining EBR–II spent fuel as well as certain other spent fuels. In concert with this, we expect the National Research Council to report back to the Department in that same time frame with their final assessment of the technology. Together, these activities will provide the technical basis for a decision on whether to proceed with full scale operations of the Fuel Conditioning Facility and treatment of the fuel.

Additionally, we will complete the processing of the sodium coolant from the EBR–II and Fermi-I reactors in fiscal year 2000, enabling us to shut down the last of the EBR–II facilities, with the exception of the Fuel Conditioning Facility, used for the demonstration project. It will be retained in standby pending a decision on treatment of the remaining sodium bonded fuel.

My office is also responsible for important activities related to the Federal uranium enrichment program that were not transferred to USEC, Inc. when it was

privatized in July 1998, including, sale of surplus natural assay uranium and management of the about 57,000 14-ton depleted uranium hexafluoride cylinders located at the gaseous diffusion sites in Paducah, Kentucky; Portsmouth, Ohio; and the Oak Ridge Site in Tennessee. For the past several years, we have worked to improve storage conditions for the cylinders through inspections, maintenance, and monitoring. As required by Public Law 105–204, signed by the President last July, the Department is required to prepare a plan to begin by January 31, 2004, construction of plants at Portsmouth and Paducah to treat and recycle the depleted UF_6 inventory. The initial plan was submitted to this Committee on March 12, 1999. The final plan will be submitted in May and we are confident it will meet the intent expressed by Congress in the enacted legislation.

Mr. Chairman, Nuclear Energy's fiscal year 2000 funding request is outlined in the following table:

Budget Authority

[Dollars in Thousands]

Program Element Request	*Fiscal year 2000*
Nuclear Energy R&D	$87,345
Advanced Radioisotope Power Systems	37,000
Test Reactor Area	9,000
University Reactor Fuel Assistance and Support	11,345
Nuclear Energy Research Initiative	25,000
Nuclear Energy Plant Optimization	5,000
Isotope Support	21,000
Termination Costs	65,000
Fast Flux Test Facility	30,000
Uranium Programs	41,000
Program Direction	24,960
Total nuclear energy, science and technology request	$269,305

I will now provide the Committee with greater detail regarding the importance of our programs and the benefits they provide.

NUCLEAR ENERGY RESEARCH AND DEVELOPMENT (R&D)

The mission of the Nuclear Energy R&D program is to conduct advanced research and development in areas such as nuclear power and space power systems. In addition, this program supports nuclear engineering education and enhancement of the Nation's nuclear science infrastructure. It also supports the infrastructure needs for the Test Reactor Area at the Idaho National Engineering and Environmental Laboratory (INEEL).

ADVANCED RADIOISOTOPE POWER SYSTEMS

The Department of Energy and its predecessor agencies have provided radioisotope power systems for use in space and terrestrial applications for 38 years. These systems are safe, proven, reliable, maintenance-free, and capable of producing either heat or electricity for many years under the conditions required for deep space and national security missions. The unique characteristics of these systems make them especially suited for applications where large arrays of solar cells or batteries are not practical, for example, at large distances from the sun where there is little sunlight or in harsh environments. To date, the Department has provided over 40 radioisotope power systems for use on a total of 25 spacecraft. In fiscal year 1998, NASA launched the Cassini spacecraft to Saturn, entirely electrically powered by three radioisotope thermoelectric generators provided by the Department. Critical national security activities and NASA missions to explore deep space and the surfaces of planets could not occur without these systems.

In fiscal year 2000, the program will continue developing new, state-of-the-art power supplies required to support both future NASA space exploration, such as a mission to Jupiter's moon Europa, a mission to Pluto, and the Solar Probe mission to the Sun, and national security applications. In keeping with NASA's new philosophy of smaller, lighter weight and more technologically advanced spacecraft, these future NASA missions will require lower power, highly efficient lighter radioisotope power systems. In fiscal year 1998, DOE initiated the development of the next generation radioisotope power system, using a more efficient energy conversion technology to achieve a lighter weight, more efficient power system. In fiscal year 2000,

the focus will be completing the design of the new system and proceeding to fabricate a flight qualification unit to more accurately assess its performance against NASA needs.

The outyear planning for future space missions reflects arrangements with the national security users and NASA that the Department will sustain the facility infrastructure to produce radioisotope power systems. This infrastructure represents the sole national capability to produce radioisotope systems. In accordance with arrangements with our customer agencies, NASA or other users will provide funds to the Department to pay for mission-specific costs, including mission-specific development, hardware fabrication, and other mission support costs.

A key factor in the ability to provide radioisotope systems for future missions is to have an adequate supply of the radioisotope Pu-238 that is used in all of these systems. It is very important to note that Pu-238 is not weapons-grade material and is not usable as an explosive in nuclear weapons. The current inventory of this isotope, with the exception of approximately nine kilograms that were purchased from Russia, was produced in the Savannah River reactors and processed in the HB-Line facilities that are shutdown or are in the process of being shut down. For the long-term, the Department has initiated an environmental analysis to evaluate sites for supporting domestic production of Pu-238. Sites to be evaluated include DOE's Hanford Site, the INEEL, and the Oak Ridge National Laboratory.

The Department is currently analyzing whether the assembly and test operations performed in Building 50 at Mound should be retained at the Mound Site or whether the functions should be moved to another site. As you know, this site is being environmentally restored by DOE's Office of Environmental Management and they plan to turn the site over to the private sector and exit the site in 2005. In general, it is the Department's policy to reduce our footprint where it can be demonstrated to produce a savings for the taxpayer and we are currently reassessing the cost involved in retaining operations at Mound versus costs of consolidating at other sites. In the meantime, progress on the environmental impact statement, begun this fiscal year, will continue at a slower pace until we complete this important assessment.

The Advanced Radioisotope Power Systems Program is an important part of the nuclear energy research and development efforts, and the Department will continue to manage this program in an effective and cost-efficient manner. We are submitting a report to Congress summarizing the status of actions taken to streamline the program. In conjunction with the user agencies, the Department will responsibly maintain the capability to supply these systems for future missions that are important to the exploration of space and vital to U.S. national security interests.

TEST REACTOR AREA LANDLORD

The Office of Nuclear Energy, Science and Technology is responsible for the landlord program for the Test Reactor Area of the INEEL. The TRA Landlord Program provides essential services to the Advanced Test Reactor (ATR) and its related facilities, including the ATR Critical Facility reactor, the TRA Hot Cells that were recently privatized for isotope production, and the INEEL Applied Engineering and Development Laboratories, as well as a machine shop that supports the entire site. These facilities are operated primarily to support vital nuclear reactor testing and materials testing for the Office of Naval Reactors, but are also operated for other programs, including our isotope program. This area of the site is expected to continue to perform national security and civilian missions well into the 21st century. As such, we must protect this critical infrastructure—maintaining facilities and services at a level that ensures protection of the workers and the public, the environment and minimizes programmatic disruptions.

In fiscal year 2000, we are requesting $9 million for the landlord program, a $2.3 million increase over last year. Most of the increase is directed to ensuring that we meet commitments in managing our legacy waste and in continuing the electric utility line item project, which will be completed in 2003. The electrical utility project reconfigures the 40 year old electrical utility system to meet current needs and replace aged switchgear, panels, and transformers for which replacement parts are not available or which have reached the end of their useful lifetime and are not economical to repair. Additionally, we will continue the fire protection upgrade line item in fiscal year 2000, at a lower level than previous years, and then with a slightly increased level of effort the following year to bring it to completion. The fire protection line item was initiated several years ago to retrofit existing facilities to meet provisions of the National Fire Protection Agency's Life Safety Code and provide an adequate level of protection, as needed, for building occupancy. We feel that this project is particularly important in light of the suppression system- related accident that occurred last year in this area of the site.

NUCLEAR ENERGY RESEARCH INITIATIVE

World leadership in nuclear science and technology is vital to the United States from the perspective of national security, international influence, and global security. The United States has more nuclear power plants in operation today than any other nation in the world and most of the world's operating nuclear power plants are based on United States technology. Many countries, especially the fast-growing economies in Asia and the Pacific Rim, are interested in building new plants using our designs. Given the projected growth in global electrical energy demand as developing nations industrialize, our vital strategic interests in addressing global climate change, nuclear nonproliferation, nuclear safety, and economic competitiveness, and our need to satisfy the growing domestic needs for energy in an environmentally responsible manner, the United States must maintain its scientific and technological leadership in nuclear energy.

Recognizing this need, the PCAST Panel on Federal Energy Research and Development recommended in 1997 that the Department establish a new nuclear energy research effort to address the key issues affecting nuclear energy's potential as a future energy source. The key issues affecting nuclear energy's future include disposal of spent fuel, concerns about nuclear proliferation, plant safety and uncompetitive economics. PCAST recommendations are that the Department competitively select, through a peer-review process, proposals from universities, national laboratories and industry to conduct scientific and engineering research in the areas of proliferation-resistant reactors and fuel cycles; new reactor designs with higher efficiency, lower cost, and improved safety; lower output reactors for use in the global market; and new techniques for the management and storage of nuclear waste.

The Department's Office of Nuclear Energy, Science and Technology implemented the PCAST recommendations in fiscal year 1999 by establishing the Nuclear Energy Research Initiative (NERI) to fund new and innovative scientific and engineering research on these key issues and to preserve our nation's nuclear science and technology leadership. The initiative has as its primary mission the advancement of nuclear science and engineering research over the long-term.

We are very pleased with the response to the NERI program. The Department received 307 final proposals from national laboratories, universities, and industry, representing over $300 million in potential research. Additionally, a significant fraction of the proposals submitted by the national laboratories included teaming with universities and others. These individual and collaborative research proposals are being peer-reviewed by independent experts for scientific and technical merit and will be evaluated for relevance to the Department's nuclear energy objectives prior to funding selection. The process by which grants are awarded under NERI is modeled after other successful investigator-initiated independent peer review processes, such as those used by the National Science Foundation and DOE's Office of Science. As with all of the nuclear research programs, the NERI will receive guidance from the Nuclear Energy Research Advisory Committee.

The Department strongly supports the continuation of this vital scientific and engineering research effort in fiscal year 2000 and we request $25 million for this program, an increase of $6 million over fiscal year 1999 to continue important research begun this year and to award a modest number of new proposals in fiscal year 2000. In doing so, we seek to address key obstacles affecting the expanded future use of nuclear energy in the U.S.; advance the state of nuclear technology to maintain our competitive position in overseas and future domestic markets; promote and maintain nuclear science and engineering capabilities to meet future technical challenges; and improve the performance, efficiency, proliferation resistance, reliability, and economics of nuclear energy applications.

NUCLEAR ENERGY PLANT OPTIMIZATION PROGRAM

Over the last couple of years, there have been significant changes in the strategic landscape—a growing recognition of the importance that our existing nuclear power plants play in meeting the needs of the nation for electricity during the first half of the next century and their importance in meeting international commitments on climate change. These plants are also critical to helping utilities meet state implementation plans and EPA requirements for Clean Air Act compliance.

Two years ago, with electricity restructuring looming and concerns over regulatory uncertainty, the prediction was that the existing nuclear plants were doomed—that fewer plants would seek license extensions and that many would shut down prematurely. Today, with consolidations in ownership occurring and several plants announcing their intention to seek license extensions, it is clear that there is a future for many of the U.S. nuclear power plants. However, for these plants to remain viable beyond 2020, both government and industry must take action—government re-

ducing regulatory and other barriers to operation and industry, investing capital in the upgrading their facilities for the future and investing in short-term R&D. Also, together, government and industry should explore intermediate-term evolutionary technologies to sustain these plants. For these reasons, the Department is resubmitting its proposal for the Nuclear Energy Plant Optimization (NEPO) program in fiscal year 2000 to address the issues that could prevent continued operation of existing U.S. nuclear power plants.

The DOE Energy Information Administration projects that even with aggressive energy efficiency measures, U.S. electricity consumption will increase 1.4 percent per year through 2020 the equivalent of seven large 1000-megawatt power plants each year. During this same period, about 127,000 megawatts of existing electricity generating capacity could be retired because of age, competitive pressures, and as part of U.S. utility measures to meet clean air standards. In order to meet the demand for new baseload capacity, the Energy Information Agency estimates that the U.S. would need to build the equivalent of over 1,000 new fossil plants by 2020. This magnitude of building would require a huge economic investment over the next 20 years with the potential for significant increases in air emissions.

However, continued operation of our existing nuclear power plants can mitigate this need and dramatically reduce or offset air emissions. For example, continued operation of 90 percent of the existing nuclear power plants through their current license terms would displace over 3,950 million metric tons of carbon emissions between 1995 and 2035. Extending the licenses of 75 percent of these nuclear plants could reduce emissions by 64 million metric tons between 1995 and 2010, 208 million metric tons by 2015, and 2260 million metric tons by the middle of the next century, when the last existing plant would shutdown.

The Department's Nuclear Energy Plant Optimization (NEPO) program is proposed to address issues associated with operating existing nuclear power plants, in cost-shared cooperation with the Electric Power Research Institute (EPRI) and in coordination with the Nuclear Regulatory Commission. As a collaborative program, industry would share a minimum of 50 percent of the cost and the program would be guided by a joint DOE/EPRI strategic plan. The proposed program would involve the nation's national laboratories, universities, and industry and although no federal research dollars would be allocated internationally, the program would benefit from substantial international collaboration and coordination.

Specifically, we propose the following R&D initiatives:

Managing the long-term effects of nuclear plant aging.—R&D conducted under NEPO would provide a better understanding of material degradation mechanisms and how they occur, enabling development of cost-effective aging management strategies which will provide capabilities to easily prevent, detect, or repair the degradation.

Improving nuclear power plant capacity factors from 71 percent in 1997 to 85 percent in 2010.—This initiative focuses on improving the long-term economic performance of current plants through development of technologies that will improve equipment reliability, lower operating costs, and increase power output while maintaining high levels of safety.

Optimizing power generation through efficiency and productivity improvements.—Current nuclear plants were designed and are operating with technology developed over 25 years ago. As plants age, components and parts degrade or become obsolete, introducing inefficiencies, added costs, and unreliability. There have been significant technology advancements over the last 25 years that are applicable to power generation, particularly in computers, communications, materials, sensors and digital electronics, and artificial intelligence that provide more accurate, reliable and cost-effective technologies; however, most of these technologies are not qualified to meet Nuclear Regulatory Commission requirements. Further R&D developments will produce new technology applications that meet regulatory requirements and that will improve plant operation and maintenance, increasing overall plant output. This initiative is focused on demonstrations of technologies necessary to achieve regulatory acceptance of the new technologies.

Research performed under this program would be prioritized by the NERAC subcommittee on operating nuclear power plant research, coordination and planning.

UNIVERSITY REACTOR FUEL ASSISTANCE AND SUPPORT

The Department of Energy's University Nuclear Science and Reactor Support Program conducts the important task of supporting nuclear science education and research in the United States. Under this program, we work with universities and colleges across the nation, with assistance from private industry, to maintain nuclear education programs, support outstanding students, undertake innovative nuclear

engineering research, and continue the operation of research reactors. Much of the program funding is used to provide fresh fuel to these reactors, to remove spent fuel, and to upgrade the operational capabilities at the university research reactors at 26 universities in 21 states.

To ensure that these valuable educational tools remain available into the next decade, in fiscal year 2000, for the third straight year we plan to support U.S. universities and colleges in their efforts to modernize reactor safety systems and improve their operational capabilities. These reactors are critical and unique assets of the U.S. scientific infrastructure. They are used for educational purposes, to conduct important medical and materials research, and to make vital isotopes. In fiscal year 2000, we will continue to supply fresh fuel to, and transport spent fuel from, universities requiring assistance. In addition, we will continue converting university reactors that currently use highly enriched uranium fuel to low enriched uranium fuel, thus advancing our nonproliferation goals. Additionally, through our reactor sharing program we will provide a means for students at universities without reactors to have access to another university's reactor for education, training, and research purposes.

We will continue the very important and successful Nuclear Engineering Education Research grants initiative that provides much needed funding to faculty for innovative research at universities at the same level of funding you appropriated in fiscal year 1999. This program is vital to the research needs of the U.S. universities' nuclear engineering departments and, in particular, to attracting and retaining faculty.

We plan to maintain our growing number of partnerships with the electric utility industry and other private sector entities by providing research grants to universities that receive similar commitments from the utilities and private companies. As in the past, we intend to provide funding equal to the amount contributed by private organizations, to a maximum of $50,000 in Department of Energy grants per university. In fiscal year 2000, we expect to fund $800,000 in grants to 17 universities that will be matched by participating companies.

We also plan to continue our support of scholarships for outstanding students in undergraduate and graduate nuclear engineering and health physics programs at our universities and colleges, including fellowships for outstanding students at our minority institutions. These fellowships and scholarships provide for the education of approximately 18 outstanding graduate engineering students across the country and approximately 62 undergraduate students. We will continue an initiative, begun in fiscal year 1999, which provides practicums at national laboratories for 30 undergraduates in their junior or senior year, thus giving them valuable real-world experience in nuclear engineering. In fiscal year 2000, we will begin an initiative to support nuclear engineering recruitment activities in conjunction with professional societies to ensure a highly informed group of college freshmen enter university nuclear engineering and related scientific courses of study. Also, we will continue a radiochemistry initiative begun this year to help educate a new generation of radiochemists, prepared to address the technical challenges associated with operating nuclear plants.

ISOTOPE SUPPORT

Our isotope program develops, produces, sells, leases, and ships hundreds of different stable and radioactive isotopes for medical applications, scientific research, and commercial use throughout the United States and to approximately 25 other countries. Consistent with our mandate in the Atomic Energy Act of 1954, it is our longstanding policy to produce isotopes when no domestic or private sector capability exists; where unique government production facilities are needed, such as nuclear reactors and isotope enrichment facilities; or where other productive capacity is insufficient to meet the Nation's needs. Over the last several years, we have aggressively pursued private sector investment in new isotope production ventures and in fiscal year 2000, we will complete privatization of our commercial isotope production activities, including privatization of our business functions. In instances where the private sector can produce isotopes more efficiently than the government, we will sell, lease, or license existing facilities, technologies and inventories for commercial purposes.

The isotope program operates with a revolving fund and maintains financial viability through revenues from sales and annual appropriations. We function like a business, and as such, must have sufficient operating cash to fill customer orders and maintain solvency during market changes. Our fiscal year 2000 budget request, which funds about two-thirds of the program, will provide the minimum necessary operating cash. The revolving fund is audited annually by an independent public ac-

counting firm, KPMG Peat Marwick, and since the first audit in 1992, the isotope program has continuously received an unqualified opinion which states that the financial statements are presented fairly in all material respects. The audited financial statements are an essential management tool for the Isotope Program.

Although we are not obligated to provide all isotopes requested, we strive to meet our customers' requests subject to inventory, production capability, and financial constraints. This fiscal year, to obtain a better understanding of our customers' requirements, a panel of medical experts convened to develop a consensus on the growth of demand for medical isotopes between now and the year 2020 and to identify future support the Department of Energy will need to provide to the nuclear medical community. The panel's report has been accepted by NERAC as the basis for its development of a long-term isotope research and development plan. The report indicates that the need for medical isotopes used in diagnostics, therapy, and research will increase between 8 and 17 percent per year over the next 20 years. Although the cost of meeting this demand is not insignificant, it is a fraction of that which would be saved in health care costs by the use of isotopes for diagnosis and treatment.

The isotope program has negotiated a number of cooperative arrangements with foreign suppliers, to assure an uninterruptible supply of isotopes in the U.S. For example, in 1997 we completed a cooperative production agreement with the Institute for Nuclear Research (INR) in Troitsk, Russia, for production of strontium-82, which was followed by FDA qualification of the Russian strontium-82 in 1998. This agreement resulted in the supply of material to Los Alamos for chemical processing and eventual distribution to hospitals at a time in which no large accelerator, necessary for strontium-82 production, was operating in the U.S. We are making similar cooperative efforts for reactor-produced isotopes.

Because until recently the United States was dependent on a single supplier of molybdenum-99, a major initiative of the past several years has been to bring our facilities at Sandia National Laboratories—the Annular Core Research Reactor (ACRR) and associated Hot Cells to the point that emergency production of this important medical isotope could be established if needed. molybdenum-99 is a precursor of technetium-99m, an isotope used for diagnostic imaging, including body organ functions, in more than 36,000 medical procedures each day in the United States alone. This isotope allows physicians to accurately diagnose cancer and other diseases without resorting to exploratory surgery. Substantial modifications have been undertaken at these facilities to ensure a stable production source that is capable of meeting part or all of the U.S. demand is available if needed. Modifications will be completed to both the ACRR and Hot Cell Facility this year that will place them in a condition where emergency production of molybdenum–99 could be constituted if needed. The demand for molybdenum-99 continues to grow due to the application of this cost-saving diagnostic technique, thus making it attractive to privatization. For this reason, we are pursuing privatization of molybdenum-99 production and related business activities. A draft Request for Proposal (RFP) will be issued this month, followed by the final RFP in May 1999, with a contract award anticipated by the end of the fiscal year.

Our fiscal year 2000 request includes funding for relocation of the Los Alamos isotope target irradiation station at the Los Alamos Neutron Science Center (LANSCE), a facility owned by and operated primarily for the Office of Defense Programs. Because of the research community's identified year-round need for short-lived radioisotopes that can only be produced in a large accelerator, we are continuing the modifications to the LANSCE facility to construct a beam spur that can be dedicated to isotope production. Without this beam spur, the nation will lose the ability to make certain isotopes when LANSCE shuts down later this year. The total estimated cost for the relocation of the LANSCE target irradiation station is $14 million. Conceptual design and planning activities for this project began in fiscal year 1998 to support construction of the relocated target station and tie into the accelerator beam, scheduled to take place in fiscal year 1999, in a time-frame dictated by Defense Programs' accelerator maintenance schedule. By the end of fiscal year 2000, construction should be 60 percent complete and with the additional $8 million requested, the new station will be completed and commissioned in fiscal year 2001. The fiscal year 2000 funding request is essential to minimizing the time that the country is unable to produce these isotopes.

Additionally, the President's fiscal year 2000 request includes a recommendation to establish a new program, the Advanced Nuclear Medicine Initiative, initially funded at $2.5 million. This initiative will apply the Department's unique expertise and capabilities in isotopes to advance nuclear medicine technology in the U.S. Under the initiative, the Department will sponsor nuclear medical science using a peer-review selection process, encourage the training of individuals in nuclear medi-

cine methods by establishing scholarships and fellowships for nuclear medicine specialists and by sponsoring summer internships at appropriate institutions, and initiate a focused program to apply alpha-emitting isotopes to fight a spectrum of malignant diseases including most common cancers and infectious diseases such as meningitis and AIDS.

TERMINATION COSTS

The termination costs program funds the deactivation of the Experimental Breeder ReactorII (EBR–II) facility located at Argonne National Laboratory-West (ANL-West) in Idaho. The objective of the program is to place the EBR–II facility and other surplus facilities at ANL-West in a radiologically and industrially safe shutdown condition, for low-cost and long-term surveillance and maintenance, pending final decontamination and decommissioning. The principle components of this program are completing the electrometallurgical treatment demonstration project, which will occur this fiscal year; completing processing of the sodium coolant from the shutdown reactor, and closing the last of the EBR–II facilities.

The Department is responsible for the safe storage and disposal of approximately 8,000 tons of spent nuclear fuel containing about 2,700 metric tons of uranium and transuranic elements from various civilian and defense-related programs. Some of these spent fuels contain materials or are in a condition that may preclude their direct disposal in a geologic repository. The electrometallurgical treatment technology under development at ANL is a technology that has the potential to assist the Department in dealing with this spent fuel challenge, a challenge which is unique to the Department.

In particular, this technology may be the best way to deal with the sodium-bearing spent fuel removed from EBR–II. This spent fuel contains metallic sodium, a material which can cause an explosion when brought into contact with water. This spent fuel must be treated if it is ever to be relocated to a geologic repository. Under the Consent Agreement between the State of Idaho and the Department (Batt Agreement), this spent fuel as well as other sodium bonded fuel onsite must be removed from the State by 2035. Consequently, this technology may be crucial to the Department's success in meeting those obligations. If this technology is not successful, new R&D activities will have to be initiated to find other alternatives for treating the Department's sodium-bonded fuel.

The Department will complete the electrometallurgical treatment demonstration this fiscal year. In fiscal year 2000, the Department will complete an environmental impact statement on using this technology. In parallel with this, the National Research Council will complete their review of the technology and will issue a final report to the Department during the first quarter of fiscal year 2000. Together, these activities will form the basis for a decision early in fiscal year 2000 on whether to proceed with this technology for treatment of the rest of the inventory of EBR–II spent fuel as well as certain other spent fuels in the Department's inventory.

In 1994, the Department began the permanent shutdown of EBR–II and associated support facilities at ANL-West. During fiscal year 2000, our efforts to place these facilities in a radiologically and industrially safe shutdown condition will continue. The Sodium Process Facility, designed and constructed to convert the highly reactive sodium coolant to an environmentally acceptable form suitable for routine disposal, will complete its mission in early fiscal year 2000. The facility will be placed in a safe configuration, awaiting further deactivation and eventual decontamination and decommissioning. With exception of the Fuel Conditioning Facility, used for electrometallurgical treatment, all facilities will be in a shutdown configuration by the end of fiscal year 2000.

FAST FLUX TEST FACILITY

Nuclear Energy also provides program management and technical direction for the Fast Flux Test Facility (FFTF) located at the Hanford Reservation in Washington. FFTF is a 400 megawatt thermal, sodium cooled reactor that operated between 1982 and 1992. Originally designed to provide irradiation testing of nuclear reactor fuels for the U.S. liquid metal reactor program, it operated for materials testing for fusion, space reactor, and the international fast reactor programs. In 1992, the Department shut down the facility and placed it in standby, pending a decision on using the facility as a bridge for tritium production until an accelerator or a commercial light water reactor could come on line to produce tritium. In December 1998, Secretary Richardson announced that FFTF is not required for tritium production or other defense missions. However, the Secretary indicated that he will decide, this spring, whether to begin permanent deactivation of FFTF or consider using it for other missions, such as medical isotope production, plutonium-238 pro-

duction for space missions, advanced materials research, and nuclear energy R&D. If so, the Department would initiate an Environmental Impact Statement on the potential restart of the facility.

To provide a more informed decision, the Nuclear Energy Research Advisory Committee will complete their evaluation this spring of the Nuclear Energy, Science and Technology Infrastructure Roadmap. This road map is important not just to assessing the need for FFTF but for assessing the existing facilities and capabilities for neutron science and isotope production across the Department as well as the needs of the Nation over the next 20 years.

The funding requested in fiscal year 2000 is the absolute minimum level required to continue to maintain the facility in a safe condition and in compliance with federal and state safety and environmental regulations. Neither the fiscal year 1999 appropriated level nor the fiscal year 2000 requested levels are sufficient for either option of beginning permanent deactivation or pursuing restart for other missions. Responsibility for funding FFTF standby activities transferred from the Office of Environmental Management to the Office of Nuclear Energy, Science and Technology in fiscal year 1999.

URANIUM PROGRAMS

The Office of Nuclear Energy, Science and Technology retains important government activities related to the Federal uranium enrichment program that were not transferred to the United States Enrichment Corporation (USEC Inc.). In particular, this program addresses the facility and environmental legacies associated with the enrichment program, management of government assets, and associated research and development.

One of the principal missions of Uranium Programs activities is to effectively manage the Department's depleted uranium hexafluoride (depleted UF_6) inventories. A key responsibility of the Department is to ensure that an estimated 46,400 cylinders of depleted UF_6 are maintained in an environmentally responsible manner by conducting annual cylinder inspections, and developing and implementing options to repair cylinders exhibiting accelerated corrosion. The Department is currently evaluating alternative long-term management strategies for the material. In December 1997, we issued a draft programmatic environmental impact statement (EIS) for public comment, and we expect to issue the final programmatic EIS and the record of decision shortly.

Maintaining safe cylinder storage in the interim requires substantial work, with costs ranging from $12 to $15 million per year. Many of these cylinders date back to the Manhattan Project and have been in outside storage for up to 50 years. To improve storage conditions, one cylinder yard has been reconstructed, and three new cylinder yards have been built to date. A pilot cylinder painting program has been completed, and 12,000 cylinders are being painted over 3 years to reduce accelerated corrosion of the cylinders. We are also applying advanced technologies to facilitate inspections, detect leaks, and evaluate cylinder wall condition.

In addition to appropriations received for management of DOE-generated depleted UF_6, the Department received $66 million in fiscal year 1998 from the United States Enrichment Corporation (USEC Inc.) for the management and disposition of about 11,200 additional USEC-generated depleted uranium cylinders. In accordance with fiscal year 1999 appropriations report language, the Department submitted, on December 17, 1998, its initial plan for applying the $66 million received from USEC. These funds are administered in accordance with the terms of the two Memoranda of Agreement (MOAs) and related correspondence for activities required to accept and maintain the USEC material. Also, in July 1998, the President signed Public Law 105–204, requiring the Department to prepare a plan to begin by January 31, 2004, construction of plants at Portsmouth and Paducah to treat and recycle the depleted UF^6 inventory. The initial plan was submitted to this Committee on March 12, 1999. The final plan will be submitted in May 1999 and we are confident that it will meet the intent expressed by Congress in the enacted legislation. The Department's fiscal year 2000 budget requests $5 million to be used in addition to the MOA funds to begin activities to begin the process of constructing depleted UF_6 conversion plants.

Other Uranium Programs activities at the gaseous diffusion plants in Portsmouth, Ohio; Paducah, Kentucky; and Oak Ridge, Tennessee include maintenance of facilities and grounds, cleaning legacy spills in the leased areas of the diffusion site consistent with the Federal Facilities Compliance Act, and guarding and protecting highly enriched uranium stored at the Portsmouth site.

Since the Department shut down highly enriched uranium production at the Portsmouth Plant in 1992, we have been removing the highly enriched uranium res-

idues and placing the facility in a safe shutdown condition. Progress on the removal of highly enriched uranium has been substantial, and all highly enriched uranium oxides not planned for transfer to USEC will be removed from the site by the end of fiscal year 1999.

More than 70 facilities at the enrichment plants were not leased by USEC, Inc. and remain the responsibility of the Department. As landlord, my office maintains these facilities and their associated permits and is responsible for completing environmental corrective actions. We are also responsible for satisfying financial obligations associated with enrichment operations before the transition to USEC, Inc. Chief among these obligations is payment of post-retirement life and medical benefits to the Department's enrichment plant operating and power supply contractors and assisting in litigation involving claims against the Department for its prior operations. Lastly, after assisting in the transfer of regulatory oversight of the leased facilities and obtaining an initial certificate of compliance from the Nuclear Regulatory Commission, the Department continues to review and update safety documentation as necessary, for the non-leased facilities and assist the NRC in preparing annual congressional reports on the status of the diffusion plants.

My office is also responsible for the management and disposition of the Department's surplus natural uranium inventories. The Department currently has an inventory of approximately 24 million pounds of natural uranium, with a total value of about $260 million, that may be sold in the commercial market. All of the uranium to be sold under this program is currently held at the Portsmouth or Paducah gaseous diffusion plants. The USEC Privatization Act and the Energy Policy Act allow the Department to sell excess uranium stockpiles subject to certain conditions. Before the Department sells any of its excess natural uranium, the USEC Privatization Act requires the Secretary to determine that "* * * the sale of the material will not have an adverse material impact on the domestic mining, conversion, or enrichment industry, taking into account the sales of uranium under the U.S./Russian Highly Enriched Uranium (HEU) Agreement and the Russian Suspension Agreement* * *"

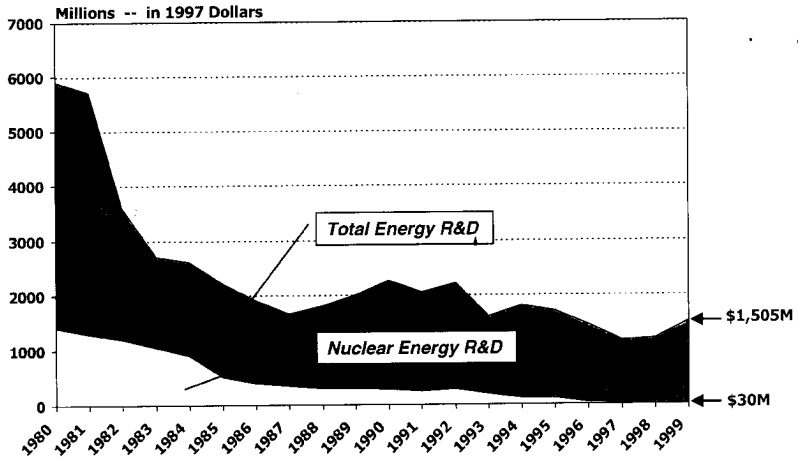
Finally, my office is also responsible for administering the $325 million authorized in Public Law 105–277 for the purchase of natural uranium pursuant to 1997 and 1998 deliveries under the U.S./Russian HEU Agreement. The purchase of this material is contingent on the Russian and Western uranium suppliers reaching a long-term agreement on purchases of the natural uranium component of the low enriched uranium delivered under the U.S./Russian Highly Enriched Uranium Purchase contract. I understand these negotiations are going very well and an agreement may be reached soon.

PROGRAM DIRECTION

In fiscal year 2000, we are requesting $25 million for salaries, travel, support services, and other administrative expenses for 144 Headquarters and Operations Office personnel providing technical direction to uranium, isotope support, and other nuclear energy programs. This budget item includes management and staff support funded by other Department of Energy accounts (*e.g.*, technical direction for the operation of the Department's research reactors funded by the Office of Energy Research); other Federal agencies; and foreign governments. It also funds the activities of the Nuclear Energy Research Advisory Committee (NERAC).

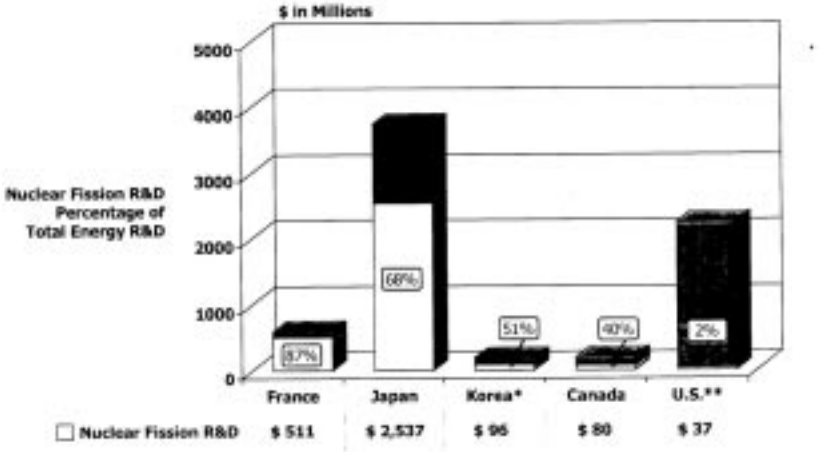
Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions. Again, I look forward to working with you and the Subcommittee this year as we examine important questions and issues concerning the allocation of federal resources to strengthen our universities and colleges, protect our critical infrastructures, bring vital isotopes and technology to the American people, support deep space and related missions, and meet our important stewardship responsibilities.

DOE Energy R&D Profiles



Source: PCAST Energy R&D Panel Report, November 1997, Figure 2.6 (Years 1980-1987)

International Nuclear R&D Funding, 1997



Sources: "Energy Policies of IEA Countries – 1998 Review" Annex B.; OECD/IEA
** Korea Ministry of Science and Technology Website*
*** U.S. DOE 1997 Budget*

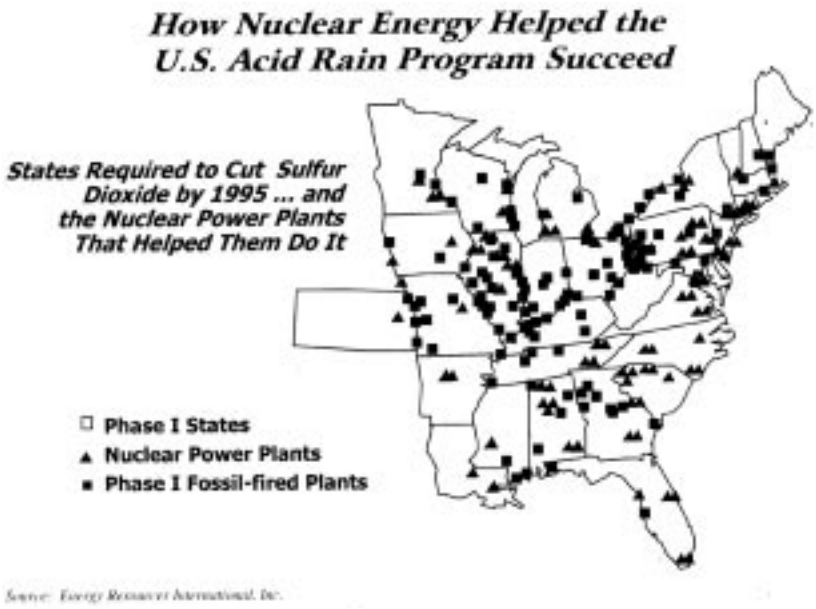
Nuclear Energy: Essential in Reducing CO_2 Emissions

[Utility pledges to reduce greenhouse gases]

Improvements to nuclear plants	33
Renewable energy	4

Nuclear Energy: Essential in Reducing CO_2 Emissions—Continued

Methane recovery, foresty and fly ash reuse	9
Improvements to fossil plants	14
Improved energy efficiency	18
Miscellaneous and uncategorized	22



IMPORTANCE OF NUCLEAR POWER

Senator DOMENICI. Thank you very much.

I might just say here for the record, I do not see how we could have a Department of Energy, and have such little emphasis on nuclear power. It borders on being a sham, in my opinion, not your fault.

Clearly, when the Administration puts such emphasis, a budget emphasis, on climate change technology initiative, departmental cross-cut, it is obvious to me that we have a department that wants to be for nuclear, but does not want to offend those who are against nuclear.

Even so this document Climate Control Program which did not include any of the old programs, said zero for nuclear research, and then said this year it is going up 100 percent. Kind of interesting. Anybody looking at it who does not like nuclear power would love it.

They would say, "Look here, solar and renewable, as a climate change initiative has $398 million in the President's request, and that bad old nuclear stuff, it has $5 million. So we are still keeping it under check. The Department put little or no emphasis on nuclear power." When you put up charts that show in controlling the ozone problem, that one of the biggest and most significant contributors is nuclear power, and probably will be necessary in the future

for us to meet our treaty obligations, if we ever do validate it in Kyoto.

So I do not make any bones about it. I have done enough research now on nuclear power, traveled the country enough to say, and I am for it, and I believe we are going to miss the boat as new technologies arrive which are going to permit safer, modular, easy-to-build nuclear power plants. A very small group of people can contain the Department of Energy, can control it, and indicate that so long as we do all these other things they will support the Department, but if you do anything in nuclear, then that is the end of the game.

I have also found, and I want this on the record, and I would like Dr. Krebs in particular to hear this, but also you Mr. Magwood, I have traveled now and delivered two major addresses on this subject, one at Harvard and one at MIT. The response from across this country has been overwhelmingly positive from those who know how we are falling behind in technology of this type. Now, you showed on one of your charts, that the rest of the world is not falling behind, and they are proceeding, using American ingenuity and American talent. You just showed us a super plant in Japan—how long did it take to build that plant?

Mr. MAGWOOD. Just about 4 years.

Senator DOMENICI. Four years. Incidentally, for those who wonder, they have a high safety record, a marvelous safety record in Japan. So 4 years to build it and there is no indication that they are cutting corners, it is that they have accepted nuclear power as something that is necessary and have adjusted their regulatory program accordingly.

I do not know what other things we are going to find in other hearings that might be necessary to move ahead in this area. But I assure you, we cannot continue with a policy that says let us not offend those who are against nuclear power, because they have some power base that is important.

I think what is important is that we do the right thing, and I believe we are moving in that direction in our committee. I think whether it be this year or next year, but eventually within a very short number of years, the administration will come to the reality that you have to move ahead with nuclear power if you want to have a clean environment and meet some obligations with reference to our contribution to that pollution.

Thanks for permitting me to follow-on on your remarks, and now we will go quickly to our testimony on the solar and renewable program. I have already complimented you, Mr. Reicher, and I want to do that again. I think you have found that we were pretty concerned about some of the things they use solar and renewable money for. It did not seem to some of us to be promoting the future, but rather promoting some organizations, and I would appreciate it very much if you would tell us about that, but also give us your vision and view, a realistic one I hope, with reference to these programs.

STATEMENT OF DAN REICHER

Mr. REICHER. Thank you, Mr. Chairman, and first of all I want to thank you for the confidence you have expressed in the job we

have been doing in the Office of Energy Efficiency and Renewable Energy. I am pleased to testify on the Energy and Water Development subcommittee portion of that budget. As you know, the other portion of the budget comes from the Interior subcommittee.

PROGRAM ACCOMPLISHMENTS

Mr. Chairman, 20 years ago renewable energy was generally produced at a very high cost and in a very inefficient manner, and advanced power delivery system components and high-temperature super conductivity did not even exist. Furthermore, the alternative transportation fuel sector was very immature. We have come a long, long way in the last two decades. In large measure, it is as a result of the support of the Congress and the work of many national laboratories.

The cost of electric power from wind turbines in 1980 ranged from thirty to forty cents a kilowatt hour, and it has dropped as a result of aggressive R&D, to between four and six cents a kilowatt hour.

At this price, wind power systems are entering the marketplace, expanding from early California sites, to states ranging from Vermont to Alaska, and from Wisconsin to Texas. We are also working on the next generation of turbines, which would bring the cost of wind power to as low as two-and-a-half cents a kilowatt hour by 2002. We are close to 20,000 megawatts of wind worldwide, and Mr. Chairman, this chart shows why wind is now the fastest growing energy source worldwide. Worldwide we have installed the equivalent of scores of fossil fuel plants, with more than 2,000 megawatts installed in 1998 alone across the globe.

I am pleased to announce today that the New Mexico Energy Office, through our broadbased solicitation has been selected for negotiation to evaluate four potential wind sites. We anticipate that the negotiations will be completed within the next few weeks.

PHOTOVOLTAIC

As another example, Mr. Chairman, the first commercially available photovoltaic panels in the early 1980s produced power at a cost of one dollar per kilowatt hour. By fiscal year 2000, these PV systems will be delivering electricity for as low as twelve to twenty cents per kilowatt hour, and in the next decade it should drop to below a dime, if we continue adequate support, particularly the work at the National Renewable Energy Laboratory and Sandia National Lab.

We now have large PV manufacturing plants in states as diverse as Virginia, Maryland, California, Michigan, Delaware, and Massachusetts. The solar industry is a fast-growing part of the U.S. economy; however, while both domestic PV production and U.S. product sales are up, we risk losing our world market leadership, having dropped from 44 percent in 1996 to 40 percent in 1997, to 35 percent in 1998. Our potential loss of this growing market is exacerbated by a Japanese PV budget, which is three times what we spend in the U.S.

Senator DOMENICI. Mr. Reicher, I note that I have to make a phone call at 10:30. We will come right back to you in about two minutes.

Mr. REICHER. Thank you, Mr. Chairman.

[A brief recess was taken.]

Senator DOMENICI. The hearing will come to order, please.

Would you continue, Mr. Reicher?

BIOFUELS PROGRAMS

Mr. REICHER. Production of ethanol is also on track for widespread domestic use at very competitive prices. As you know, Mr. Chairman, the use of ethanol is a very effective means to reduce our dependence on foreign oil. To compete with today's inexpensive gasoline, our biofuels program focuses on the development of facilities which make ethanol from agricultural and forest waste and from dedicated crops.

Mr. Chairman, Senator Lugar and former CIA director, James Woolsey highlighted the phenomenal potential for waste to ethanol production in a recent article in foreign affairs. I request that it be entered into the record, and you will find it a very interesting discussion of how we can cheaply produce ethanol from waste materials.

Senator DOMENICI. Very good.

[The information follows:]

THE NEW PETROLEUM

[Richard G. Lugar and R. James Woolsey]

WHY CHANGE?

Oil is a magnet for conflict. The problem is simple—everyone needs energy, but the sources of the world's transportation fuel are concentrated in relatively few countries. Well over two-thirds of the world's remaining oil reserves lie in the Middle East (including the Caspian basin), leaving the rest of the world dependent on the region's collection of predators and vulnerable autocrats. This unwelcome dependence keeps U.S. military forces tied to the Persian Gulf, forces foreign policy compromises, and sinks many developing nations into staggering debt as they struggle to pay for expensive dollar-denominated oil with lower-priced commodities and agricultural products. In addition, oil causes environmental conflict. The possibility that greenhouse gases will lead to catastrophic climate change is substantially increased by the 40 million barrels of oil burned every day by vehicles.

Ethanol has always provided an alternative to gasoline. In terms of environmental impact and fuel efficiency, its advantages over gasoline substantially outweigh its few disadvantages. But until now it has only been practical to produce ethanol from a tiny portion of plant life—the edible parts of corn or other feed grains. Corn prices have fluctuated around $100 a ton in the last few years, ranging from half to double that amount. Ethanol has thus been too expensive to represent anything but a small, subsidized niche of the transportation fuel market. In spite of recent reductions in the expense of ethanol processing, the final product still costs roughly a dollar a gallon, or about double today's wholesale price of gasoline.

Recent and prospective breakthroughs in genetic engineering and processing, however, are radically changing the viability of ethanol as a transportation fuel. New biocatalysts—genetically engineered enzymes, yeasts, and bacteria—are making it possible to use visually any plant or plant product (known as cellulosic biomass) to produce ethanol. This may decisively reduce cost—to the point where petroleum products would face vigorous competition.

The best analogy to this potential cost reduction is the cracking of the petroleum molecule in the early twentieth century. This let an increasingly large share of petroleum be used in producing high-performance gasoline, thus reducing waste and lowering cost enough that gasoline could fuel this century's automotive revolution. Genetically engineered biocatalysts and new processing techniques can similarly make it possible to utilize most plant matter, rather than a tiny fraction thereof, as fuel. Cellulosic biomass is extremely plentiful. As it comes to be used to produce competitively priced ethanol, it will democratize the world's fuel market. If the hundreds of billions of dollars that now flow into a few corners in a few nations were

to flow instead to the millions of people who till the world's fields, most countries would see substantial national security, economic, and environmental benefits.

PAYING FOR ROGUES

Energy is vital to a country's security and material well-being. A state unable to provide its people with adequate energy supplies or desiring added leverage over other people often resorts to force. Consider Saddam Hussein's 1990 invasion of Kuwait, driven by his desire to control more of the world's oil reserves, and the international response to this threat. The underlying goal of the U.N. force, which included 500,000 American troops, was to ensure continued and unfettered access to petroleum.

Oil permeates every aspect of our lives, so even minor price increases have devastating impacts. The most difficult challenge for planners, policymakers, and alternative-energy advocates is the transportation sector, which accounts for over 60 percent of U.S. oil demand. The massive infrastructure developed to support gasoline-powered cars is particularly resistant to modifications. It precludes rapid change to alternative transportation systems and makes America highly vulnerable to a break in oil supplies. During a war or embargo, moving quickly to mass transit or to fuel-cell or battery-powered automobiles would be impossible.

For most countries, excluding only those few that will be the next century's oil suppliers, the future portends growing indebtedness, driven by increasingly expensive oil imports. New demand for oil will be filled largely by the Middle East, meaning a transfer of more than $1 trillion over the next 5 years to the unstable states of the Persian Gulf alone—on top of the $90 billion they received in 1996.

Dependence on the Middle East entails the risk of a repeat of the international crises of 1973, 1979, and 1990—or worse. This growing reliance on Middle Eastern oil not only adds to that region's disproportionate leverage but provides the resources with which rogue nations support international terrorism and develop weapons of mass destruction and the ballistic missiles to carry them. Iraqi vx nerve gas and Iranian medium-range missiles show how such regimes can convert oil revenues into extensive and sophisticated armament programs.

IS OIL RUNNING OUT?

Optimists about world oil reserves, such as the Department of Energy, are getting increasingly lonely. The International Energy Agency now says that world production outside the Middle Eastern Organization of Petroleum Exporting Countries (OPEC) will peak in 1999 and world production overall will peak between 2010 and 2020. This projection is supported by influential recent articles in Science and Scientific American. Some knowledgeable academic and industry voices put the date that world production will peak even sooner within the next five or six years.

The optimists who project large reserve quantities of over one trillion barrels tend to base their numbers on one of three things: inclusion of heavy oil and tar sands, the exploitation of which will entail huge economic and environmental costs; puffery by OPEC nations lobbying for higher production quotas within the cartel; or assumptions about new drilling technologies that may accelerate production but are unlikely to expand reserves.

Once production peaks, even though exhaustion of world reserves will still be many years away, prices will begin to rise sharply. This trend will be exacerbated by increased demand in the developing world. As Daniel Yergin, Dennis Eklof, and Jefferson Edwards pointed out in these pages ("Fueling Asia's Recovery," March/April 1998), even assuming a substantial recession, increased Asian needs alone will add enough demand by 2010 (9 million barrels per day) to more than equal Saudi Arabia's current daily production.

The nations of the Middle East will be ready to exploit the trend of rising demand and shrinking supply. The Gulf states control nearly two-thirds of the world's reserves; the states bordering the Caspian Sea have another several percent. Barring some unforeseen discoveries, the Middle East will control something approaching three-quarters of the world's oil in the coming century.

A WHOLE NEW WORLD

If genetically engineered biocatalysts and advanced processing technologies can make a transition from fossil fuels to biofuels affordable, the world's security picture could be different in many ways. It would be impossible to form a cartel that would control the production, manufacturing, and marketing of ethanol fuel. U.S. diplomacy and policies in the Middle East could be guided more by a respect for democracy than by a need to protect oil supplies and accommodate oil-producing regimes. Our intrusive military presence in the region could be reduced, both ameliorating

anti-American tensions and making U.S. involvement in a Middle Eastern war less likely. Other states would also reap benefits.. Ukraine, rich in fertile land, would be less likely to be dominated over time by oil-rich Russia. China would feel less pressure to befriend Iran and Iraq or build a big navy to secure the oil of the South China Sea. The ability of oil-exporting countries to shape events would be increasingly limited.

The recent report by the President's Committee of Advisers on Science and Technology (PCAST) predicted that U.S. oil imports will approximately double between 1996 and 2030, from 8.5 million barrels per day, at a cost of $64 billion, to nearly 16 million barrels per day, at a cost of $120 billion. They estimated, however, that with concentrated efforts in fundamental energy research and investment in renewable fuel technologies, this could be reduced to 6 million barrels per day in 2030. The report concluded,

> A plausible argument can be made that the security of the United States is at least as likely to be imperiled in the first half of the next century by the consequences of inadequacies in the energy options available to the world as by inadequacies in the capabilities of U.S. weapons systems. It is striking that the Federal government spends about 20 times more R&D money on the latter problem than on the former.

FUEL FARMERS

Cellulosic ethanol would radically improve the outlook for rural areas all over the world. Farmers could produce a cash crop by simply collecting agricultural wastes or harvesting grasses or crops natural to their region. Agricultural nations with little to no petroleum reserves would begin to see economic stability and prosperity as they steadily reduced massive payments for oil imports. Even more striking would be the redistribution of resources that would occur if farmers and foresters produced much of the world's transportation fuel. We know from the positive results of micro-credit institutions and other such programs that even small increases in income can be a major boost to a subsistence-level family's prospects. If family income is a few hundred dollars a year, earning an extra $50–$100 by gathering and selling agricultural residues to a cellulosic ethanol plant could mean a much improved life. Such added income can buy a few used sewing machines to start a business or a few animals to breed and sell. It can begin to replace despondency with hope.

There are likely to be even larger effects on rural development if biomass ethanol production can lead a shift toward using plant matter for other products as well, such as biochemicals and electrical energy. The cleanliness of renewable fuel technologies makes them particularly attractive to countries that lack a sophisticated infrastructure or network of regulatory controls. At least some facilities that process carbohydrates should lend themselves to being simplified and sized to meet the needs of remote communities. If such towns can produce their own fuel, some of their fertilizers, and electricity, they will be far better positioned to make their way out of poverty and to move toward democracy and free enterprise. Local economic development can promote political stability and security where poverty now produces hopelessness and conflict.

A major strength of the new technologies for fermenting cellulosic biomass is the prospect that almost any type of plant, tree, or agricultural waste can be used as a source of fuel. This high degree of flexibility allows for the use of local crops that will enrich the soil, prevent erosion, and improve local environmental conditions.

Finally, as recession and devaluations overseas move the American balance-of-payments deficit from the 1998 level—$1 billion every two days—toward nearly $1 billion every day, there will be increased calls for protectionism. The best way to avoid the mistakes of the 1930s is to have a solid economic reason for increasing U.S. production of commodities now bought abroad. The nearly $70 billion spent annually for imported oil represents about 40 percent of the current U.S. trade deficit, and every $1 billion of oil imports that is replaced by domestically produced ethanol creates 10,000–20,000 American jobs.

EASY BEING GREEN

To be politically and economically acceptable, changes in fuel must be understood by the American public to be affordable and not disruptive. Most other countries require the same tough criteria—U.S. difficulties in convincing developing nations to reduce greenhouse gas emissions are directly related to the cost and the damage this would have on their development plans. But if one of the most effective ways to reduce greenhouse emissions also produced an unproved balance-of-payments deficit and opportunities for rural development, economic benefits would suddenly far

exceed the costs. The political acceptability of reducing emissions changes substantially when the economics change. A shift to biomass fuels stands out as an excellent way to introduce an environmentally friendly energy technology that has a chance of both enjoying widespread political and economic support and having a decisive impact on the risk of climate change.

Renewable fuels produced from plants are an outstanding way to substantially reduce greenhouse gases. Although burning ethanol releases carbon dioxide into the atmosphere, it is essentially the same carbon dioxide that was fixed by photosynthesis when the plants grew. Burning fossil fuels, on the other hand, releases carbon dioxide that otherwise would have stayed trapped beneath the earth.

If one looks at the complete life cycle of the production and use of ethanol derived from feed grains, the only addition of carbon dioxide to the atmosphere results from the use of fossil fuel products in planting, chemical fertilizing, harvesting, and processing. But this fossil fuel use can be substantial—up to seven gallons of oil may be needed to produce eight gallons of ethanol. When ethanol is produced from cellulosic biomass, however, relatively little tilling or cultivation is required, reducing the energy inputs. It takes only about one gallon of oil to produce seven of ethanol. There is a virtual consensus among scientists: when considered as part of a complete cycle of growth, fermentation, and combustion, the use of cellulosic ethanol as a fuel, once optimized, will contribute essentially no net carbon dioxide to the atmosphere.

According to a 1997 study done by five laboratories of the U.S. Department of Energy, a vehicle powered by biomass ethanol emits well under one percent of the carbon dioxide emitted by one powered by gasoline. More surprising, however, is that ethanol produced from biomass emits only about one percent of the carbon dioxide emitted by battery-powered vehicles, since the electricity for those is commonly produced by burning fossil fuels at another location. Although local air quality is improved, total carbon dioxide emissions are not curtailed; they are merely exported—for example, from Los Angeles to the Four Corners. Unless the electricity to charge the car's batteries is produced by renewable fuels or nuclear power, electric vehicles are only 20 to 40 percent better as carbon dioxide emitters than gasoline-powered cars. Biomass ethanol beats both by a factor of about 100, fundamentally changing the global-warming debate.

FRINGE BENEFITS

Cellulosic ethanol is the only alternative fuel that requires, at most, very modest changes to vehicles and the transportation infrastructure. One need not spend money retooling Detroit, nor spend years awaiting the gradual replacement of older vehicles by those with new technology. Nor does one need to modify or construct pipelines and storage tanks to hold hydrogen as an alternate to petroleum. This compatibility with today's infrastructure saves billions of dollars and not just years, but decades. Moreover, there is nothing incompatible between using ethanol now in internal combustion engines and using it later in more efficient power systems, such as hybrids or fuel cells.

Essentially all automobiles currently on the road can use fuel containing up to ten percent ethanol. But strict fuel economy standards have encouraged the development and production of flexible fuel vehicles (FFVs) that can use up to 85 percent ethanol. FFVs are already in dealers' showrooms, containing (at no added cost to the consumer) the minor engine modifications—a computer chip in the fuel system and a fuel line made out of slightly different material—that make large-scale ethanol use possible. Even pure ethanol vehicles are quite practical. Brazil has 3.6 million on the road.

Corn ethanol will continue to serve an important role as ethanol production shifts to cellulosic biomass. Commercialization of corn ethanol has provided a base of industrial experience, talented people, and infrastructure from which a much larger cellulosic ethanol industry may be launched. For corn farmers, biomass is no threat; it will probably be a boon. Indeed, there is likely to be a continuing, perhaps even an expanding, market for corn ethanol because of the value of its byproducts, such as animal feed. In general, the transition from corn to cellulosic biomass and from a few producers to many is likely to expand opportunities for American farmers.

BIOENGINEERED BUGS

Ethanol's economic viability depends on making it cheaper to produce. This can be achieved by making it out of cellulosic biomass, which includes essentially anything that grows or has grown: agricultural and forest residues, prairie grass, kudzu, waste wood, used paper products, even much of urban waste. Last year, about 95 percent of the ethanol produced in the United States came from corn. But

agricultural residues and other wastes have low or even negative cost—some you are paid to haul away—while crops like prairie grass cost only a few tens of dollars a ton. This represents a substantial savings in the raw material used in ethanol and puts it within the range of oil, even inexpensive Persian Gulf oil.

Only recently have scientists developed the means to convert cellulosic biomass efficiently into ethanol. The edible portions of corn and other grains easily ferment into ethanol because of their chemical make-up. Most biomass, however, consists of more recalcitrant hemicellulose and cellulose, requiring both the breaking up of these two fibers as well as the fermenting of both five- and six-carbon sugars. This all happens in nature, but two parts of it—fermenting five-carbon sugars and breaking up cellulose quickly—are technically challenging. The first is now done by genetically engineered microorganisms; this tool and other new techniques are now being brought to bear on the second problem.

How far along are these developments? The current efficiency of ethanol processing is somewhat analogous to that of petroleum refining in the early 1900s: after the invention of thermal cracking made it possible to use a major share of the petroleum molecule for gasoline production but before the invention of catalytic cracking opened up an even larger share of petroleum to exploitation. In short, we have come a long way, but still have some inventing to do. The new, genetically engineered microorganisms have already taken us far toward the fermentation of ethanol from a wide range of plant material, laying the groundwork for reductions in processing costs as well.

The new microorganisms, combined with other improvements in processing, fundamentally change the equation for considering ethanol a major transportation fuel. According to a recent study by Dartmouth engineering professor Lee Lynd, utilizing only some of the nation's agricultural and forest residues, with no additional land use, could supply over 15 billion gallons of ethanol a year—more than ten times the amount now produced from corn, and enough to replace around eight percent of the nation's gasoline. (Not all residues would be used, of course, since some must be left for long-term fertility.) Lynd also calculated that taking a little over half of the 60 million acres of cropland historically idled by federal programs for conservation and other purposes, and using for ethanol production the mown grasses with which much of this acreage is ordinarily planted, would produce enough ethanol to fulfill around 25 percent of the country's annual gasoline needs. These calculations use current automobile mileage. Lynd notes that, further mileage improvements, achieved through a shift to hybrids or fuel cells, could obviate the need for gasoline entirely, without taking land from food crops or nonagricultural uses. The coproduction of animal feed and biomass residues from alfalfa and switchgrass is especially promising. There is, in short, no basis for the argument that America does not have the land to produce enough ethanol to make a very large dent in U.S. gasoline consumption.

Biofuels must be produced in ways that enhance overall environmental quality. Sound land-use policies certainly must be followed, to protect wildlife habitat and address other environmental concerns. But professional land-use techniques should readily accomplish this. Alternative fuels are often seen as an unpalatable necessity representing a retrenched standard of living, forced upon us in an age of limits. The opposite may be true. Utilization of renewable fuels will make it possible for us to continue enjoying the freedom afforded by private cars, even as the production of petroleum begins to decline.

THE RIGHT STUFF?

Early this century, Henry Ford expected that ethanol, not gasoline, would be the fuel of choice for automobiles. His reasons are evident. The two fuels can be compared by examining three basic parameters—energy content, octane, and vapor pressure. Pure ethanol contains 69 percent of the energy of gasoline. A lower energy content translates into fewer miles to the gallon; in order to travel the same range, about a 30 percent larger fuel tank is needed (as is used in Brazil). Many scientists believe that optimizing engines for ethanol use will largely compensate for this difference, in part because ethanol is a simple combination of carbon, hydrogen, and oxygen. It is vastly less complex than gasoline, which means that fine-tuning an engine to squeeze every last drop of energy from ethanol is potentially easier.

Octane is the measure of a fuel's ability to oxidize hydrogen and carbon molecules within a fraction of a second. When the reaction is not simultaneous, "engine knock" and inefficient combustion result. Ethanol has an octane rating 15 percent higher than gasoline's. In the 1920s ethanol was briefly considered as a large-scale additive to gasoline to stop the knocking of the new higher compression engines. However, to the detriment of public health, ethanol lost out to highly toxic tetraethyl lead,

for three reasons: in contrast to ethanol, only a small amount of lead was needed as an additive; some were concerned that corn-derived ethanol would compete for land and threaten the feed grains market; and since Prohibition was in effect, many were also worried about the security problems associated with maintaining large volumes of what is essentially 200-proof vodka. Ethanol's ability to be an effective fuel, however, was never an issue.

A third important fuel measurement is vapor pressure, or how readily a liquid evaporates. A fuel's vapor pressure is directly linked to the quantity of vehicle emissions, since over 40 percent of automobile emissions result from evaporation, not tailpipe emissions. Substituting ethanol for gasoline in any amount reduces tailpipe emissions and thus reduces urban smog. Pure ethanol, and any gasoline-ethanol mixture that is more than 22 percent ethanol, has a lower vapor pressure than gasoline and would therefore reduce the amount of evaporative emissions.

Somewhat confusingly, however, blends of ethanol and current gasoline have a slightly higher vapor pressure than pure gasoline when the mixture contains less than 22 percent ethanol, because of the unique mixing properties of the liquids. Some studies show that low-level blends of ethanol and gasoline (like gasohol, which is ten percent ethanol) can actually worsen local air pollution, especially the formation of low-level ozone. Consequently, in cities in the Northeast and California, proposals to encourage the use of ethanol blends have often fallen on deaf ears. Some environmentalists see them as camouflaged subsidies for Midwestern corn growers at the expense of the cities.

But although low-level ethanol blends present complex issues, blends with more than 22 percent ethanol—which can be used in FFVs—do not have the vaporization problem. Moreover, with different approaches to refining and blending gasoline, a solution to the vaporization problem may well exist even at mixtures below 22 percent. Finally, ETBE—an oxygenate made from ethanol that improves gasoline combustion—improves air quality both in tailpipe emissions and vaporization, although its use means the fuel contains five to ten percent ethanol.

Choosing to use cellulosic ethanol is not a choice to forsake more advanced automobile propulsion technologies, such as hybrids and fuel cells. Ethanol is compatible with both. Jeffrey Bentley, vice president of Arthur D. Little, Inc., a company recently honored by the U.S. government for its novel fuel-cell technology, stated that "ethanol provides higher efficiencies, fewer emissions, and better performance than other fuel sources, including gasoline * * *. Where ethanol is available, it will be the fuel of choice by consumers." As both hybrids and fuel cells continue to improve, automobiles powered by them may dramatically reduce air pollution. Ethanol's compatibility with both makes moving toward cellulosic ethanol as a transportation fuel much more desirable.

If government policies promote FFVs, moreover, a large fleet of ethanol-compatible vehicles will be available much earlier than would otherwise have been feasible. This is because FFVs can burn gasoline now but can use cellulosic ethanol as it becomes available. Introducing FFVs into the national fleet differs radically in timing from other changes in transportation. Even if an ideal hybrid or fuel-cell vehicle came on the market, the slow rate of turnover in the nation's cars would mean that it would be many years before its introduction would make a dent in overall fuel use. But moving now to substantially increase the number of FFVs being produced would create the capability to shift to cellulosic ethanol as soon as it is available at attractive prices.

In addition, insofar as U.S. security and environmental concerns are more with the consumption of problem-causing petroleum fuel than with fuel in general, substituting cellulosic ethanol for gasoline improves relevant "mileage" radically, even in internal combustion engines. For example, an average automobile gets approximately 17 miles per gallon and is driven approximately 14,000 miles per year, thus using 825 gallons of gasoline annually. Suppose that same automobile were an FFV using a mixed fuel containing 85 percent cellulosic ethanol. Because of ethanol's lower energy content, it would use about 1,105 gallons of fuel, but only 165 would be gasoline. Such a vehicle could be said to be getting, in a sense, over 80 miles per gallon—of national-security-risk-increasing, carbon-dioxide-producing gasoline.

The one remaining barrier to widespread replacement of gasoline with ethanol is production cost. Relying on feed grains makes this cost comparatively high and volatile, since corn is subject to the caroming behavior of feed markets. In 1995, its price of $100 a ton nearly doubled, forcing a sharp curtailment in ethanol production. A partial shift to biomass should circumvent such instabilities. Over the past 15 years, the cost of producing a gallon of ethanol has been cut in half, to just over $1 a gallon wholesale. If, as predicted, the new biocatalysts, low and steady raw material costs, and improved processing let costs fall another 50 percent or so, ethanol could

compete with gasoline at today's prices. If oil prices rise in the next century, gasoline could actually be at a substantial price disadvantage.

Such a reduction of ethanol cost is entirely plausible for two reasons. First, a simple comparison of energy content reveals that a dry ton of biomass crops—$40 is a reasonable current average cost—is comparable to oil at $10–13 a barrel. Agricultural wastes, in many cases, are considerably cheaper than either: many are free or have negative cost. So the overall costs of cellulosic biomass are likely to at least be in the same ballpark as those of crude oil. Second, further reductions in the cost of processing seem quite achievable. The current cost of processing ethanol is significantly higher than the equivalent price per barrel for oil. But this discrepancy reflects the maturity and sophistication of the petroleum industry, developed over the past century, as compared to the fledgling biofuels effort. Producing ethanol is not inherently more complex than refining petroleum—in fact, just the contrary. The world has simply invested far more effort in the latter.

JUMP-START

While the private sector will provide the capital, and motivation to move toward ethanol, the federal government has a vital role to play. Market forces seldom reflect national security risks, environmental issues, or other social concerns. The private sector often cannot fund long-term research, despite its demonstrated potential for dramatic innovation. Hence, the federal government must increase its investment in renewable energy research, particularly in innovative programs such as genetic engineering of biocatalysts, development of dedicated energy crops, and improved processing. The very small sums previously invested by the Departments of Energy and Agriculture have already spawned dramatic advances. Every effort should be made to expand competitive, merit-based, and peers reviewed science and to encourage research that cuts across scientific disciplines.

Research is essential to produce the innovations and technical improvements that will lower the production costs of ethanol and other renewable fuels and let them compete directly with gasoline. At present, the United States is not funding a vigorous program in renewable technologies. The Department of Energy spends under two percent of its budget on renewable fuels; its overall work on renewable technologies is at its lowest level in 30 years. Because private investment often follows federal commitment, industrial research and development has also reached new lows. These disturbing trends occur at a time of national economic prosperity when America has both time and resources for investing in biofuels. The United States cannot afford to wait for the next energy crisis to marshal its intellectual and industrial resources.

Research alone will not suffice to realize cellulosic ethanol's promise. The federal government should also modify the tax code to spur private investment. The existing renewable alcohol tax credits have recently been extended by Congress through 2007—which will help the growth of the new biofuels industry and offer some protection in the transition from grain to cellulosic biomass. But the tax credit structure should facilitate the gradual adoption of cellulosic ethanol—in time, it should not need subsidies. Government incentives to produce FFVs should also be increased.

Finally, there must be a coordinated effort across the many different federal agencies that oversee government laboratories and regulatory agencies. The analogy to the semiconductor industry is instructive. In 1987, Congress authorized the creation of a government-industry partnership, the Semiconductor Manufacturing Technology Association (SEMATECH). Under the direction of the Department of Defense's Advanced Research Projects Agency, SEMATECH pursued fundamental research in semiconductor components and manufacturing processes. Private firms with innovative ideas were encouraged to devote research dollars to transform the idea into a commercial reality. The few domestic semiconductor manufacturers were brought together in forums where the companies could discuss technical hurdles without sacrificing competitive advantage. Today, the success of SEMATECH is evident, as the high-technology sector demonstrates. Biofuels offer a similar opportunity.

Cellulosic ethanol is a first-class transportation fuel, able to power the cars of today as well as tomorrow, use the vast infrastructure already built for gasoline, and enter quickly and easily into the transportation system. It can be shipped in standard rail cars and tank trucks and is easily mixed with gasoline. Although somewhat lower in energy content, it has a substantially higher octane rating than gasoline, allowing for more efficient combustion. It can radically reduce the emission of global warming gases, help reduce the choking smog of our cities, and improve air quality. It is far less toxic than petroleum, far less likely to explode and burn

accidentally, and far simpler physically and chemically, making possible simpler refining procedures. If a second Exxon *Valdez* filled with ethanol ran aground off Alaska, it would produce a lot of evaporation and some drunk seals.

Our growing dependence on increasingly scarce Middle Eastern oil is a fool's game—there is no way for the rest of the world to win. Our losses may come suddenly through war, steadily through price increases, agonizingly through developing-nation poverty, relentlessly through climate change—or through all of the above. It would be extremely short-sighted not to take advantage of the scientific breakthroughs that have occurred and that are in the offing, accelerate them, and move smartly toward ameliorating all of these risks by beginning to substitute carbohydrates for hydrocarbons. If we do, we will make life far less dangerous and far more prosperous for future generations. If we do not, those generations will look back in angry wonder at the remarkable opportunity that we missed.

Mr. REICHER. As an example, construction recently began in Louisiana of a first-of-a-kind production plant, with 80 percent cost share, that will produce ethanol from sugarcane waste. We are also supporting the development of plants in California and New York that will use rice draw and even municipal solid waste to produce ethanol, again, which can be used in automobiles, to reduce our dependence on foreign oil.

SUPERCONDUCTIVITY

A final example of our technological progress involves superconductivity. Through our innovative industry-laboratory R&D program, superconductivity has rapidly moved from discovery to utility-scale prototypes that carry 100 times the current of conventional copper cables, and this has occurred in only 10 years. I am pleased to note that the world's first super-conducting power line will be installed in Detroit next year.

While we are making tremendous strides in these technologies, we still have much work to do. The competitive revolution and power generation has led to drastic decreases in the price of electricity. Still, renewable energy is already making market in-roads in many states.

The world's largest wind installation is being developed in Iowa. Major new commitments to solar energy in many states, ranging from Massachusetts, to Nevada, to New Mexico, biomass power plants in states such as New York, Ohio, Minnesota, Vermont, and Indiana, and tens of thousands of new geothermal heat pumps in homes, businesses, federal installations, and schools in states as diverse as Wisconsin, Kentucky, North Dakota, and South Carolina.

We are also aggressively pursuing integration of fossil fuel with renewable energy technologies. Projects that combine wind with natural gas and co-firing of biomass with coal demonstrate the opportunities that exist between renewables and fossil fuels.

Mr. Chairman, I look forward to the opportunity to provide a more in-depth discussion of our successes at the upcoming subcommittee hearing on the deployment of renewable technologies.

FISCAL YEAR 2000 BUDGET REQUEST

Our fiscal year 2000 budget request would accelerate the development and market penetration of renewables and advanced power systems. Our request is $325 million, up $53 million, or 19 percent, from this year's enacted level. I would note that this year's request is a small fraction of what Congress appropriated for renewables in the early 1980s.

Let me quickly give you some examples of major program activities in fiscal year 2000. The photovoltaic program will initiate the development of new high-efficiency, multi-junction solar cells to capture and convert one-third of the sun's energy to electricity.

That would be up from 8 to 15 percent conversion today. The biopower program will accelerate development of advanced conversion systems, such as co-firing biomass with coal. The biofuels program will continue its waste ethanol projects and advance its core conversion technology research with universities and national labs.

I would also note that biofuels have the potential to mitigate major environmental problems in the West. Due to suppression of forest fires, large quantities of dead and diseased trees and underbrush have accumulated in the forest, creating a severe fuel loading problem, which threatens human life and property, as well as wildlife and timber resources. Working with states, labs, and industrial partners, we are evaluating forest thinnings for conversion to ethanol and co-generation of electricity.

The wind program will place added emphasis on fuel testing small wind turbine prototypes to verify performance for remote sites, cold weather, and off-grade energy needs. We will also begin testing the next generation of large turbines for major on-grid power production as a major step towards producing power at two to three cents a kilowatt hour.

The geothermal program will focus more resources on high-priority research and technology development for electric power applications. The program will accelerate work to produce an advanced drilling system capable of economically accessing the vast geothermal resources below 10,000 feet. These initiatives will enable the program to achieve its goal of producing power at three cents a kilowatt hour.

I also want to stress, Mr. Chairman, that in fiscal year 2000 we proposed to more than double our hydropower budget to help us maintain and enhance our nation's existing hydroelectric generation, which today provides 10 percent of U.S. electricity.

With more than 200 hydro facilities up for relicensing in the next decade, early indicators suggest than environmental concerns may cause regulators to reduce generation capacities or relicense facilities unless fish mortality and water quality concerns are met. We are developing and completing testing of advanced environmentally friendly hydropower turbine prototypes that will improve water quality and reduce fish kills.

In fiscal year 2000, our hydrogen request will continue a strong core R&D effort to meet the goals in producing the cost of hydrogen production, increasing the energy density and efficiency of our storage systems, and developing low-cost reliable sensors to detect hydrogen leaks. Hydrogen, Mr. Chairman, has a phenomenal potential for clean power production and vehicle propulsion.

SOLE SOURCE VS. COMPETITIVELY AWARDED GRANTS

Mr. Chairman, when I became Assistant Secretary about 17 months ago, I realized that the office faced many management challenges, and I made a major commitment to you to fix them. We have listened to you, to industry, to our other stakeholders, and we have delivered. This committee said we were relying too heavily on

non-competitive mechanisms to disburse funds. We listened and we delivered a dramatic reduction in our use of non-competitive funding mechanisms.

The Office of Power Technologies, which represents the bulk of the funding from this subcommittee, has increased its level of competition to 93 percent, including congressionally directed activities.

Close to 100 activities previously funded by sole source contracts within the Energy and Water Development account in fiscal year 1998 will now be competitively awarded. In 1998, we competed the $1 billion management and operating contract for the National Renewable Energy Lab, the first time it was competed in 15 years.

Across all of our offices we have reduced uncosted balances by more than 58 percent since the beginning of fiscal year 1996. I am very proud of this progress.

We realize, however, that our work to improve the way we do our business is by no means complete, and so we have established a new office management improvement team, and we are working with the National Academy of Public Administration to improve our procurement. The National Academy of Sciences is also conducting a broad review of our R&D programs.

We are also trying to break down the stovepipes that have often separated our various offices. Our bioenergy initiative, for example, is helping us to better integrate our important work in bio-power, biofuels, and bioproducts.

PREPARED STATEMENT

So in conclusion, Mr. Chairman, we have accomplished a great deal over the last two decades. We have set aggressive, but achievable goals. We have improved our management, and we have requested a realistic budget. We hope that in light of our success and our commitment we can earn this subcommittee's support.

I am happy to respond to questions. Thank you.

Senator DOMENICI. Thank you very much for an excellent statement.

[The statement follows:]

PREPARED STATEMENT OF DAN W. REICHER

Mr. Chairman and members of the Subcommittee, I am pleased to have the opportunity to appear before you today to discuss the Energy and Water Development portion of the fiscal year 2000 budget request for the Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE). I will address three areas related to Solar and Renewable Resource Technologies: (1) the tremendous technological progress that has been achieved to date; (2) what we will accomplish with the resources proposed in the fiscal year 2000 budget; and 3) important management improvements we have instituted within EERE.

Technology Progress

Twenty years ago renewable energy was generally produced at a very high cost and in an inefficient manner. Advanced power delivery system components and high temperature superconducting materials did not even exist, and the alternative transportation fuel sector was very immature. We have come a long way.

For example, the cost of electric power from wind turbines in 1980 ranged from $0.30–$0.40 per kilowatt-hour (kWh). Through aggressive R&D by EERE and its industry partners on wind turbine aerodynamics, materials development and computer-aided design, we have been able to reduce the costs to between $0.04 and $0.06 per kWh. At this price, wind systems are entering the marketplace, expanding from the early California windfarms to include States ranging from Vermont to Alaska and from Minnesota to Texas. Wind energy systems are also poised to ex-

pand into other Great Plains and Northeastern locations, such as Oklahoma, Wisconsin the Dakotas, Maine, and New York. We are also working on Next Generation Turbines to reduce the cost of electricity from wind even further—to as low as 2 ½ cents per kWh by 2002. This cost will enable wind to compete in many regions of the U.S.

As another example, the first commercially-available photovoltaic (PV) systems in the early 1980s produced power at a cost of more than $1.00 per kWh. By fiscal year 2000, PV systems will be delivering electricity for as low as $0.12–$0.20 per kWh—depending upon the specific technology—making clean, reliable PV systems competitive in many remote and on- grid sites here in the U.S. and around the globe. By 2010 we project PV-generated electricity will drop to $0.10 per kWh. At this price solar would be a competitive power option in many urban and suburban areas where transmission and distribution systems are constrained and also in rural areas across the entire United States where distribution costs are too high. Improved materials manufacturing techniques and energy conversion improvements—most supported by DOE and its laboratories—have made and will make these cost reductions possible and have facilitated the resurgence of the U.S. PV industry as the world's leader in this $1.2 billion global industry, which grew 95 percent between 1995 and 1998. With large manufacturing plants in Virginia, Maryland, California, Michigan, Delaware and Massachusetts, the solar industry is a growing part of the U.S. economy. However, global competition is fierce. While both domestic PV production capacity and U.S. product sales are up, the U. S. risks losing its world market leadership, having dropped from 44 percent in 1996 to 40 percent in 1997 to 35 percent in 1998. Our potential loss of this growing market is exacerbated by a Japanese PV budget that is three times what we spend in the U.S. ($240 million in Japan in fiscal year 1999 vs. $72 million in the U.S. in 1999).

Production of ethanol is also on track for widespread vehicle use at competitive prices. To compete with today's inexpensive gasoline, our biofuels program focuses on the development of facilities that make ethanol from agricultural and forest wastes and dedicated crops. Construction recently began in Jennings, Louisiana, on a "first-of-a-kind" production plant with 80 percent industry cost-sharing that will produce ethanol from sugarcane waste. This 20-million gallon facility is scheduled to come on-line in the year 2000 with initial ethanol production costs of $1.00 per gallon, putting us well on-track for the program's 2010 production cost goal of $0.72 per gallon. We are also supporting the development of demonstration plants in California and New York that will use rice straw and municipal solid waste to produce ethanol. Additionally, we are studying ways to add facilities to existing corn-ethanol plants to produce ethanol from corn stalks and leaves. R&D on ethanol technology is very important to our future energy security. By 2020 net U.S. oil imports, which accounted for about 50 percent of domestic petroleum consumption in 1998, will grow to 65–70 percent of domestic petroleum consumption—with an annual oil bill ranging from $130 billion to more than $180 billion in current dollars.

A final example of technological progress involves Superconductivity, a property of certain special materials allowing them to carry large electrical currents without resistance energy losses. While we have known about superconductivity for nearly a century, hurdles such as ultra-low temperature requirements stymied the development of commercial applications. Then Nobel prize-winning discoveries in the late 1980s opened the possibility for practical uses of these technologies to improve the efficiency and performance of the electricity sector. Through EERE's innovative industry/laboratory R&D program, High-Temperature Superconductivity (HTS) has rapidly moved from discovery to utility-scale prototypes that carry 100 times the current of conventional cable in only ten years. I am pleased to note that the world's first superconducting power line will be installed in Detroit in the fall of 2000. Installed more widely, superconducting power lines and equipment would increase capacity, efficiency and reliability during the crucial period ahead when competition will bring new (and unplanned) stresses on our national electrical system.

While we are making tremendous strides in these technologies, we still have much work to do. The competitive revolution in the power generation sector has led to drastic decreases in the price of power from new sources of generation. For example, natural gas-fired combustion turbine technology produces electricity for about $0.03 per kWh. Given the low domestic market prices of fossil fuels, market penetration of renewable energy technologies is occurring more quickly in remote locations domestically and also overseas where the cost of electricity is generally much higher than in the U.S. Still, renewable energy is already making market inroads in many states: the world's largest wind installation in Iowa; major new commitments to solar energy in at least 15 states ranging from Massachusetts to Illinois to Arizona; biomass power plants in states such as New York, Ohio, Minnesota, Vermont and Indiana; and tens of thousands of new geothermal heat pumps in

homes, businesses, schools and Federal installations in states as diverse as Indiana, New Jersey, Kentucky, Nevada and Utah.

We are also aggressively pursuing integration of fossil fuel with renewable energy technologies. Projects such as hybrid wind/natural gas and co-firing of biomass with coal demonstrate the opportunities between renewables and fossil fuels.

With this remarkable progress over the past two decades, we have established a firm foundation for major market success of renewables and advanced power delivery systems in the coming years.

Fiscal Year 2000 Program Focus

Our fiscal year 2000 budget request of $398.9 million—an 18.7 percent increase over fiscal year 1999—would help us accelerate the market success of renewables and advanced power delivery systems. The budget request has three central objectives. First, we will accelerate U.S. technological progress by funding, in cooperation with industry and other partners, a balanced and integrated portfolio of research and development on renewable energy and power delivery technologies capable of meeting the diverse needs of the competitive electricity marketplace in the 21st Century. Second, we will improve environmental quality through increased use of non-polluting renewable energy technologies and advanced electric power systems. Third, we will expedite the transfer of technology and manufacturing process improvements to U.S. industries which will enable them to increase the deployment of their energy systems in the United States and to better compete for expanding export markets in other countries. The programs will help us achieve two important goals for 2010: (1) Tripling the installed U.S. electricity generation capacity of geothermal, biomass, wind, and solar; and (2) developing ethanol from wastes and dedicated crops as a cost competitive (less than $0.75 per gallon) domestically-produced blended transportation fuel.

Some examples of major program activities in fiscal year 2000 that will help us achieve these objectives include:

Photovoltaics.—The photovoltaic program will initiate development of new high-efficiency, multi-junction solar cells to capture and convert ⅓ of the sun's energy to electricity (the concentrator cell will be 33 and ⅓ percent efficient). The program will also continue efforts to reduce manufacturing costs and increase durability of PV systems, extending their lifetimes to greater than 25 years by 2004.

Biopower/Biofuels.—In fiscal year 2000, the biopower program will accelerate development of advanced conversion systems such as co-firing with coal that offer economic, near-term reductions in carbon emissions. In addition, the program will also continue its three highly cost-shared, biomass power projects in Minnesota, Iowa, and New York that will confirm the economic feasibility of integrated biomass power projects and provide a vital stimulus to rural America.

The fiscal year 2000 biofuels program will continue its waste-to-ethanol and corn ethanol projects, and advance its core conversion technology research with universities and the national laboratories through a highly competitive process. It will also co-fund the regional biomass and feedstock development programs essential for geographically-appropriate, genetically superior biomass material.

Wind.—In fiscal year 2000, the Wind program will place added emphasis on field testing small wind turbine prototypes to verify performance for remote site, cold weather, and off-grid energy needs. The first Next Generation Turbine prototypes—large turbines for major on-grid power production—will also begin testing, a major step towards achieving the market- driven 2002 goal of 2½ cents per kWh in good winds.

Geothermal.—The Geothermal program will focus more resources on high-priority research and technology development for electric power applications. In particular, the program will initiate a cost-shared enhanced geothermal system (EGS) at an existing geothermal field, putting the U.S. at the forefront of global competition to achieve the first full-scale EGS capable of sustained operation. Additionally, the program will accelerate work to produce an advanced drilling system capable of economically accessing the vast geothermal resources below 10,000 feet. These initiatives will enable the program to achieve its long-term strategic goals, including the technology-based cost target of $0.03 per kWh.

Hydropower.—In fiscal year 2000, we are more than doubling our hydropower budget request to help us maintain and enhance our Nation's existing hydroelectric generation which today provides 10 percent of U.S. electricity. With more than 200 hydropower facilities up for relicensing in the next decade, early indicators suggest that environmental concerns may cause regulators to reduce generation capacities for relicensed facilities unless fish mortality and water quality concerns are met. EERE is developing and completing testing of advanced environmentally-friendly

hydropower turbine prototypes that will improve water quality and reduce fish kill so that we can retain our current hydropower capacity of 75,000 MW.

Hydrogen.—In fiscal year 2000, our request will continue a strong core research and development effort to meet the goals of reducing the cost of hydrogen production, increasing the energy density and efficiency of solid state storage systems, and developing low-cost, reliable sensors to detect hydrogen leaks for a number of applications. The program will also support the accelerated development of hydrogen vehicle fueling stations in a 50/50 cost-shared venture with industry, vehicle mounted storage systems, reversible fuel cells that can be integrated with renewable energy systems and small fuel cells for remote power applications.

Superconductivity.—In fiscal year 2000 US leadership in this critical 21st Century technology will be visible through several ground breaking program successes. In addition to the Detroit cable project already mentioned, an advanced and environmentally friendly 10 megavolt ampere transformer will be installed in a Milwaukee substation—the world's first to supply power to a manufacturing facility. Also, testing will continue of the world's largest superconducting motor (1000 horsepower—installed fiscal year 1999). Superconducting transformers and motors will be half the size of conventional alternatives and have only half the energy losses. Another expected breakthrough will be the continuous manufacture of an entirely new type of superconducting "tape" based on discoveries at Los Alamos and Oak Ridge National Laboratories. This new "tape," which can now only be made in short samples, offers unprecedented performance potential: two thin one centimeter-wide metal tapes coated with this new superconducting material will be able to carry the same electric load as a very large, complex copper cable.

Competitive Solicitation.—In fiscal year 2000 we propose to create an integrated Competitive Solicitation field validation program that combines the best elements of the earlier Renewable Indian Energy program and the Federal Buildings and Remote Power programs. Highly cost-shared, and technologically and regionally-diverse projects under this new solicitation will accelerate the development and use of the most promising renewable and hybrid renewable/fossil energy systems, leveraging as much as $30 million annually in new renewable energy projects.

Management Improvements

When I became Assistant Secretary seventeen months ago, I realized that EERE faced many management challenges and committed to fix them. This Subcommittee also highlighted several issues. We have listened to you—and to industry and other partners—and we have delivered.

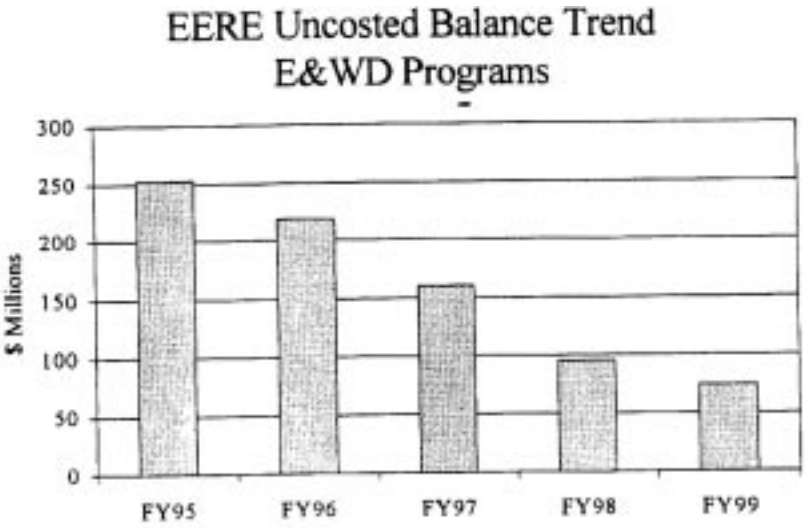
Competition.—This Committee said that EERE was relying too heavily on non-competitive mechanisms to disburse funds. We listened and we delivered a dramatic reduction in our use of non-competitive funding mechanisms. As you can see from the chart below, our use of broad-based solicitations, program management directives, and an increased emphasis on competition for laboratory subcontracts, has brought our level of competitive awards by the Office of Power Technologies (OPT) to 93 percent (including Congressionally-directed activities). This represents a reduction in OPT's discretionary use of sole source mechanisms by almost 60 percent in one year. Close to 100 activities previously funded by sole-source contracts within EERE's Energy and Water account in fiscal year 1998 will be competitively awarded in fiscal year 1999. This is a major success.

In 1998 we also competed the $1 billion management and operating contract for the National Renewable Energy Laboratory, the first time it has been competed in 15 years. The resulting contract with a partnership of three outstanding organizations—the Midwest Research Institute, Battelle, and Bechtel—strengthens the laboratory's management team and sharpens its mission focus.

Uncosted Balances.—This Committee also said that EERE's uncosted balances were too high. Again, we listened and we delivered. Across all of EERE, we have reduced uncosted balances by more than 58 percent since the beginning of fiscal year 1996.

Within the Solar and Renewables R&D account we have made even greater progress, reducing uncosted balances by 62 percent since fiscal year 1996. By the end of fiscal year 1999, we will have reduced these balances by more than $175 million versus the beginning of fiscal year 1996. This Committee also highlighted the use of support service contractors. We listened and significantly reduced the proportion of funding directed to support service costs and established more streamlined procurement and business practices.

Management Practices.—While we are proud of the progress we have made, we realize that our work to improve the management of EERE is by no means complete. For example, I have just established a new Management Improvement Team composed of senior managers from across the various EERE sectors as well as representatives from our National Laboratories, the Golden Field Office, and various DOE Offices to improve the corporate management processes and procedures. We expect recommendations from this team will increase our ability to competitively award even more funding in fiscal year 2000 on a competitive basis. Also, we are working with the National Academy of Public Administration (NAPA) to undertake an independent review of our financial management and procurement practices. This review should be completed by the end of October 1999.



Planning and Evaluation.—We are also developing smarter strategies and carefully measuring progress in our core mission. We are developing a new office-wide strategic plan and using technology "roadmaps"—jointly developed with industry—to ensure we are in step with the needs and goals of the marketplace. We are making greater use of the Government Performance and Results Act and peer-reviewed measures of our technology progress. For example, we have commissioned the National Academy of Science to conduct an independent peer review of the Office of Power Technologies R&D programs. These tools and practices will help provide the data and analysis necessary to help make smart—and sometimes difficult—management choices such as our recent decision to end work on the solar power tower program in fiscal year 2000. Finally, just as any business must do to stay competitive, we are working with the Department's Workforce 21 Initiative to ensure we have the right training, skills, and human resources available to fulfill our challenging missions.

Program Integration and Expanded Partnerships.—One of our major management challenges is breaking through the "stovepipes" that often separate our various missions. This is important because the solutions to many of our renewable energy and energy efficiency challenges cross technology and market lines. For example, in the biomass area both the private sector industries (i.e., fuels, electric power, and chemical products) and our own power, industrial, and transportation programs have traditionally operated separately from each other. Leading initiatives designed to better integrate our work include those in Bioenergy, EnergySmart Schools, and Distributed Power.

As part of our efforts to integrate our biomass work, we are launching a cross-cutting Bioenergy Initiative. Biomass represents a tremendous, untapped, domestic resource for our energy future, particularly as an alternative to imported oil. By investing in a bioenergy industry today, we can cultivate and harness renewable biomass resources to fuel our cars, power our homes and businesses, and supply our chemical needs in the 21st Century. The Department of Energy, along with other federal agencies and private partners, is launching a national partnership to develop an integrated industry to produce power, fuels, and chemicals from crops, trees, and wastes. By making a "ton of biomass" a viable market competitor to a barrel of imported oil, this initiative will help grow the U.S. economy, strengthen U.S. energy security, protect the environment, and revitalize rural America. This effort will integrate the work from existing DOE R&D in transportation biofuels, biomass power and programs with the forest products and agriculture industries. It is only through the integration of these efforts that biomass will be an effective competitor to imported fossil fuels.

The EnergySmart Schools initiative is an EERE-led partnership that brings together public and private sector resources to reduce the $6 billion in annual energy

bills of our Nation's schools and redirect the savings to our children's education. EnergySmart Schools will help to reduce energy consumption and expand the use of clean energy technologies in new and existing schools, improve the learning environment, and increase awareness of energy-related issues. It is estimated that this initiative—which will coordinate and build on the work of existing EERE programs such as Rebuild America, the State Energy Program, the Million Solar Roofs Initiative, Clean Cities, Energy Star, and the and potential projects under the proposed Solar Program Support/Competitive Solicitation program—will help schools save up to $1.5 billion in energy costs and lower carbon emissions by 10 million metric tons by 2010 as they incorporate state-of-the-art energy efficiency and renewable energy technologies. Through the EnergySmart Schools partnership, we will provide technical assistance, demonstrate renewable and energy efficiency technologies, and offer guidance on financing and building design.

EERE is also pursuing a new initiative to encourage the development and use of distributed power technologies—i.e., the generation of power at or near the point of use. Many technologies can be used in a distributed manner, including wind, photovoltaics, combined heat and power, concentrating solar power, fuel cells, gas microturbines, hydrogen production and storage, battery and flywheel energy storage, and hybrid renewable/fossil power systems. The benefits of the distributed approach to power generation include reduced consumer costs through increased system efficiencies, reduced environmental emissions, and increased reliability. Our approach to achieving the benefits is three-pronged: (1) R&D to facilitate introduction of distributed power applications, such as the development of modular renewable and fossil energy systems that can be scaled to need; (2) addressing crosscutting regulatory/institutional issues such as our work with the Institute of Electrical and Electronics Engineers (IEEE) to develop consensus-based interconnection standards; and (3) developing policy options for possible inclusion in electricity restructuring legislation.

Another challenge we are pursuing is to better leverage our resources and facilitate technology deployment by expanding partnerships with Federal, State, industry, and other entities. These partnerships involve other Offices within the Department of Energy including the Office of Fossil Energy (FE) and the Office of Science (OS) as well as other Federal agencies including the Department of Defense, NASA, the U.S. Department of Agriculture, the Department of the Interior, and the Environmental Protection Agency. For example, we work with FE as we implement our advanced geothermal drilling and biomass co-firing with coal programs, and OS is a partner for fundamental research on photovoltaic and superconducting materials and biomass feedstock genetics.

At the State and regional level, we have developed closer working relationships with State and tribal organizations including the Association of State Energy Research and Technology Transfer Institutions (ASERTI), the California Energy Commission (CEC), the New York State Energy Research and Development Agency (NYSERDA), and the Council of Energy Resource Tribes (CERT). For example, the Wind Energy program is coordinating R&D with the California Energy Commission and an industry partner to develop one of EERE's two Next Generation Turbines.

Of course, in addition to our National Laboratories, our programs will continue to tap the innovation and expertise available at the many fine universities across the country. We will also continue to leverage resources and ensure market acceptance of the technologies we develop by pursuing cost-shared partnerships with the Nation's industries, utilities and other power providers, and other leaders in the energy field. For example, we are working with 18 universities across the U.S. to research innovative new photovoltaic conversion technologies and we have an extensive research partnership with the Electric Power Research Institute (EPRI) to accelerate development of superconducting wire, transmission cables, and motors.

OVERVIEW OF THE FISCAL YEAR 2000 REQUEST FOR SOLAR AND RENEWABLE ENERGY TECHNOLOGIES

Our fiscal year 2000 program level for Solar and Renewable Energy Technologies is $398.9 million—an increase of $62.9, or 18.7 percent million over fiscal year 1999. The bulk of the EERE Energy and Water Development Appropriation supports the work of the Office of Power Technologies ($325.2 million). This office works with electric service providers and related industries to advance clean, competitive and reliable power technologies. We develop renewable energy technologies that use solar, wind, hydropower, geothermal and biomass energy resources and conduct R&D that will enable a hydrogen energy infrastructure in the future. Our program also develops advanced technologies—including high temperature superconducting materials, real-time power system controls, and energy storage—that will improve

the energy efficiency and cost-effectiveness of the nation's electric systems. Finally, the program facilitates the export of renewable energy power generation internationally.

Included in the Energy and Water Development Appropriation is $53.4 million for the Office of Transportation Technologies to support R&D on production of biomass-based transportation fuels. The requested funds also include $19.2 million for Program Direction, which provides the Federal staffing resources and associated funding to support the management and oversight of the Solar and Renewable programs.

Table 1 on the following page summarizes our total fiscal year 2000 budget request, together with the appropriations for fiscal year 1999 and fiscal year 1997. In the following sections, I describe the details of the request. For each major line of the budget, I identify changes relative to fiscal year 1999 appropriations and describe program specifics and reasons for the requested funding change.

SOLAR AND RENEWABLE RESOURCE TECHNOLOGIES

[In millions of dollars]

	Fiscal year			
	1998	1999	2000 Request	1999–2000 Change
Solar Building Technology Research	2.6	3.6	5.5	+1.9
Photovoltaic Energy Systems	64.7	72.2	93.3	+21.1
Concentrating Solar Power	16.3	17.0	18.9	+1.9
Biomass/Biofuels Energy Systems—Power Systems	27.8	31.5	39.0	+7.5
Wind Energy Systems	32.1	34.8	45.6	+10.8
Renewable Energy Production Incentive	3.0	4.0	1.5	−2.5
Solar Program Support [1]	.....	.....	10.0	+10.0
International Solar Energy Program [2]	1.4	6.4	6.0	−0.4
Geothermal Energy Systems	28.7	28.5	29.5	+1.0
Hydrogen Research	15.8	22.3	28.0	+5.7
Hydropower Development	0.7	3.3	7.0	+3.7
Renewable Indian Energy Resources [1]	3.9	4.8	.....	−4.8
Electric Energy Systems and Storage	42.3	40.1	41.0	+0.9
Federal Buildings/Remote Power Initiative [1]	4.9	4.0	.....	−4.0
Power Technologies	245.2	272.3	325.2	+52.9
Biomass/Biofuels Energy Systems—Transportation	30.3	41.8	53.4	+11.6
National Renewable Energy Laboratory	3.2	3.9	1.1	−2.8
Program Direction	15.7	18.1	19.2	+1.1
Subtotal, Solar and Renewable Energy	294.4	336.0	398.9	+62.9
Use of Prior Year Balances	−24.4	.....	−0.8	−0.8
Total, Solar and Renewable Energy	269.9	336.0	398.1	+62.1

[1] The fiscal year 2000 Budget proposes to consolidate the Renewable Indian Energy Resources and the Federal Buildings and Remote Power programs through a competitive solicitation under Solar Program Support ($10.0). This budget line would also include $2M for electricity restructuring.

[2] Excludes funding for international energy efficiency programs under Energy Conservation.

SOLAR BUILDING TECHNOLOGY RESEARCH

The request for Solar Building Technology Research is $5.50 million, an increase of $1.90 million from current levels. This funding will be used to make solar water heaters an economically attractive option for families across the U.S. by 2003. It will enable the Department to develop a new generation of solar water heaters that is 50 percent less expensive than today's technology (from $0.08/kWh to $0.04/kWh delivered energy cost). This would enable a family to buy a solar water heater for about $1,000 and see their investment returned in energy savings within four years. To accomplish this, the program is divided into three areas: Technology Development ($4.7 million), Field Validation ($0.5 million), and Quality Assurance ($0.3 million).

Within Technology Development (up $1.2 million), researchers will select two of the concepts under study that are most likely to enable the program to reach its cost goal. Development of these concepts will then become the focus of the program during fiscal year 2000. It is likely that one or both of these systems will use polymers, including advanced plastics, as a replacement for the steel, glass, and copper that make up current solar water heaters. Since polymers are inexpensive and light weight, their use will reduce the cost of the solar collector and lower the cost of installation. Work will include testing to determine performance, ability to withstand freezing and overheating, and weather degradation. Materials research will be an important aspect of this work as several polymers formulations will be tested to see which are best suited to long term exposure to solar radiation.

In Field Validation (up $0.5 million) cooperative projects with utilities and builders will address some of the technical barriers that limit the use of solar water heaters. A Cooperative Research and Development Agreement with the Salt River Project (a utility serving the Phoenix region) will be completed that develops a roof integrated solar water heater that can provide hot water at a levelized cost of $0.06 to $0.07/kWh. This project, as well as projects with the Wisconsin Public Service and Lakeland Electric, is driven by restructuring of the electric industry as utilities seek to provide additional products and services to their customers. In addition, solar technical support will be provided to builders such as Pulte Homes, the second largest builder of U.S. homes, and CAVCO, one of the largest builders of manufactured homes. All efforts in this portion of the program are limited to R&D activities that include system evaluation, analysis of system performance, and assistance in solving problems such as materials degradation and corrosion that industry cannot address by itself.

Quality Assurance (up $0.2 million) funding will be used to address the reliability of solar water heaters, a primary customer concern. Performance and repair data from hundreds of systems that have operated for at least five years will be analyzed to identify the components and subsystems most in need of improvement. This data will be used to refine computer models that predict the reliability of solar water heating systems. This information will help the solar industry improve the reliability of its product and provide guidance to the researchers developing the new generation of solar water heaters.

PHOTOVOLTAIC ENERGY SYSTEMS

The request for Photovoltaic Energy Systems is $93.3 million, an increase of $21.1 million from fiscal year 1999. The Photovoltaic Energy Systems program conducts a balanced portfolio of R&D activities that help U.S. industry to develop photovoltaic technology as a clean, competitive, reliable energy supply option, and to maintain technological leadership over strong international competition. The increase in fiscal year 2000 will primarily be used to support basic research to dramatically reduce dollar per watt values for photovoltaics in the long term, and to support technology development and deployment to incrementally reduce costs in the near term. Based on a multi-year technology plan that has been developed in close partnership with industry, this balanced program focuses on three key activities that industry and other stakeholders have cited as the most critical to maintaining and advancing our lead in PV technology and products: Fundamental Research ($20.3 million), Advanced Materials and Devices ($27.0 million), and Collector Research and Systems Development ($46.0 million).

The Photovoltaic Energy Systems program is working hard to increase competition and reach out to a broader cross section of the industry. For example, the Million Solar Roofs Initiative is forming new partnerships all across the country with builders, solar equipment manufacturers, city planners, financial institutions and utilities. Furthermore, the fiscal year 2000 increases for basic research will be used to issue competitive solicitations to a larger section of the research community seeking new ideas on non-conventional, breakthrough technologies.

Today, the U.S. stands as the world leader in photovoltaic technology, with our industry garnering 35 percent of total sales in 1998. This has not always been the case, however, nor is it guaranteed to continue. Leadership in photovoltaic technology was lost in the mid 1980's because of strong international support for PV development. As a result of our expanded support for advanced technology research and other DOE-industry partnership programs, the U.S. was able to recapture the lead in global market share for photovoltaic modules in 1993. However, in the past two years U.S. leadership has eroded, from 44 percent of total sales in 1996 to 40 percent in 1997 to 35 percent in 1998.

The U.S. photovoltaic industry faces intense competition from Japan and Europe, which are aggressively researching and marketing their PV technology. For exam-

ple, Japan's fiscal year 1999 budget for photovoltaics is 28.54 billion yen (approximately $240 million), which is more than three times our funding level. Half of Japan's budget is used to subsidize the purchase of residential PV systems. As a result, Japan's PV industry sales grew 40 percent in 1998 and are on pace to take over world leadership by the end of this year.

To maintain U.S. leadership—and to penetrate new, larger markets such as energy service providers and building applications—the cost of PV systems must be more competitive with other sources of electricity. Critical improvements in conversion efficiency, manufacturing, reliability and system life are essential. The increased funding request will enable the PV program, in cooperation with U.S. industry partners, to continue the research needed to resolve these technical problems.

Funding for Fundamental Research (up $9.3 million) will continue world-class research at national laboratories and universities on advanced concepts for improved technology in the post-2000 time frame. Activities will include continued research on several photovoltaic semiconductor materials to resolve issues that limit current technology. This work will advance the understanding of new and improved materials, cell structures, layer growth processes, semiconductor theory and material characterization methods.

Starting in fiscal year 2000 we will begin a High Performance PV Initiative to support research to substantially increase the efficiency of two key technologies: large area, single crystal interconnected thin films, and multi junction concentrator cells made from elemental (III–V-based) materials such as antimony, arsenide, gallium, phosphorous, indium, or nitrogen. Fundamental research aimed at major innovations is required to essentially double the conversion efficiency of thin films from their current 8–10 percent to 15–20 percent, and to increase III–V-based multi junction cells from 30 percent to 40 percent under 500X solar concentration. Successful development of a 40 percent efficient four-junction laboratory cell will allow a 33 percent efficient concentrating module under a solar concentration of 500X, thereby capturing one third of the sun's energy. Both the enhanced thin film approach and the multi junction III–V approach will yield dramatically reduced dollar per watt values for terrestrial photovoltaics. Also new in fiscal year 2000 will be a competitive solicitation on basic R&D for breakthrough, non-conventional PV technologies, such as liquid cells, polymers, biochemical and biomimetic processes, etc., aimed at dramatic cost reductions. Both of these new basic research activities will be core program efforts to meet the Program's long term goals of $0.06/kWh electricity.

Advanced Materials and Devices (no change) will continue collaborative research with industry to improve device efficiency and stability, particularly for large-area, thin-film deposition systems. The centerpiece of this activity is the Thin Film Partnership Program, a government/industry/university partnership program to accelerate development of cost-effective thin film technologies. Photovoltaic devices employing thin-film technology significantly reduce the amount of semiconductor material required for power generation. Also, because such devices are amenable to mass production, they offer significant potential for cost reduction—which would make possible widespread use of such technologies as PV shingles. Module reliability research will continue to support testing of modules to improve operational lifetime in the field.

Collector Research and Systems Development increases (up $11.8 million) will be used to help reduce manufacturing costs of photovoltaics, develop building integrated products, accelerate electric utility use of photovoltaics, and expand work in support of the million solar roofs initiative. Key to maintaining U.S. competitiveness over the next five to ten years, manufacturing process research and development under the Photovoltaic Manufacturing Technology (PVMaT) partnership will continue cost-shared research with industry to reduce module manufacturing costs, improve module performance, and stimulate investment in new manufacturing production lines. As a result of this cost-shared R&D with industry, average manufacturing costs for DOE partners have declined by 50 percent since PVMaT began and are expected to decline by another 40 percent by 2004. In fiscal year 2000, a PVMaT competitive solicitation to develop new in line process diagnostics and state-of-the-art measurement and characterization equipment needed for module scale-up will be issued, resulting in 5–7 new industry cost-shared contracts. A new solicitation will be issued for highly leveraged utility projects designed to provide utilities with hands-on experience with PV systems, and validate technical and economic performance in specific high-value applications such as building integrated applications. A portion of the increase will also be used to fully fund Phase 3 building integrated contracts under the PV:BONUS program, which supports cost-shared efforts with industry and others to develop PV products that can be integrated into commercial and residential buildings.

In addition, a part of the increase in Collector Research and Systems Development (up $1.5 million) will be targeted at specific activities that support the million solar roofs initiative. An important goal of this initiative is to help develop a significant domestic market for U.S.-manufactured solar energy systems, to provide a firm base for U.S. industry expansion and market competitiveness. Without such a base, as is being actively pursued in other countries such as Germany and Japan, it is likely that PV systems will become an example of technology developed here but exploited abroad.

In fiscal year 2000, the Million Solar Roofs Initiative will work with 25 State and Local Partnerships across the nation which have made preliminary commitments to install over 750,000 solar energy systems by 2010. These Partnerships work to eliminate barriers to the use of solar energy and create market demand. The members of the Partnerships often include utilities and energy services companies, builders and developers, financial institutions, solar equipment manufacturers and distributors, local government, state and Federal agencies and other solar energy interests. Work will be expanded that includes development of additional financing mechanisms, elimination of technical barriers like the safe interconnection of photovoltaics to the utility grid, technical training and establishment of net metering. Establishment of the national Million Solar Roofs registry to track system installations will also be fully implemented. Additionally, the Initiative will also work to ensure that solar energy systems meet the requirements and standards of state and local codes and standards. To ensure that the Initiative is responsive to the State and Local Partnerships, the DOE Regional Support Offices will coordinate Federal support and provide technical assistance. As the largest single user of energy in the U.S., the Federal government is committed to installing 20,000 solar energy systems on its own facilities by 2010. In fiscal year 2000, the Initiative has an interim goal of 2,000 Federal solar energy installations.

CONCENTRATING SOLAR POWER PROGRAM

The fiscal year 2000 funding request for the Concentrating Solar Power (CSP) Program (formerly the Solar Thermal Energy Systems program) is $18.85 million (up $1.85 million). The CSP Program leads the national effort to develop clean, competitive, and reliable power options using concentrated sunlight. Ranging in size from several kilowatts to multi-megawatt installations, CSP systems can satisfy substantial domestic and international energy needs, contributing up to 20,000 MW by the year 2020. Consequently, CSP systems are also expected to make a significant contribution to the U.S. effort to reduce carbon emissions in the early part of the 21st Century. An advantage of concentrating solar power systems is the capability of being deployed as either a distributed power system or as a dispatchable power system (when hybridized), or both.

In response to the changes brought on by utility restructuring and the resulting emphasis on competition, the CSP program has revised its focus from developing specific technologies to providing technology options to U.S. industry that will enable them to compete in near-term renewable energy markets and further reduce the costs for long-term penetration of broader energy markets. This paradigm shift has led to the four new program technology paths described below.

Under the first path, Distributed Power Systems, ($6.7 million requested, up $1.4 million) the CSP Program will work with three industry partnerships to develop and demonstrate reliable dish/engine systems. Under the Utility Scale Joint Venture Project (USJVP), three 25 kW systems are undergoing intensive reliability monitoring in fiscal year 1999 and fiscal year 2000, with a near-term goal of reaching 1,000 hours between down times. In order to encourage competition, a second solicitation was issued for alternative designs under the Dish/Engine Critical Components (DECC) Project in fiscal year 1998. Awards were made and operating hours are being accumulated on this system to prove reliability. Next-generation improvements are being incorporated in fiscal year 1999, with a completely-modernized, full-scale 25 kW prototype system to be installed in fiscal year 2000. A third project was launched in fiscal year 1999 to field an advanced-technology 10 kW solar dish/engine system at a remote site in the Southwestern U.S. In fiscal year 2000, the off-grid capability of the system will be developed and tested. These systems are equally suited for either stand-alone operation or for being hybridized with natural gas or diesel fuel.

The focus of the second path is to reduce the costs of Dispatchable Power Systems ($5.34 million, down $0.63 million). Based on the results of an industry-led trough technology roadmap, a number of component and system improvements were identified as being able to reduce the costs of near-term trough plants from the current 10–12¢/kWh to 6–8¢/kWh. To meet this need, the USA Trough Initiative was

launched in fiscal year 1999. Fiscal year 2000 work will focus on optimization of the collector design, improved system integration with conventional power plants (e.g., natural gas combined-cycle). This initiative will reopen a domestic market for trough systems and provide a leading position for U.S. industry in bidding on projects currently before the World Bank. Additional activities include a SolMaT effort to develop low-cost drives and concentrators.

Path three, Advanced Components and Systems ($5.96 million requested, up $0.97 million), addresses the longer- range R&D required for CSP systems to achieve energy costs in the 4 to 6¢/kWh range, thus allowing penetration of broader domestic and international markets. In fiscal year 2000, the program will continue current project work focused on higher-temperature technologies, the development of durable reflective materials, and higher efficiency system designs through the improvement of both solar concentrators and receivers.

The fourth path, Strategic Alliances & Market Awareness ($0.85 million requested, up $0.11 million), covers technology transfer, communications, and technology roadmapping efforts to ensure that the CSP program is focused on the needs of industry and the realities of the marketplace. Analyses and studies conducted in fiscal year 2000 by the world-class researchers at SunLab (a "virtual" laboratory comprised of the CSP researchers at Sandia National Laboratories and the National Renewable Energy Laboratory) are heavily relied upon by U.S. industry, Federal and State agencies, and other organizations involved in renewable energy development.

WIND ENERGY SYSTEMS

The fiscal year 2000 funding request for the Wind Energy Systems program is $45.6 million, an increase of $10.8 million over the fiscal year 1999 appropriation. The mission of the Wind Energy Systems program is to enable U.S. industry to complete the research, testing, and field verification needed to fully develop advanced wind energy technologies that lead the world in cost-effectiveness and reliability. Wind energy has been the fastest growing source of energy in the world for the last decade, with capacity additions worldwide totaling over 2000 MW in 1998 and industry sales of over $2 billion. Wind power stations in Europe and developing countries account for most of the recent capacity increases, using wind turbines supplied primarily by European companies. While wind power development in the United States is beginning to recover from several years of stagnation, prospects for sustaining this growth are still highly uncertain as electric power markets deregulate and place increased emphasis on low cost of energy production. The key to positioning wind as an important U.S. clean energy option for new competitive power markets, as well as export markets, is the development of innovative, cost-competitive technology that is being carried out under the Wind Energy Systems program. The program is currently partnering with industry for R&D targeted to reduce cost of energy from wind to 2½ ¢/kWh at sites with good winds.

In fiscal year 2000, the Wind Energy Systems program will focus on Applied Research ($13.5 million), Turbine Research ($20.2 million), and Cooperative Research and Testing ($11.9 million).

Applied Research (up $2.8 million) addresses fundamental engineering and technology issues with a broad range of applications, and is carried out at National laboratories and numerous universities. The requested increase will support the Wind Partnerships for Advanced Component Technologies (WindPACT) project. Under WindPACT, promising research ideas and concepts generated in Applied Research will be further developed and tested by a joint team of industry and laboratory researchers on a component and subsystem basis. WindPACT will develop improved wind technology components such as self-protecting rotors, passive aerodynamic controls, and new generators that can readily be incorporated into new turbine designs beyond those now included in the Next Generation Turbine project. This competitive effort is expected to attract new players into the wind industry because partnerships between new entrants and existing wind companies will be encouraged and previous technical experience with wind will not be required.

Turbine Research (up $3.8 million) is a cost-shared cooperative program with industry and utilities that supports competitively-selected research, testing, and field verification needed for advanced technology wind turbines. The requested increase for Turbine Research will support continuing partnerships with seven companies, and initiation of several new field verification projects that will be tailored to satisfy specific regional needs. Two companies are designing turbines under the Next Generation Turbine project, which is targeted to reduce energy costs from wind systems to 2½ ¢/kWh at 15 mph wind sites by 2002. In fiscal year 2000, these companies will require increased funding as they enter into a period of peak design activity

and hardware procurement for their engineering and manufacturing development prototype turbines. The Near Term Research and Testing project will be completed in fiscal year 2000, yielding several technological advancements for a more cost effective 750 kW turbine, to help U.S. industry compete in current world markets. Testing of prototypes will commence under the Small Wind Turbine project, and several new field verification projects using small (up to 100kW) wind turbines will be in operation. The program will also take the lead in completing R&D and field verification for a wind turbine intended for use in extreme cold environments, such as Alaska and the Antarctic, as the third phase of a Small Business Innovation Research project begun by the National Aeronautics and Space Administration and the National Science Foundation.

Cooperative Research and Testing (up $4.2 million) focuses on near-term R&D and testing at the world-class National Wind Technology Center (NWTC) in Colorado, which features a user facility that allows U.S. industries to expand testing of new wind energy technologies. The requested funding increase will launch a new cooperative effort with industry—Hybrid Systems for Village Power—which will build upon the experience with ongoing wind hybrid power projects in Alaska and provide opportunities for field verification on new wind control systems and system integration options. In addition, a new Wind Monitoring Network will provide verifiable data on long-term performance of several large new wind projects. This information is needed for developing strategies to accelerate the use of wind energy under the new rules of the emerging competitive power markets. NWTC capabilities for providing accredited certification testing services will be expanded, and efforts will continue in establishing U.S. certification capability for wind turbines in cooperation with Underwriter's Laboratories (UL). UL is now offering certification services to the wind industry—one wind turbine company has already contracted for UL certification—and will begin to work with the NWTC staff to define certification procedures. NWTC staff are presently developing quality assurance, testing, and design evaluation procedures which will be used to test turbines for UL certification.

BIOPOWER/BIOFUELS

We are requesting $92.4 million for Biopower/Biofuels programs in fiscal year 2000, an increase of 21 percent. This includes $6.0 million to support the Bioenergy Initiative described earlier in this testimony. The Initiative is an integrated effort spread among three sectors within the Office of Energy Efficiency and Renewable Energy in partnership with the private sector. The program supports biomass energy projects aimed at three principal markets: electric power; transportation fuels; and chemicals.

The following is a brief discussion of the Biopower and the Biofuels Programs:

Biopower Program

The budget requests for the Biopower program with the Office of Power Technologies is $38.95 million in fiscal year 2000—an increase of $7.5M over fiscal year 1999. The Biopower Program mission is to integrate sustainable biomass feedstock production with efficient biomass power generation systems that can provide substantial energy, economic, and environmental benefits. The program focuses on collaborative partnerships between the Department and the private sector to conduct critical research, development, and cost-shared demonstration activities. Through the introduction of competition to the generation market, power producers who can also produce a variety of energy related co-products will capture an increasing volume of electricity sales. These applications will provide broader based, near term markets for advanced biopower systems. The program's goal is the establishment of 30,000 MW of renewable biomass capacity installed by 2020. The request includes $2.7 million for Thermoconversion and $32.15 million for Systems Development. Also included under collaborative co-funding with biofuels are $3.1 million for feedstock development and $1.0 million for the regional biomass energy program.

Thermoconversion.—The increase in Thermoconversion (up $1.2 million) will support basic research in biomass combustion and gasification characteristics, especially related to cofiring biomass with coal (a major near-term, low-cost market opportunity) and as applied to integrated gasification power producing systems.

Systems Development.—Within the Systems Development activity (up $5.8 million), $5.5 million is requested for the Vermont Gasifier Project, $17.3 million is requested for the DOE/USDA Biomass Power for Rural Development Initiative (an increase of $1.8 million), $5.4 million is requested for the Co-firing Biomass with Coal Initiative (an increase of $2.9 million), and $4 million is requested for Small Modular Systems Development.

The Vermont Gasifier project will demonstrate a pilot-scale state-of-the-art gasifier combined with an advanced turbine, producing approximately 8–12 MW of elec-

tricity from wood. In fiscal year 2000, a hot-gas clean-up unit will be installed and the integrated combined cycle gasification systems will be operated for 1,000 hours at double the efficiency of direct- fired biomass units.

The Biomass Power for Rural Development initiative in fiscal year 2000 would support three projects: (1) co-firing tests of a 35 MW retrofitted plant with switchgrass in Chariton Valley, Iowa project will begin and up to 3600 acres of switchgrass will be planted ($1.8 million); (2) cofiring tests of willow and coal will be conducted along with the completion of retrofit of two additional coal plants and up to 600 acres of willow will be planted as part of the New York Salix project ($1.5 million); and (3) construction of the 75 MW Minnesota Valley Alfalfa Producers integrated gasification combine cycle power plant ($14 million).

The Co-firing Biomass with Coal initiative, currently conducting test runs on the effectiveness of blends of coal and biomass, will expand in scope to additional sites to include biomass gasification. Sustained operations at selected sites will also be demonstrated. Modular systems development is funding feasibility studies, prototype demonstrations, and proceeding to full systems integration and development of smaller gasification units (5kW to 5MW).

Transportation Biofuels

The Transportation Biofuels Energy Systems program within the Office of Transportation Technologies has a budget request of $53.4 million in fiscal year 2000—an increase of $11.7 million over fiscal year 1999. The mission of this program is to research, develop, and demonstrate cost competitive technologies for the production of liquid transportation fuels, in collaboration and partnership with industry, other government organizations, and academic institutions. In support of this mission, the program pursues the development of low-cost biomass energy feedstocks and cost competitive conversion technologies for liquid fuels production from agricultural residues, forestry wastes, and energy crops. The development and deployment of biofuels technologies can displace 0.30 quads of primary energy by 2010 and 0.84 quads by 2020, while promoting rural economic development. Since biofuels produce almost no net carbon on a life cycle basis, they are a very promising supply side option for reducing carbon emissions in the transportation sector.

The requests of $53.4 million for the Transportation Biofuels Energy Systems Program includes $37.4 million for ethanol production, $1.0 million for biodiesel production, and $6.0 million for integrated bioenergy research and development. The request includes $5.5 million for feedstock development and $3.5 million for the regional biomass energy program (collaborative co-funding with the Biopower program).

Ethanol production (up $1.5 million) is a major focus of the Transportation Biofuels program, comprising 70 percent of the budget request. Currently, ethanol is being used as a blend with gasoline in 10 percent ethanol/90 percent gasoline mixtures, can be used in flexible fueled vehicles (up to 85 percent ethanol blends) and is being considered for use in fuel cells.

We have established three industrial partnerships for the construction of ethanol production facilities using waste biomass. These highly leveraged partnerships, with DOE providing around 20 percent of the costs will result in "first of a kind" commercial technology demonstration plants. We recently attended a ground breaking ceremony for the construction of the first partnership project—a 20 million gallon waste to ethanol facility in Jennings, Louisiana. The other two partnerships are to build ethanol production facilities in California and New York. We are also working with the existing corn (starch based) ethanol industry to demonstrate biomass (cellulose) technology as add-on facilities using corn stalks and corn fiber to increase production and improve economic viability of the process. At least one feasibility study for an add-on facility will be completed in fiscal year 1999.

The program will also continue advanced technology research and development at our National Laboratories will improve energy conversion and integrated process efficiencies and address key cost factors to reach the production cost goal of $0.72 per gallon by 2010.

The Biodiesel program (up $0.2 million) will continue research and development of efficient technologies for the production of biodiesel to lower the cost of a biomass-based alternative to diesel fuel. Opportunities for converting low- cost waste oils will be explored.

Collaborative Funding by Biopower and Biofuels

The $8.6 million Biopower/Biofuels request for Feedstock Development (up $3.5 million) will expand the research and development to increase the number of crop species for regional diversity and the increase of the number of yearly harvesting in order to improve the economics utilization of feedstock for production. These feed-

stocks will provide a sustainable, reliable supply of biomass which can be used for the production of fuels, chemicals and power. The Biopower/Biofuels request for the Regional Biomass Energy Program of $4.5 million (up $1 million) will continue regionally focused activities with State and local governments to increase the development and use of biomass resources for multiple products.

RENEWABLE ENERGY PRODUCTION INCENTIVE PROGRAM

The request for the Renewable Energy Production Incentive Program is $1.5 million, a $2.5 million decrease from fiscal year 2000 funding levels. Annual appropriations provide financial production incentives to stimulate the construction and operation of new, qualified renewable energy facilities owned by state entities, municipal utilities, and electric cooperatives that produce and sell electricity. We estimate that fiscal year 2000 payments to qualified Tier I facilities—which use solar, wind, geothermal or dedicated (closed-loop) biomass resources—will require approximately $0.3 million to pay for electricity generated and sold. Remaining funds will be applied to qualified Tier II facilities, and include non- dedicated (open-loop) biomass resources (which would not be eligible for renewable energy tax credits if they were owned by private industry).

A number of very legitimate concerns regarding the proposed cut in REPI funding have been raised by the public power community. We are carefully revisiting this issue.

SOLAR PROGRAM SUPPORT

The fiscal year 2000 request for Solar Program Support is $10 million, $8 million for a Competitive Solicitation which would combine current the current Renewable Indian Energy Resources and Federal Buildings/Remote Power programs to encourage innovative applications and deployment of renewable electric technologies and would provide $2 million for Electricity Restructuring.

The $8 million requested for a Competitive Solicitation (down $0.8 million from the predecessor programs) will speed early deployment of renewable technologies by seeking technology proposals on the best ways to use renewable technologies, either singly or in combination with other renewable technologies, or in hybrid configurations with fuel cells, natural gas or energy storage systems.

The two primary objectives of the Competitive Solicitation program are: (1) to prove the availability of clean, affordable, and reliable electric power supply options for the many remote and/or economically challenged regions of the Nation; and (2) to obtain essential data on operational performance, reliability, and benefits of renewable energy and hybrid renewable energy systems in various geographic locations and climatic conditions.

The information and experiences gained through this Competitive Solicitation program will also help overcome specific impediments to more widespread use of renewable electricity technologies. Currently, renewable energy projects are hampered by the uncertainties of electric utility restructuring, the current low price and perceived availability of natural gas, and improvements in gas turbine technology. The increasingly competitive restructured electric environment also favors technologies with low capital costs over technologies with higher capital costs, but lower life cycle costs. Rather than high project technical or financial risk, the major hurdle often facing renewable energy projects is identification of project structures in the new marketplace that would allow acquisition of long term power purchase contracts and project financing. Such new structures include renewable energy power marketers, hybrid projects with renewables and natural gas, investments in distributed renewable electricity generation, and customer choice.

This six-year, highly-leveraged program would combine two previous budget items—the Renewable Indian Energy Resources and Federal Buildings/Remote Power programs—into a single, integrated, technology-focused competitive field validation program. (Compared to the prior programs, funding is reduced by $0.8 million.) In keeping with the origins of this program, the Solicitation program would designate two targeted areas for competitive awards—systems benefitting Native Americans and systems addressing the needs of Federal facilities—in addition to providing for an "open" solicitation for other applications of these systems. Remote power needs will continue to be addressed as aspects of all three segments of this solicitation. Of the $8.0 million proposed for fiscal year 2000, up to $3.0 million of the solicitation will be dedicated to projects benefitting Native Americans. Native American projects will require a minimum 20 percent cost-sharing, and the "open" portion of the solicitation will require at least 75 percent non-DOE funding. For a number of reasons, there are tremendous synergies between renewable energy technologies and the energy needs of Native Americans. Renewable resources such as

solar and wind are often abundant on tribal lands. In addition, Native Americans often have substandard or, in some cases, no electricity service. Renewable energy technologies can often provide the most cost-effective option for providing electricity on tribal lands and can also be a source of employment for tribes installing such systems onsite.

The request for Electricity Restructuring for fiscal year 2000 of $2 million represents an increase of $100,000 over fiscal year 1999 appropriations. The purpose of the Department's electricity restructuring activities is to develop a comprehensive understanding of emerging electricity competition policies across the country and their impacts on renewable energy and energy efficiency products and services, and the impacts on various public benefit programs such as low-income assistance.

The program will provide technical assistance and analysis to State, Federal and tribal decision makers and others to assist them in their efforts to achieve their renewable energy, energy efficiency, and consumer protection goals as the industry is changed. This work is critical to renewable and energy efficiency technologies because the new electricity market and regulatory rules will have a major impact on future technology deployment.

Due to the introduction of competition the electricity sector is undergoing the most significant transformation that has occurred in over 60 years. Fourteen States have enacted retail competition legislation to permit customers to choose their electricity supplier and four others have issued comprehensive competition orders. Fourteen other States ended their 1998 legislative sessions with comprehensive retail competition bills pending.

The transition to competition is challenging for a number of reasons including the technical complexity of the electricity system, the intricate web of Federal, State, and local law and regulation, and regional differences. As a consequence, policy makers at all levels of government need analysis and technical assistance on a portfolio of market and policy mechanisms to achieve their restructuring goals. The demand for this assistance is very high. For example, as part of the recent broad-based solicitation, the Department received far more restructuring-related analysis and technical assistance proposals than our resources can support.

Although each State and region face unique electricity policy challenges, there are many common issues. Furthermore, many States lack the resources and expertise needed to address the complexities of electricity restructuring and to keep track of what other States are doing. Consequently, it is often more cost-effective and efficient for certain technical assistance and analysis to be provided at the federal level rather than duplicated on a State-by-State basis. In addition, although a plethora of studies and analyses funded by entities with economic interests in certain restructuring outcomes exist, user-friendly information from independent entities on key policy issues is often in short supply. The EERE electricity restructuring program works to fill this information gap.

The restructuring program is also important to the development of EERE's own research and development agenda. The success of our R&D agenda hinges, in part, on assuring that the technologies we help develop are compatible with the rapidly evolving electricity market structure. Thus, the restructuring program informs our R&D work. For example, the introduction of competition is likely to favor modular, distributed systems that are less capital intensive than central station plants. In response, many of our R&D programs are increasingly focused on modular applications.

In fiscal year 2000, the Department proposes to expand technical analyses on the impacts of electricity restructuring on renewable technologies and energy efficiency technologies. Analyses on market mechanisms such as labeling of electricity products for consumers, "green" certification, and energy services strategies will be completed. The program will provide tools and information for policy makers to develop legislative and regulatory policies that lead to competitive, reliable electricity markets with a range of energy options including renewable energy and efficiency technologies. To facilitate these efforts, the program will also encourage the States and others to form regional information exchange networks to share "lessons learned" about what does and doesn't work.

NATIONAL RENEWABLE ENERGY LABORATORY

The fiscal year 2000 request of $1.1 million for the National Renewable Energy Laboratory (NREL), (down $2.8 million), is to provide for maintaining NREL facilities to assure appropriate scientific and technical support for Solar and Renewable Energy R&D activities. The request will fund infrastructure renovations and upgrades at the NREL sites, including minor modifications, road repair, safety fencing, roof repairs, and the installation of a 2,000 square foot multi-user prefabricated fa-

cility for solar radiation research. In addition, the request will fund acquisition of a variety of critical multi-program laboratory equipment needed to upgrade or replace old equipment, and also provide for the upgrading of the laboratory's data system infrastructure.

GEOTHERMAL ENERGY

The Geothermal Energy request for fiscal year 2000 is $29.5 million, an increase of $1.0 million over fiscal year 1999 levels. The Geothermal program in the Office of Geothermal Technologies works in partnership with U.S. industry to establish geothermal energy as a sustainable, environmentally sound, and economically competitive contributor to the U.S. and world energy supply. These joint efforts sponsor research and development that leads to advanced technologies to improve reliability, reduce environmental impacts, and lower costs of geothermal energy systems. The budget request supports the five goals of the Geothermal Energy Strategic Plan for 2010 which have been endorsed by industry: supplying the electrical power needs of 7 million U.S. homes; providing the heating, cooling, and hot water needs of 7 million U.S. homes; meeting the basic energy needs of 100 million people in developing countries; ensuring that the United States continues to lead in geothermal technology; and developing new technology to meet 10 percent of U.S. non-transportation energy needs. In contrast to last year, the budget request is allocated solely for Geothermal Electric R&D and Development ($29.5 million). No funds are requested for Geothermal Heat Pump Deployment in fiscal year 2000. The $29.5 million request is allocated among: reservoir technology, $8.0 million; exploration, $7.0 million; drilling $7.5 million; and energy conversion, $7.0 million.

The Reservoir Technology program (+$2.5 million) will perform water injection tests at a commercial site at Dixie Valley, Nevada, develop a suite of chemical tracers for tracing the flow of injected water, and use field test data to improve reservoir models. These efforts will lead to proper fluid management practices which could enable a geothermal field to operate productively for over 100 years. The Enhanced Geothermal Systems initiative under the Reservoir Technology program will focus on extending the productivity and lifetime of geothermal reservoirs through rock fracturing, stimulation, and water injection.

The Exploration program (+$1.5 million) will collaborate with industry on 3D-seismic techniques to locate and characterize new geothermal fields. Individual geophysical methods will be integrated to develop "smart" systems which will select more reliable exploration targets. Greater effectiveness in locating geothermal resources will greatly reduce the number of non-productive wells.

The Drilling program (+$2.5 million) will complete the testing of improved PDC drill bits, unshielded high-temperature logging tools, and a high-temperature casing inspection tool. The Geothermal Advanced Drilling System will be initiated which will give economic access to the extremely large geothermal resources contained in rocks at great depth. One element of the Geothermal Advanced Drilling System is a high speed data link that will transmit a variety of real-time drilling data to the surface for decision making while drilling. About 50 percent of the cost of the high speed data link will be provided by major private sector partners. In addition, a consortium for high-temperature electronics suitable for applications in geothermal wells will be formed by the Gas Research Institute, Honeywell, Boeing, other industry leaders, and the Drilling program. Finally, the program will transfer to industry the technology to acoustically align downhole line shaft pumps which will save industry millions of dollars annually.

In the Energy Conversion program (+$1.0 million), the Kalina Cycle, a new plant design for more efficient and cost-effective electricity generation, will be tested in partnership with industry. The non-Federal cost share of this demonstration project is over 60 percent. The program will also field test gas monitors and anti-fouling coatings for heat exchanger tubes which will reduce geothermal power plant operating and maintenance costs. The new Modular Geothermal Power Plant initiative under the Energy Conversion program will support the design, construction, and testing of a small (300 to 500 kW) power module for distributed or off-grid sites. This initiative creates a supply option for developers wishing to install small-scale geothermal plants which can be used in remote, off-grid, and/or grid-connected locations, providing flexibility in adapting to the changing electric power industry. This is particularly important because geothermal is emerging as an attractive "green power" customer choice option as program R&D continues to cut power generation costs.

Competition is key to the cost-effective management of geothermal R&D activities. All three geothermal initiatives described above, as well as many other research and development activities, will be competed through solicitations.

HYDROGEN

The request for Hydrogen is $28 million, an increase of $5.7 million from fiscal year 1999. Industry is investing substantially in both hydrogen production systems and the development of the Proton Exchange Membrane (PEM) fuel cells that require a hydrogen stream to operate. Buses powered by fuel cells with onboard hydrogen are being tested in metropolitan districts, and residential fuel cell systems are entering into pre-commercial testing. These ventures portend commercial activities for the distributed production, storage and utilization of hydrogen by 2001 to 2003.

The Hydrogen Program is authorized by the Hydrogen Future Act of 1996 to fund those projects which are evaluated on a competitive basis. In fiscal year 1999, the Department funded 92 percent of the Hydrogen Program through four competitive solicitations. The fiscal year 2000 request will support a balanced program to increase market penetration of renewable/hydrogen energy systems and hydrogen-powered vehicles, and long-term research and development in the production of hydrogen from renewable resources through a similar competitive process. The program focuses on three key activities: Core Research and Development ($14.1 million), Technology Validation ($11.4 million), and Analysis and Outreach ($2.5 million).

Core Research and Development (up $5.0 million) supports R&D on hydrogen production, storage and utilization. The increased funding will fully fund thermal conversion processes that produce hydrogen from natural gas with a 25 to 35 percent decrease in the cost of producing hydrogen over conventional processes. Long-term research programs will also be enhanced in awarding multiple cooperative agreements for photobiological and scaled-up photoelectrochemical processes. These key activities, in conjunction with the industrial development of the PEM fuel cell, will enhance the ability of the industry to consider low-cost hydrogen options for power, industry and transportation market sectors by 2004.

Storage R&D is focused on developing and demonstrating hydride and carbonaceous materials for the storage of hydrogen at low temperatures for power and transportation applications. The increased funding will permit the award of one project to characterize a family of new metal hydride materials and another award to assemble carbon absorbents into a laboratory system.

Utilization technology is focused on developing and demonstrating end-use power systems that are safe, and have near-zero or zero emissions with an overall generation efficiency greater than 45 percent. A newly developed solid state hydrogen leak detector prototype design will be fabricated and field tested. A low-cost 25 kWe fuel cell will be demonstrated.

Technology Validation (up $0.4 million) supports 50/50 cost-shared ventures with industry on hydrogen vehicle fueling stations, vehicle-mounted hydrogen storage systems, reversible fuel cells to operate with renewable systems, and small hydrogen fuel cell systems for remote power applications. The fiscal year 2000 request supports the operation of a reversible fuel cell with 60 percent round-trip efficiency; the incorporation of high-pressure hydrogen storage on vehicles; construction of a quick-fill refueling station to service Las Vegas shuttle buses and government vehicles; and the design and construction of small-scale fuel cells for remote applications.

Analysis and Outreach (up $0.3 million) conducts portfolio and technology analyses to determine what steps are required to transition to a hydrogen energy economy. Technology analyses will periodically review specific areas (i.e., thermo-conversion, storage, etc.) to ensure that research is of high quality and of significance to the overall objectives of the program.

HYDROPOWER

For fiscal year 2000, the Department is requesting $7.0 million for Hydropower Development, an increase of $3.8 million over fiscal year 1999 funding. With this funding, the program will complete proof-of-concept testing of an innovative, non-shearing "fish-friendly" turbine design (competitively selected in earlier activities) and will provide for the completion of experiments to develop biological performance criteria for advanced turbine design. The program will also initiate the competitively selected engineering design of a "fish-friendly" turbine to increase dissolved oxygen.

Once complete, these new turbines can replace equipment at existing facilities where environmental concerns may cause a reduction in generation. Hydropower provides approximately 10 percent of the total U.S. electricity generation today; diminished power production from this clean baseload power resource would have serious environmental and economic impacts on our nation. This cost-shared program with industry would maximize power generation from hydropower facilities and help develop an important export market for U.S. companies.

ELECTRIC ENERGY SYSTEMS AND STORAGE

$41.0 million is requested for the Electric Energy Systems and Storage program in fiscal year 2000, an increase of $0.9 million from fiscal year 1999. The program is working with partners to develop advanced power systems that will make the delivery of electric power more efficient and cost effective, reduce power sector emissions, facilitate market penetration of renewables, and enhance U.S. industrial competitiveness. The program includes efforts on Transmission Reliability Research ($4.0 million), High Temperature Superconductivity ($31.0 million), Energy Storage ($6.0 million), and Climate Challenge (no funds requested).

The fiscal year 2000 budget request for Transmission Reliability Research is $4.0 million, an increase of $1.0 million from fiscal year 1999. Before electric restructuring, vertically integrated utilities sold electricity and reliability services from central station power generators over transmission lines that were constructed to serve specific load areas. This system was not designed to allow competitive sales of energy and services from any generator to any customer, and the resulting constraints to this type of operation must be resolved cost effectively to allow full market competition. Transmission Reliability provides Federal support to develop technologies and policy options that will maintain and improve the reliability of the Nation's electricity delivery system during the transition to competitive power markets. The program is being implemented through a National Laboratory/electricity industry partnership, and is leveraging funds from other partners. Transmission Reliability has two key activities: Power System Reliability ($3.8 million) and Distributed Power ($0.2 million).

Power System Reliability (up $1.3 million) will develop advanced computational and information systems to monitor and control the power system in real time, and advanced power electronics to accomplish fast, high-power switching under real time system control. Reliability technologies and policy options are developed in the context of competitive markets, and research will account for changes in market forces as rules and restructuring legislation are developed and implemented. Real-time control of the power system can provide information to remove transmission bottlenecks and operate the system in a way that can turn "two-lane roads" into "superhighways," releasing capacity for competitive markets.

Distributed Power (down $0.3 million) funding will continue development of technologies, and removal of technical, regulatory, and institutional barriers to enable the integration of distributed generation and storage into the electric and natural gas systems. Distributed technologies include renewable resources, fuel cells, microturbines, battery and flywheel storage, and direct load control. Integration of these technologies offers environmental and economic benefits and extends competition to the retail customer level.

It is anticipated that the Transmission Reliability program will last approximately five years and will ensure that research and development for reliable systems and competitive markets is maintained until new market and/or regulatory structures are developed that provide the incentives for the private sector to assume this work. The program will be reassessed each year to determine the need for Federal involvement depending on the nature and implementation needs of new regulations, and the impact of market forces.

The fiscal year 2000 budget request for High Temperature Superconductivity is $31 million, a decrease of $1.5 million. The funding is divided between the Superconductivity Partnership Initiative ($14.0 million), Second Generation Wire Initiative ($8.0 million) and Strategic Research ($9.0 million). The program is accomplishing two major technological goals: solving the difficult problem of manufacturing electrical wires from the family of brittle ceramic superconducting materials, while, in parallel creating designs of super-efficient electrical systems. The products will be resistance-free electrical wires that carry 100 times the current of conventional alternatives and the design of advanced systems that have only half the energy losses and are half the size of conventional alternatives of the same power rating.

The Superconductivity Partnership Initiative (down $0.5 million) will support six major projects to develop first-of-a-kind electrical systems that can provide quantum improvements to the efficiency and capacity of the national electrical grid. These include transmission cables, transformers, large motors, flywheel energy systems and magnetic separation systems that meet required performance goals. The revolutionary equipment emerging from the program in the 2005–2010 timeframe will have a major role in meeting the new demands of a competitive electricity industry for increased capacity and reliability. Superconducting cables will relieve congestion at critical parts of the grid as well as improve delivery efficiency. They will also allow load growth in urban areas to be accommodated by repowering existing ducts,

without the need for acquiring new property. Superconducting transformers will accommodate increased demand for electricity without the need for construction of new substations and will protect against accidental "fault currents" that now cause serious damage and power outages. The program's past success has demonstrated that this extremely ambitious undertaking is possible within the funding requested due to careful planning and leveraging of resources. Leveraging includes the 50 percent cost share that the program has been able to attract, even though the projects are very high risk. Additional leveraging occurs through the project teams being a vertically integrated consortium of companies containing a future user (an electric power company), a manufacturer, and a superconducting component supplier. The funding reduction will result in research being completed in fiscal year 2001 rather than in fiscal year 2000, but is not expected to impact accomplishment of important goals.

The Second Generation Wire Initiative (no change) is crucial to producing superconducting wire that meets the program's performance goals. Four industrial consortia will be working with the national laboratories to scale up recent discoveries that are the basis for this initiative. Private sector participants' 50 percent cost-sharing leverages program funds.

The Strategic Research program element (down $1.0 million from fiscal year 1999) is the incubator for discoveries and innovations that have characterized this successful program. The activities supported include in-house national laboratory research and joint research carried out with private companies under 50 percent cost-shared agreements. The requested level of funding will adequately support multi-disciplinary research teams that have made major breakthroughs in the past, and will also support a number of cooperative research projects with industry. Important leveraging is obtained through integrating research funded by the DOE Office of Science and leveraged research at two NIST (National Institute of Science and Technology) laboratories where each program dollar is matched by two NIST dollars.

The $6.0 million request for the Energy Storage Systems program (up $1.5 million) will fund focused research on energy storage technologies which will reduce the high cost of power outages, improve power quality, and enhance technology choices in a competitive utility environment. Efficient energy storage is critical for service reliability and for the success of distributed power generation. In a restructured electricity industry with many independent power producers, energy storage will play an increasingly crucial role in combining multiple inputs of varying power quality and matching output to a changing load. Program emphasis will be placed on battery systems integration and on the development and evaluation of advanced storage technologies. All projects will be carried out in close cooperation with industry.

No funding is requested for the Climate Challenge program in fiscal year 2000 (down $0.1 million).

INTERNATIONAL SOLAR ENERGY PROGRAM

The fiscal year 2000 budget request for the International Solar Program is $6.0 million, a slight decrease of $350,000 from $6.350 million in fiscal year 1999. The mission of the International Solar Energy Program is to encourage acceptance and use of renewable energy technologies by developed and developing countries in support of U.S. national interests and policies. With World Bank estimates indicating that developing countries alone will require five million megawatts of new electricity capacity over the next four decades (the world's total installed capacity today is three million megawatts), international markets will provide growing opportunities for U.S. sales of advanced renewable energy and energy efficient technologies and job creation. And it is these same technologies that also hold the greatest potential for mitigating global climate change.

The primary goal of the International Solar Energy Program is to support the expansion of U.S. renewable energy and energy efficiency technology exports to help meet the energy needs of developed and developing countries, reduce the rate of consumption of finite global resources, and address local and transnational environmental issues. The program has been refocused in response to Congressional direction. While the Program will continue to provide support for the U.S. Initiative on Joint Implementation, all activities will be refocused into three broad program areas: Emerging Global Environmental and Energy Issues (USIJI), facilitating Market and Trade Development, and advancing U.S. Energy and Environmental Security interests.

The Emerging Global Environmental and Energy Issues will be implemented specifically through and in conjunction with the U.S. Initiative on Joint Implementation (USIJI). USIJI is a DOE-led interagency program that supports the development of

flexibility mechanisms under the U.N. Framework Convention on Climate Change (U.N. FCCC) such as Joint Implementation (JI), Clean Development Mechanism (CDM), and Emissions Trading. This element will also focus on encouraging meaningful participation by developing countries in the effort to reduce worldwide greenhouse gas emissions.

The Market and Trade Development element will accelerate reductions in U.S. technology production costs and advance deployment of technologies through overseas market expansion. Activities will focus on stimulating global economic development and regional economic stability, and accelerating domestic economic growth, market competitiveness, and employment. This element will be implemented in key regions through bilateral (e.g., Gore-Mbeki in South Africa) and multilateral (e.g., Asia Pacific Economic Cooperation, Hemispheric Initiatives and International Energy Agency) technology cooperation activities and information exchange and dissemination. Private sector technology development will be encouraged while seeking opportunities for leveraging U.S. funds and stimulating deployment in strategic and emerging markets through project-based activities.

The Energy and Environmental Security element is designed to advance U.S. strategic interests in bilateral and multilateral energy and environmental security activities and will provide specialized assistance in the utilization of appropriate technologies. This element will be implemented in support of existing and emerging bilateral and multilateral treaties and agreements (e.g., U.S.-China Energy Efficiency and Renewable Energy Protocol). This element will also assist the Department in meeting U.S. obligations and commitments to provide disaster relief and assistance by facilitating private sector technology development and deployment in strategic and emerging markets.

SOLAR PROGRAM DIRECTION

The fiscal year 2000 Congressional Request for Solar Program Direction is $19.2 million, an increase of $1.1 million. Program Direction provides the staffing resources and associated funding to support the management and oversight of the Solar and Renewable Energy Programs. It also provides funding for all support services, the Working Capital Fund, and crosscutting requirements.

There are two principal changes in Solar Program Direction this year. First, funding for electricity restructuring, included under this account in fiscal year 1999, is provided for under Solar Program Support in fiscal year 2000. Second, the request includes $1.85 million to address anticipated staffing adjustments resulting from Workforce 21 plans.

Workforce 21 is a Department-wide effort to address unintentional negative impacts resulting from aggressive downsizing in recent years. While the Department has been able to fill most essential positions through intra-agency transfers and a very few replacement hires (even as we met or exceeded our reduced workforce targets) some gaps in filling critical technical and professional positions still remain. The Program Direction request level will enable EERE to fill limited number of key technical and professional staff positions at DOE headquarters and in the field. Clerical and administrative positions will remain essentially level.

CONCLUSION

Thank you once again, Mr. Chairman, and members of the Subcommittee for the opportunity to discuss our fiscal year 2000 budget request. I hope you agree that the management improvements we have instituted—and continue to refine—are enhancing the value received by American citizens for their investment. We believe that the technologies our programs are now developing will lead to a clean, cost-effective, and secure electric power and transportation fuel system for the United States. We fully understand that we must set and meet aggressive technology research and performance goals so that the new power generation, power delivery, and transportation fuel systems we are developing can compete in the marketplace. And while the task before us is certainly challenging, we are confident that our proven record of achievement—combined with hard work, careful planning, and adequate financial and workforce resources—will lead to even more success ahead, enabling the Nation to respond not only to the important energy and environmental challenges but also to the global market opportunities of the next century.

APPROPRIATE USE OF APPROPRIATED FUNDING

Senator DOMENICI. Let me just ask a couple of questions. While you are there, I will go with you first, and if Senator Reid has any questions, can you answer them within two weeks?

Mr. REICHER. Yes, sir.

Senator DOMENICI. Last year, we raised concerns about your office, and among those were paying for members of industry associations to attend national and international conferences, publishing magazine articles, writing op ed-style articles in magazines, and preparing talking points in support of the Department's programs.

You have told us about your competitiveness initiative, which is a great effort. What about this kind of activity, what are you doing about these sorts of things?

Mr. REICHER. Well, Mr. Chairman, as a part of our push to increase competition, we have encompassed those kinds of activities. What we basically said to groups of all sorts, from trade associations, to universities, to others, is that if you want to work with us you are going to have to compete for the dollars.

So virtually all that we are now doing, this sort of public outreach communications, is now being done on a competitive basis, so I think that should very quickly and very much lead to the end of those kinds of sole source situations.

Senator DOMENICI. Well, I guess what I really need is for you to be more specific for a minute. We were paying groups to publish magazines about solar energy. Now, does that come within the definition that you just described, that you may still be doing it, but it is going to be competitive?

Mr. REICHER. Let me say it this way, Mr. Chairman. We now compete the dollars for what we call information dissemination and public outreach. Within that, we fund a variety of mechanisms for communicating the technology progress of our work. So what I want to stress to you is that first, these are competitive mechanisms that we are using.

Second, by virtue of the fact that they are competitive, we are looking very carefully to avoid the kind of funding situations you are speaking about in the past. So I am quite confident that the kinds of problems that you have seen, that you have raised, that you have highlighted for us are no longer the case with what we are going forward with in terms of our work.

Senator DOMENICI. Well, I would like you perhaps by the end of this fiscal year to give us a report on this new approach that you have taken—how it has affected the kind of activity that we were complaining about, what is being done in terms of industry association members being paid to go to international conferences. Do your Requests for Proposals envision that the Department pay people to go to international conferences that are not part of our government team?

Mr. REICHER. It does not envision that, Mr. Chairman.

[The information follows:]

REPORT ON INFORMATION AND DISSEMINATION ACTIVITIES, OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

The Office of Energy Efficiency and Renewable Energy will provide a report to the Subcommittee providing details on how financial assistance for Information and Dissemination activities was competed in fiscal year 1999. The report will explain the process used to compete the financial assistance activities and summarize the types of activities that were funded. The report will be provided by September 30, 1999.

Senator DOMENICI. Okay. Talking points in support of the Department's programs, you have outside groups preparing those.

Mr. REICHER. Again, that is not the sort of thing that we intend to be——

Senator DOMENICI. I know this could be, to some, kind of nitpicking, but I do not think it is. I think it is not what the Congress of the United States thinks we are doing in this area. The committee has an oversight and stewardship responsibility to understand if appropriated funds are being used wisely, so that we do not end up looking silly about funding a program that does not do R&D. We need to bring these renewables on board as soon as possible, and make realistic choices with reference to their effectiveness.

That is kind of your job, and, again, I say I think you are doing very well at it.

KYOTO ACCORD

Do you know very much about the Kyoto Accord in terms of what it requires and what its goals are, and the like? Are you an expert on that, or do you know something about this area?

Mr. REICHER. I know something about it.

Senator DOMENICI. Okay.

Mr. REICHER. I do not consider myself an expert.

Senator DOMENICI. So might I ask you, is it possible for the United States to meet the mission goals of the Kyoto Accord on the path we are on now?

Mr. REICHER. On the current path we are on now, the business as usual path, we would not meet those goals.

CARBON FUEL TAX

Senator DOMENICI. A number of groups indicated in order to meet the goals of the Kyoto Accord that we would have to impose a substantial tax on carbon fuels, somewhere in the area of $45 per barrel, if that tax is imposed on oil. Do you anticipate that if we did that, that would have an effect on the American economy? If you do not think that is what is required, then just say I do not think the $45 is what anybody is thinking about.

Mr. REICHER. Let me say it this way, there have been a range of projections about what it would take to meet the Kyoto goal. The Council of Economic Advisors has done a study that suggests that it can be met more cheaply than I believe the figures you are suggesting would indicate, a combination of international emissions trading and advances in technology to bring prices—to bring the cost of technologies and the use of clean technologies to market.

Also, five of the national laboratories produced a study a couple of years ago that also suggested that we could meet much of the Kyoto goal with only modest increases in terms of the cost of fuel and energy.

Senator DOMENICI. I think, based on what you read, and you have just indicated that you read a myriad and a diversity of things, you would easily recognize that, from an economic standpoint, one of the things that affects the American economy most significantly and most rapidly on the inflation side is increased costs of energy to a typical American consumer from his automobile, to the energy source that ultimately heats his home.

Mr. REICHER. Absolutely.

Senator DOMENICI. If that goes up 15 or 20 percent, it is pretty hard to control inflation regardless of the other economic curbs that we are permitted with in terms of—and you are aware of that.

Mr. REICHER. Yes. Mr. Chairman, I would just stress that the other really two-thirds of the office that I run is devoted to, in fact, improving the efficiency of energy use, so that interestingly, even if the price of a particular unit of energy were to rise, if we can use it more efficiently, that can net out at zero or only a modest increase for consumers.

So one approach is improving the efficiency of energy use, the others, as you have heard this morning, is developing a very broad and diverse set of energy resources, and the more that those are domestic, the better off we will be.

Senator DOMENICI. How are we doing with reference to efficiency? Are we sliding backwards? We were moving ahead rather wonderfully 8 or 10 years ago. I think we kind of lost our——

Mr. REICHER. We, to some extent, have leveled off, in terms of the efficiency of use, and that is why, in fact, we feel it is so important to continue to make the strong kinds of pushes that we have made between industry and government. For example, in the area of automobiles, we are at a good path now to be producing an affordable 80-mile-per-gallon automobile, U.S. built, in the middle of the next decade, and obviously, that will have a dramatic impact on fuel use, production, and U.S. competitiveness.

Senator DOMENICI. Well, let me move to Mr. Magwood for just a minute. Do you pay for any magazine articles that promote nuclear power?

Mr. MAGWOOD. Do we pay for any magazines?

Senator DOMENICI. Yes.

Mr. MAGWOOD. I am a member of the American Nuclear——

Senator DOMENICI. No, no, no, I mean—you personally do pay for them. I'm asking about your program office.

Mr. MAGWOOD. If you are asking do we fund people to put articles in newspapers and magazines, no, we do not do anything like that.

Senator DOMENICI. Does your office pay for the preparation of pamphlets that are put out by pro-nuclear groups?

Mr. MAGWOOD. No.

Senator DOMENICI. Do you pay for editorials to be written by somebody in the outside that might be promoting nuclear power?

Mr. MAGWOOD. No.

Senator DOMENICI. I raise this, because I actually believe that if they did, we would just have one firestorm. It would seem to me that those that are anti-nuclear would talk about this not being the business of government to be involved in promoting nuclear power, and frankly I think that is the case for all power.

We either say get government involved in promoting nuclear, based upon its contribution to the American economic system and to energy resources in conservation, or we do not do any of it. I feel rather strongly about that.

I would think if you did that with $300,000 of Office of Nuclear Energy money it would not take us 1 week from the time it hit the marketplace, even if it was authentic and true, but just because it was about nuclear, somebody would be camping over on the White

House steps or over at the Vice President's office saying, what is this about using money to promote nuclear energy.

NUCLEAR POWERPLANT RELICENSING

Now, having said that, let me ask you, how are we proceeding with reference to expediting in a rational way, in a healthy way, relicensing of nuclear powerplants? Can you give us your advice and update us on where we are?

Mr. MAGWOOD. I think the early signs are very good. I have met with all of the commissioners at the Nuclear Regulatory Commission, I have met with the senior staff, and I have also met with the industry to talk about this issue, because I think it is so important. I have been extremely pleased with what I have heard. I am very encouraged with the attitude and approach the NRC has taken toward relicensing.

They recognize this as an opportunity to show that they can provide safe regulation of nuclear powerplants, in a manner that is very efficient and fair. They have worked very closely with the industry to carry out their duties, doing so in such a way that the process does not drag on for a long time.

Additionally, I met with senior executives from Baltimore Gas and Electric, and they tell me that they expect to complete their action with NRC to relicense the Calvert Cliffs nuclear powerplant about 2 years ahead of schedule.

Senator DOMENICI. Excuse me, I need to take a brief recess.

[A brief recess was taken.]

Senator DOMENICI. Please proceed.

Mr. MAGWOOD. I was just saying that my understanding is that the first examples of the license renewal process, Baltimore Gas and Electric's application and Duke Power's application have both gone very well and are well ahead of schedule. It is my understanding that these relicensing actions will be completed almost 2 years ahead of schedule. We are very pleased with what is going on so far.

NUCLEAR ENERGY RESEARCH INITIATIVE [NERI]

Senator DOMENICI. Last year Congress provided you with $19 million for nuclear energy research initiative. You have requested $25 million for fiscal year 2000. How much interest have you received from researchers for the $19 million?

Mr. MAGWOOD. There has been a great deal of interest expressed in NERI. I believe we have received about 308 applications from researchers all over the country, from universities, from industry, from national laboratories, and combinations, there is a lot of collaboration in that community, which we are very pleased to see, and they have proposed research over 3 years worth around $300 million for the $19 million.

So the interest has been very high, and in addition to the proposals we have received, as I have indicated earlier, the international community is also very excited. We have been talking with Europeans, Koreans, the Japanese, and they are all very interested in working in cooperation with our NERI program. So the interest is extremely high.

Senator DOMENICI. When are you going to award contracts under that program, Mr. Magwood?

Mr. MAGWOOD. Mid- to late May. We will award the first contracts in the middle of May.

Senator DOMENICI. The middle of May. Will the $25 million simply continue the awards funded in 1999, or will you be able to have some new ones?

Mr. MAGWOOD. Well, the way we have structured this program, we allow people to tell us what they think they are going to need over a 3-year period. We make no commitment beyond the first year. We can only provide them 1 year of money at a time, but assuming that we actually award a contract, we would not require an awardee to reapply for the money in the following year; therefore, a lot of the money that we will use in fiscal year 2000, if we get the $25 million, will go to simply continue work that is already started.

I would say probably about $20 million of the $25 million would go simply to continue work that has already started.

MOLY-99 PROGRAM

Senator DOMENICI. Mr. Magwood, I understand that when the Department submitted its budget for 2000 that the Department planned to privatize the Moly-99 program at Sandia by September of this year.

Mr. MAGWOOD. Yes.

Senator DOMENICI. I understand that there may be some reluctance by the private sector to assume responsibility. Do you still plan to privatize this by September?

Mr. MAGWOOD. We had a conference with the private sector at Sandia National Laboratory I believe just last week, and we are still having discussions with the industry. It is clear they clearly would have liked to have seen us go forward with the Food and Drug Administration approval process for Moly-99 before talking about privatization, but they have not said at this point that where we are now is not acceptable. We think there is still some room to negotiate, and we are still optimistic that we will be able to do this.

Senator DOMENICI. State for the record essentially what the Moly-99 program is.

Mr. MAGWOOD. Moly-99 is a precursor to Technetium–99m, which is used by U.S. clinicians in diagnosing all sorts of illnesses, heart disease, and cancer through imaging processes.

Senator DOMENICI. So it is in the medical field.

Mr. MAGWOOD. Yes. My understanding is that it is used about 36,000 times a day in the United States.

Senator DOMENICI. If you do not get it privatized by September as planned, will you need additional funds for the privatization effort?

Mr. MAGWOOD. We have not requested additional funds, anticipating privatization. Our budget is rather limited, so we really were not able to support both maintaining activities such as placing a new isotope reduction facility at the LANSCE facility in Los Alamos, while at the same time continuing Moly-99.

So we had to make some tough choices, and the choice we made was to move forward with the privatization. If we are not success-

ful in privatizing we will have to reassess the situation, but there is no money in our request to support that at this time.

FAST FLUX TEST FACILITY [FFTF]

Senator DOMENICI. Your budget request assumes that a decision to restart, permanently shut down, or maintain the FFTF in its current condition will be made this spring.

Mr. MAGWOOD. That is correct.

Senator DOMENICI. Has the decision been made? If the decision is made to restart it or permanently shut it down, how much additional funds will be necessary?

Mr. MAGWOOD. Our budget, as you indicated, assumes a decision will be made by the end of April, and Secretary Richardson told me just yesterday that he fully expects to make that commitment and make his decision before the end of April.

To answer your question about the funding, we currently have $30 million requested in the budget. If we continue in standby and proceed with an environmental impact statement, we will require about an additional $10 million. If the decision is to shut it down immediately, it will require I believe about an additional $20 million.

EBR-II

Senator DOMENICI. Now, EBR–II reactor for fuel treatment program at Argonne, that laboratory is expected to encounter a $20 million reduction in this year's budget. Are you going to make, at some later date, a decision about whether to use the electrometallurgical process technology to treat the EBR–II and other fuels?

Mr. MAGWOOD. Yes. We currently are developing in an environmental impact statement regarding the use of electrometallurgical technology for treating all of the Department's sodium-bonded fuel. This EIS will be completed by the end of the year, and also by the end of the year we will complete, or rather the National Academy of Sciences National Research Council, will complete their review of this technology.

They have had a team that has been looking at this since the beginning of our research program. The Secretary will use this information in making a decision about whether to go forward with the use of this technology on a production scale, or whether to shut down the program. I have talked with the Deputy Secretary about this several times—if we decide to shut it all down, we will not require any new funding, but if we decide to move forward we will have to seek some sort of new funding, or seek a reprogramming of some sort.

NUCLEAR ENERGY RESEARCH ADVISORY COMMITTEE

Senator DOMENICI. I just have two remaining questions. Let me ask them now while we have you here, even though I am using considerable time. I think it is good that you have created a Nuclear Energy Research Advisory Committee. You have indicated who they are, a few changes, for obvious reasons.

Your office uses this group, I assume, to help you with reference to the direction and focus of your program. Has that committee reviewed your current research program?

Mr. MAGWOOD. That is ongoing right now. There are actually several activities going on within the advisory committee review of our research activities. One is being led by Dr. John Ahearne, of Sigma Xi, who is conducting a long-term research and development strategy, and he has accumulated a large group that is going to be studying that over the next several months.

Dr. Richard Reba, from the University of Chicago, who is an expert in nuclear medicine, is analyzing our isotope production research plans. Finally, Dr. John Taylor, who is retired from Electric Power Research Institute, is leading a group that will be assessing the near term needs, when I say near term, within 10 years, of research for existing nuclear powerplants. So we have really tried to cover all the ground in our program, and I think that the NERAC has been a very valuable contributor to that.

Senator DOMENICI. That kind of an approach that you have just described and intend to use, would it or could it result in an advisory group telling you where the deficiencies in a research program are that are imminent or necessary or the like?

Mr. MAGWOOD. Absolutely.

NUCLEAR ENERGY PLANT OPTIMIZATION PROGRAM

Senator DOMENICI. Okay. We spoke a little bit about the nuclear energy plant optimization program, although we did not call it that. You and I discussed where we were on relicensing. That is sort of the same thing. Last year we passed the nuclear energy plant optimization request in our appropriations and it did not get out of the full Congress.

I think we need an explanation of the significance and importance of it, so rather than just answer that for me now, would you supply a succinct answer in writing to why we need it, you and your experts indicate, so that we can make the case both on the floor and in the committee.

Mr. MAGWOOD. I would be happy to.

[The information follows:]

NUCLEAR ENERGY PLANT OPTIMIZATION PROGRAM JUSTIFICATION

HOW NUCLEAR ENERGY HELPS OUR NATION

A reliable and affordable electric power supply is a prerequisite for a strong economy and sustained growth. The United States has enjoyed such a supply of affordable electricity principally because of the diversity in its fuel mix. Nuclear energy is an important part of this diversity and since the oil embargo of 1973, it has provided about one-half of the electricity needed to meet demand growth. It has proven to be an extremely safe and reliable source of electricity supply, e.g., in the winter of 1996 when rivers were frozen and coal barges could not get to power plants, nuclear power plants continued to operate. Not only are the fuel and technology used in the nuclear energy completely domestic, but the fuel costs for nuclear are a smaller fraction of the production costs and are far more stable when compared with the fuel costs for fossil fuels. Therefore, the use of nuclear energy tends to insulate the economy from fossil fuel price fluctuations.

HOW EXISTING NUCLEAR POWER PLANTS HELP THE ENVIRONMENT

Nuclear energy generates electricity without emitting any greenhouse gases or other harmful air pollutants such as sulfur oxide and nitrogen oxides. It has played

an important role in limiting U.S. emissions by avoiding two billion metric tons of carbon emissions since 1973. The 104 nuclear power plants in the U.S. provide approximately 20 percent of the electricity generated and avoid more than 150 million metric tons of carbon emissions annually. Continued operation of the existing nuclear power plants (75 percent) another 20 years beyond their current license terms could reduce emissions by 64 million metric tons between 1995 and 2010, 208 million metric tons by 2015, and 2260 million metric tons by the middle of the next century. Also, with new requirements for lower emissions of sulfur dioxide and nitrogen oxide for fossil plants, particularly in the eastern part of the nation, the contribution of existing power plants in avoiding harmful air emissions becomes even more important. These plants are critical to achieving our international goals on climate change and to meeting current requirements under the Clean Air Act.

WHY IT IS IMPORTANT TO ENSURE CONTINUED OPERATION OF NUCLEAR POWER PLANTS

In order to ensure a continued high standard of living for the American people, we need to maintain a diverse, secure energy portfolio of fossil fuels, nuclear energy, and renewables. Currently solar and wind energy provide less than one tenth of one percent each of the total energy consumption in the United States. Due to inherent limitations of energy intensity available for solar and wind power, their share is not expected to become significant in the near future. The share of electricity generation from non-hydroelectric renewable electric generators was 1.21 percent for 1997. Their share including co-generation was 2.1 percent in 1997 and Energy Information Administration (EIA) projects it to grow to 3.23 percent in 2020 in the reference case forecast. However, if a state or federal mandated requirement of a renewable portfolio standard (RPS), which specifies that 5.5 percent of electricity generated (or sold) in the state must be produced by qualifying renewable power plants (these generally include all renewable facilities except hydroelectric plants and municipal solid waste), is achieved, and if we assume that the yields for energy crops grown on pasture and crop land will be nearly 20 percent higher than expected in the reference case, then by applying the most optimistic assumptions for capital costs, operation and maintenance expenses, and capacity factors for non-hydroelectric renewables, their share of generation is limited to be no more than 6.22 percent of total electricity generated in the U.S. in 2020.

Hydroelectric power currently supplies close to 10 percent of U.S. electricity needs but its expansion potential very limited due to a lack of available new sites, high construction costs, growing environmental concerns, and competing uses of water resources. The share of hydroelectric generation is projected to decline from 9.96 percent in 1997 to 6.7 percent in 2020.

Therefore, despite environmental concerns, use of coal and natural gas to generate electricity must continue. Nuclear energy generation must continue as well. The EIA projects that even with aggressive energy efficiency measures, U.S. electricity consumption will increase by 1.4 percent per year through 2020—the equivalent of seven large 1,000 megawatt power plants each year. During this same period, 127,000 megawatts of existing electricity generating capacity could be retired because of age, competitive pressures, and as part of U.S. utility measures to meet clean air standards.

Continued operation of existing nuclear power plants is an important hedge against uncertainties associated with meeting emission limitations for fossil plants and is critical to meeting demand in the future and sustaining our energy supply infrastructure.

ISSUES THAT COULD IMPACT CONTINUED OPERATION OF NUCLEAR POWER PLANTS

Deregulation of electricity production in the United States has increased economic uncertainties in the electricity sector. Existing and proposed environmental laws are causing the closure of older fossil-fuel plants. Similarly, we are at a critical juncture with regard to the continued operation of nuclear power plants in the United States. Licenses for U.S. nuclear power plants will begin to expire in large numbers in 2010; licenses for 13 plants representing some 11,700 MWe will expire in 2014 alone. A few utilities have decided to close older, less efficient nuclear facilities before their license expiration date. Six reactors closed before license expiration with the resultant loss of approximately 4,000 megawatts of U.S. generating capacity in the past three years.

However, over the last couple years the strategic landscape has started to change. Two years ago, with electricity restructuring looming and concerns over regulatory uncertainty, the prediction was that existing nuclear generation capacity was doomed—that fewer plants would seek license extensions and that many would shut down prematurely. Today, with consolidations in ownership occurring and several

plants proceeding and making good progress with license renewal, it is clear that there is a future for the majority of U.S. nuclear plants. However, for these plants to remain viable beyond 2020, both government and industry must take action—government reducing regulatory and other barriers to operation and industry, investing capital in upgrading their facilities for the future and investing in short-term R&D.

Industry must continue to carry the burden of short term research and they are meeting this challenge very well with an investment approaching $100 million annually. Most of this research is aimed at enhancing day to day operational performance and to respond to regulatory and other relicensing issues. On the other hand, there is a clear role for the government in filling the void in intermediate term research—research as proposed by the Nuclear Energy Plant Optimization (NEPO) program to address plant aging issues and to improve safety and reliability of existing nuclear power plants.

INDEPENDENT ADVICE ON NUCLEAR ENERGY R&D

The President's Committee of Advisors on Science and Technology (PCAST) Panel on Federal Energy Research and Development recognized the critical role of nuclear power in its report of November 5, 1997. The Panel's report recommended that the Department work with its laboratories and industry to develop a program jointly funded with industry, to address the problems that may prevent the continued operation of existing nuclear power plants.

The nuclear industry has consistently urged DOE to assume this important role. A number of letters to the Secretary of Energy from Kurt Yeager, CEO of Electric Power Research Institute (EPRI), and from EPRI's Nuclear Power Council, comprised of the nuclear utility executives who guide the industry's collaborative R&D program, were sent to DOE in 1997 and 1998 in support of this role.

THE NUCLEAR ENERGY PLANT OPTIMIZATION (NEPO) PROGRAM

Existing nuclear power plants serve the broad national strategic interests of expanding the economy, providing for energy security, and improving the environment. Recognizing these national interests, and consistent with the Comprehensive National Energy Strategy and recommendations of PCAST, the Department proposes, the NEPO program, beginning in fiscal year 2000. The goal of NEPO is to ensure that current nuclear plants can continue to deliver adequate and affordable energy supplies up to and beyond their initial 40-year license period by resolving open issues related to plant aging, and by applying new technologies to improve plant economics, reliability, and availability.

As a program that addresses higher risk, more long-term R&D than that performed by industry, and as a program addressing issues associated with existing nuclear power plants, it would be conducted in at least 50–50 cost shared collaboration with industry and with close coordination with the Nuclear Regulatory Commission.

Senator DOMENICI. Did you have anything else you wanted to add, sir?

Mr. MAGWOOD. No. I would just like to say that I appreciate your interest in this issue. It has been gratifying to have Members of Congress take a leading role and actually pushing us along in some areas, perhaps areas that we had not even really thought much about, but I appreciate your interest and involvement.

MICRO-MACHINES PROGRAM AT SANDIA

Senator DOMENICI. Thank you very much. Dr. Krebs, let me ask you about a technology that is not within your jurisdiction, but ask if you are familiar and if you know about it. Do you visit Sandia National Laboratory very often?

Dr. KREBS. I have visited Sandia Laboratories several times during my time in this job.

Senator DOMENICI. Are you aware of a research project they have going in terms of nuclear safety, but it has some very other significant uses called micro-machines?

Dr. KREBS. I have seen some of their work in that area and some of the—they send me pictures and I have gone through that part of the laboratory.

Senator DOMENICI. The reason I was asking is because I trust your judgment and I was going to ask if you were as interested in it as a future technology as I have become, but since you are not that familiar you would not have an observation on that, would you?

Dr. KREBS. Not particularly about micro-machines, but as I noted in my testimony, we are very engaged in exploring the performance of materials on a nano-scale, and the next step after that is taking it into technological applications. Now, these small machines are not quite at nano-scales yet, but nonetheless, you have to start someplace.

Senator DOMENICI. Well, there is just a gigantic interest in them——

Dr. KREBS. Right.

Senator DOMENICI [continuing]. What they are doing, producing machines just like you have your microchip, there are machines on it instead of inactive things, and they are so small, one-tenth of a hair, a hundredth of a hair, and they could end up being put in your blood system, and they could attack things like the plaque that makes heart conditions and the like. Actually, engineers designed them with micro-equipment just like you would design a——

Dr. KREBS. It is very exciting.

SPALLATION NEUTRON SOURCE [SNS]

Senator DOMENICI. It is kind of interesting. Are you satisfied that when we go to the House and say we want to continue the Spallation Neutron Source at Oak Ridge that we are going to have enough information within the next month or so showing that we have taken care of most of GAO's concerns?

Dr. KREBS. I do believe that, yes, sir.

Senator DOMENICI. I would appreciate your making a note that as soon as you have the project in a position where you can clearly state we are on course with an appropriate management team and it should be built pursuant to specs, and if the specs are right, it will work, we would like to have that from you.

Dr. KREBS. I think I can have the first installment of that to you on Thursday, with the report from the—the recent report that is coming out tomorrow.

Senator DOMENICI. If there is a subsequent installment, would you get that to us as a matter of course, get it to our subcommittee?

Dr. KREBS. Yes, sir.

[The information follows:]

SPALLATION NEUTRON SOURCE PROJECT ASSESSMENT REPORT AND ACTION PLAN

EXECUTIVE SUMMARY

The Spallation Neutron Source (SNS) is a $1.36 B project to build what will be the world's most powerful research facility for neutron science. As a seven-year construction project supported by the Department of Energy (DOE), the SNS is now in its first year of congressionally approved line-item funding. In January 1999, the DOE reviewed the project's status and recommended that experienced project leadership be recruited to strengthen project performance. With the support of the DOE

and the five national laboratories[1] participating in the project, the new SNS leadership has conducted a thorough project assessment and developed a comprehensive course of action for completing the project safely, on budget, and on schedule.

The assessment determined that many qualified people and adequate management systems are in place throughout the partner laboratories to support the current R&D activities of the project. The present accelerator concept is sound, uses existing, low-risk technology, and is highly likely to achieve the desired performance and reliability. High-quality technical work is ongoing. Planning for safe execution of the project within the Integrated Safety Management systems of all the partner laboratories is advanced. The final Environmental Impact Statement has been submitted to DOE and approved, and the Record of Decision is expected in May.

As the project enters the Title I design phase, the primary needs identified by the project assessment are to recruit additional experienced staff for key positions, optimize and fully integrate the technical design, and strengthen the business and project management systems to support construction activities. Through prompt implementation of the management action plan developed from the assessment, the project will establish within the next six months or sooner:

1. An integrated SNS organization with experienced people in key roles, fully engaging the expertise available from the partner laboratories;
2. An optimized project baseline, with adequate contingency, that delivers maximum scientific output within the $1.36 B budget;
3. Strengthened Memoranda of Agreement (MOA) that formalize accountability for deliverables, ensure project authority over all project personnel at partner labs, and cap overhead rates; and
4. Fully integrated and efficient project and business management systems to plan, track and expedite work accomplishment, and effectively control the project.

Completion of the action plan will position the SNS to be constructed safely and within budget by fiscal year 2006. In full operation the SNS facility will meet or exceed its performance goals and deliver pulsed neutron beams of unprecedented power and reliability to a world-class instrument suite.

INTRODUCTION

For 30 years there has not been a major new neutron source commissioned in the United States. This situation has led to a serious decline in the competitiveness of U.S. researchers compared to their European and Japanese colleagues. Lacking new opportunities, successive generations of young neutron scientists have migrated into other fields of research, significantly depleting the strength of an enterprise in which North America played the seminal role as recognized by the 1994 Nobel Prize in Physics. Although decline within the U.S. neutron research community has occurred, global neutron research has expanded its unique role in determining the structure of critical materials, especially complex magnetic and organic substances which are essential to our high-technology economy. Given the growing age of existing U.S. facilities and the compelling scientific importance of neutrons, the construction of a leading-edge neutron research facility has become an urgent national priority.

The U.S. neutron research community has now focused on reestablishing world leadership in this critical field by building the Spallation Neutron Source at the preferred site of ORNL. Using advanced accelerator technology, and at a cost of $1.36 B, this source will be ten times more powerful than any existing facility worldwide when it is completed in fiscal year 2006. Including new-generation neutron-source technology and instrument design, the SNS will extend its scientific advantage to an even greater level. Success in achieving these challenging technical goals can only be accomplished through exemplary cost, schedule, and safety performance.

The DOE regularly reviews its major construction projects using a comprehensive approach that has an outstanding reputation for depth and integrity. During January 26–28, 1999, the DOE conducted such a review of the SNS project, which has its first year of construction line-item funding. The purpose of this review was to validate the projects proposed Level 1 (Office of Science) cost, schedule, and technical baseline. The review determined that the project planning was not sufficiently mature to support the validation of the necessary baseline and recommended that experienced project leadership be recruited to ensure the project could be executed successfully. In early March, Dr. David Moncton—previously the leader of the re-

[1] The preferred site for the SNS is at Oak Ridge National Laboratory (ORAL) and essential technical expertise is being provided by Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL), Lawrence Berkeley National Laboratory (LBNL), and Los Alamos National Laboratory (LANL).

cently successful Advanced Photon Source project—was appointed. With the support of DOE (Appendix A) and the five DOE laboratories participating in the project, he has attracted other experienced managers, enlisted independent specialists, and conducted a rapid assessment of every aspect of the project to determine the assets, status, and the course of action necessary to establish the baseline and complete the project successfully. Part of this assessment considered whether the project's scope was optimized to provide the greatest capability for neutron science that could be obtained within the budget of $1.36 B.

Informed by this assessment, DOE review reports, and its collective experience with major scientific projects, the new SNS leadership developed the action plan summarized in Section 4 below. This plan contains the actions, milestones, and strategies needed for the balance of fiscal year 1999 to position the SNS for success in meeting its performance objectives.

The SNS project has a great deal of work to accomplish in a short period of time. But there exists within the DOE system, and available to the project through the five-lab collaboration, expertise sufficient to achieve all the long-range goals of the project and build a facility that will revolutionize neutron scattering worldwide. This facility will reestablish the U.S. as the premier center for neutron research, and its safe construction, on schedule and within budget, will clearly demonstrate the commitment and the capacity of the DOE national laboratories to achieve world-class management and scientific performance.

PROJECT VISION AND MANAGEMENT PRINCIPLES

The key element in the SNS project planning is the formation of an effective multi-laboratory partnership to insure that the best scientists/engineers and the optimum technology are employed in the design and construction phases with followed by successful commissioning and operation. To execute this project effectively, the participating laboratories must share a common vision for the facility and embrace an active management approach that transcends institutional boundaries. Underlying both of these elements must be a strong commitment to attract and support people who are highly qualified in every aspect of technical and management responsibility.

Vision

By the year 2006, the SNS will have been completed safely, within cost and on schedule by the multi-laboratory partnership. It will be positioned to meet or exceed its performance goals within the ensuing few years, delivering pulsed neutron beams of unprecedented power reliably to instruments with highly advanced designs. Through their involvement in these developments, an expanded user community will advance the frontiers of knowledge in a broad range of scientific fields.

In these accomplishments, the partner laboratories will have met or exceeded their individual goals and enhanced their reputations in areas important to their own competencies. But more importantly the people involved will have achieved something that none of them alone could have done—turning this vision into a reality that will transform many fields of science for decades to come.

Management Principles

Environment, safety and health.—Of overriding importance is the safety of our people and the protection of the environment. It is our philosophy that accidents and injuries can be prevented, that we must rigorously adhere to relevant safety and environmental standards, and that no individual working for the SNS project should feel compelled to do work he/she believes is not safe. Managers and workers share this responsibility, and all must work to continuously improve our collective performance.

High-quality people.—Our next most important principle is that optimum results will be achieved on this complex project by the best people working in a collaborative and supportive environment.

Integrated, cross-laboratory teamwork.—A major challenge in this project is to manage effective collaboration among the participating laboratories. We will need to establish explicit mechanisms to overcome institutional, geographic, and communication barriers and build an integrated SNS team.

Project-based thinking to deliver on time and within budget.—It is essential to recognize that the SNS is first a major construction project with specific deliverables and a firm cost and schedule. A key principle for a project of this magnitude and technical complexity is the need to optimize globally—that is, over the entire project—rather than locally. For every project element, the temptation must be avoided to optimize local technology, budget or schedule, whenever doing so would not benefit the project overall.

Active management and clear communication.—Management has a fundamental responsibility to make and communicate decisions in an open and logical manner, while achieving the highest possible degree of consensus. It is essential that project employees and managers respect and trust one another, and that the management team act in a way that is deserving of that trust.

Collaboration Management

The most fundamental issue in collaboration management is the nature of the "contract" between ORNL as the lead lab and the other partner laboratories. Because ORNL has the ultimate responsibility for delivering the SNS project and operating the completed facility, it is imperative that ORNL provide credible technical and project leadership on behalf of the collaboration. It is incumbent on ORNL to delegate appropriate authority to the partner labs for execution of their work consistent with their demonstrated performance and the terms of the Memoranda of Agreement. It is equally important that ORNL have full ability to track and appropriately manage SNS activities at the partner labs. In implementing this trust-but-verify approach, it is desirable to have maximally transparent boundaries between the partner labs, thereby creating an integrated project team with accountability and communication as clear as if the project were executed in the traditional single-lab approach.

ACTION PLAN

Planned actions developed by the new SNS leadership are grouped within six principal categories and are summarized below.

People and Organization

The Project Office will be reorganized by July to establish clear responsibility for each technical and administrative area and increase the number of project-experienced managers (Fig. 1). An accelerator technical staff (led by an experienced Accelerator Systems Division Director) will be promptly established at ORNL to lead integration and review of component and system designs, prepare for facility operations, and guide procurement, fabrication, installation, testing and commissioning strategies. An integrated project human resources plan will be developed (in phases and completed by October) to guide the hiring process. Key staffing needs identified during this project assessment will be filled as soon as possible with qualified and experienced individuals. The HR plan will include policies and mechanisms for ensuring project input into performance appraisals for people performing SNS work, position description requirements, staffing levels, and strategies to ensure that broad diversity in talent is achieved.

SNS Organization

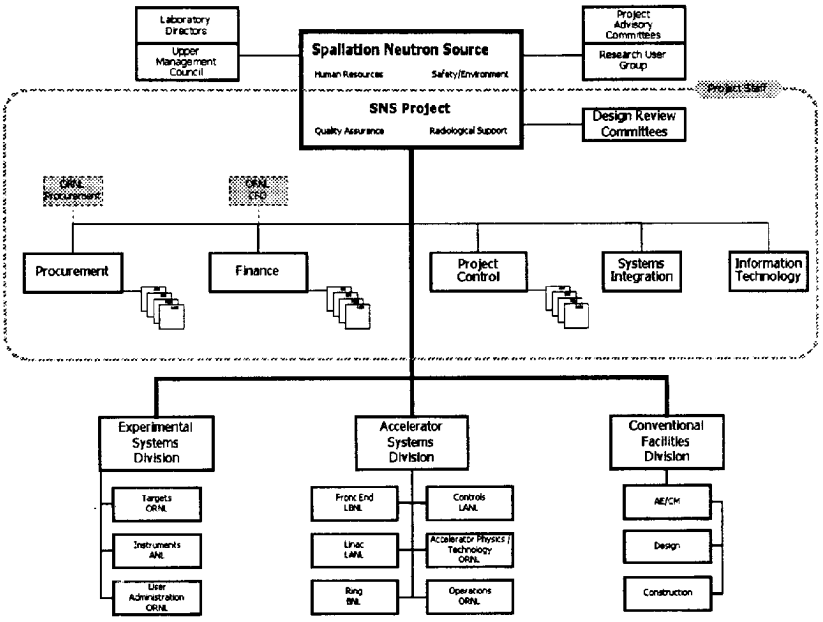


Figure 1

Technical Concept

By August 1999, a plan for SNS instrumentation will be developed that reflects the need for best-in-class instruments, involves the user community, capitalizes on the capabilities of the federally-funded laboratories with substantial neutron science experience, and includes ongoing instrument development. This plan will propose mechanisms and incentives for investment by potential investors, a strategy for engaging the scientific community early in the project, and user access policies tailored to the needs of the neutron scattering community in the U.S. A series of workshops aimed at outreach to new user communities (e.g., the biological/biomedical community) will be launched. Also, by August 1999, a staffing plan for operations, ongoing instrument development, and on-site user activities and support will be developed to optimize the design of the conventional facilities. An R&D program on a backup solid target will be initiated now.

The present linac/accumulator ring (LAR) concept will be optimized for 2–MW operation by May 1999 and its detailed cost estimate will be reviewed and scrubbed by the project management in June. This process will strive to identify available funds to increase project contingency and to provide additional instruments, targets, and office/laboratory space. This 2–MW LAR design will be reviewed by the Accelerator Systems Advisory Committee and proposed as the project baseline to DOE in mid-July. In parallel, a study will be started immediately (provided sufficient resources can be identified) to explore modified accelerator designs by June. If modifications are shown to have substantial cost advantages with no loss of performance or negative impact on the project's long-range schedule, then their designs, cost estimates, and schedules will be developed by October 1999 and adopted through the project's formal change control process.

Conventional Facilities and Site

Full geotechnical qualification of the preferred ORNL site will be pursued aggressively. Innovative technology and a site drilling plan will be employed, and the three-season surveys for threatened species and endangered plants will be completed by the end of calendar year 1999. Facilities programming will be initiated now to ensure that adequate requirements to support researchers and operations

staff are identified in the design. Systems requirements documents for all facilities will be completed, and the design requirements and site plan of the Joint Institute for Neutron Science will be reviewed with the University of Tennessee to ensure that the SNS site plan and programmed space needs are optimized. Based on the actions above, the final SNS site qualification will be completed by September 1999.

Project Management

The Memorandum of Agreement with each partner laboratory will be revised by May 1999 to formalize each laboratory's accountability for deliverables, strengthen the authority of the Project Director over SNS-assigned personnel at each location, and cap overhead rates applied to SNS activities for the duration of the project. The role of the project Upper Management Council will be developed to provide additional and regular advice and assistance with strategic collaboration management issues.

Environment, Safety and Health, and Quality Assurance

A focused effort on target radiological issues in the preliminary safety analysis report (PSAR) will be instituted now to support a project decision in June 1999 on target hazard classification and potential mitigation proposals. Completion of the draft PSAR will be expedited to the first quarter of fiscal year 2000. The project ES&H group will issue a draft plan by July 1999 to establish appropriate project-wide ES&H standards for engineering design. A quality assurance (QA) approach will be developed and a tailored QA plan will be approved by September 1999. To facilitate development of this plan and enhance cross-project teamwork, a workshop including QA specialists and technical managers will be conducted.

Business Systems

A number of actions are planned to improve the project's management support systems, including human resources, finance and accounting, and procurement.

With DOE assistance, policies and plans to better facilitate recruitment of experienced personnel will be established to provide continuity of service benefits when hiring between DOE laboratories. Relocation and family assistance to address recruiting concerns at ORNL (including transfer of ORNL personnel hired at partner laboratories) will be procured. Routine use of videoconferencing capability available to SNS project teams at all partner labs will be implemented by July 1999 to reduce travel costs and enhance communications.

By October 1999, methods to automate the integration of financial and cost performance reporting system information with project schedules will be in place, reducing the manual effort currently required to reconcile these data and to provide improved contingency control. The project office will conduct a detailed analysis of overhead rates at all partner laboratories and verify cost estimates during the June cost estimate scrub. This action will support the establishment of long-term capped overhead rates as reflected in the strengthened MOA. An SNS project financial audit plan will be formalized by October 1999, to include plans for regular financial reviews and guidance for audit activity at partner laboratories.

A project-wide procurement strategy will be developed by July; this strategy will include advanced procurement planning, guidance for acquisition decisions, reporting requirements and formats, approval levels, and buyer/technical staff roles and responsibilities. A workshop led by ORNL project procurement will be scheduled to help develop this strategy, build teamwork, and resolve inefficiencies resulting from constraints on procurement organizations in the partner laboratories. Based on the project procurement strategy, the procurement workload and resulting staffing plan will be developed and in place by October 1999.

CONCLUSIONS

This assessment report and action plan addresses the SNS project's organization, technical, and scientific capability, site qualification, project management systems, business systems, and human resources. The plan focuses on establishing by July 1999:

1. An integrated SNS organization with experienced key staff in place that takes advantage of the capabilities at the partner laboratories, while building at ORNL the technical and administrative strength to lead the construction effort and operate the completed SNS user facility for world-class scientific research;

2. A validated, self-consistent, and optimized technical, cost, and schedule baseline with adequate cost and schedule contingency and maximized neutron-science capability within the $1.36 B budget;

3. Strengthened interlaboratory MOA that formalize accountability for deliverables, ensure project authority over all project personnel, and cap overhead rates for the life of the project.

Major objectives to be achieved by October 1999 include:

4. To complete the geotechnical analysis of the preferred site at ORNL to determine that it is acceptable;

5. To establish a firm hazard category for the target facilities to allow optimal design and planning to proceed and ultimately to allow safe and cost effective operation;

6. To implement fully integrated and efficient project management systems to plan, track, and expedite work accomplishment, and effectively control the project; and

7. To establish financial, procurement, human resource, and related business systems that are tailored to project needs and linked to the project management databases.

The assessment determined that many qualified personnel and management systems adequate for the R&D phase are in place throughout the partner laboratories. High-quality technical work is ongoing. Planning for safe execution of the project within the Integrated Safety Management systems of all the laboratories is advanced. The final Environmental Impact Statement has been submitted to DOE for approval and the Record of Decision is expected in May. The primary project needs are to significantly upgrade the capabilities and systems of the central project office during the design phase, and to fully optimize and integrate the design for construction and operation.

Project management, reporting, business, and human resource systems will also be tailored to execute the project in the multilaboratory environment. These systems will become fully mature by October 1999. The critically important task of developing a staffing plan and attracting highly qualified personnel will proceed concurrently. The Upper Management Council, consisting of one senior line manager appointed by each partner laboratory director, will be convened on a regular basis to assist project management and help refine the collaboration management approach. Successful completion of the described action plan will position the SNS to be completed safely by the multilaboratory partnership within budget and on schedule.

DOE LETTER OF AGREEMENT

DEPARTMENT OF ENERGY,
Washington, DC, February 19, 1999.

Dr. DAVID MONCTON,
Associate Laboratory Director for the Advanced Photon Source,
Argonne National Laboratory, Argonne, IL.

DEAR DAVID: Al Trivelpiece told us that the five laboratory directors responsible for the construction of the SNS met and that you were their enthusiastic and unanimous choice to lead the SNS project. I was very pleased to learn that you are seriously considering this position and that you already have agreed to undertake a personal review of the project. I understand and support your need to review all aspects of the project and to discuss your findings and recommendations with both the DOE and the five laboratory collaboration.

We have agreed that you will assemble a Senior Management Team from both within and outside the present SNS project. The Senior Management Team will conduct a comprehensive month-long asset assessment using a set of teams composed of outside experts and internal asset owners. Under review will be, among others things, financial resources, human resources, project management systems, business management systems, physical assets, and the site itself. Importantly, we have agreed that your assessment will include the reference design and its associated costs and schedules. You will prepare a Project Plan containing findings and recommendations by the first week in April and will present this plan to DOE, the directors of the SNS partner laboratories, and the several SNS advisory committees immediately thereafter. A longer-term goal is to have the project ready for a Level 1 baseline review by July 1999.

I want to assure you that DOE is open to accepting a wide range of recommendations subject only to a very few constraints, which we have already discussed. These constraints are the following. (1) The Level 0 Baselines (cost, scope, and schedule) approved by Secretary Pena in December, 1997, and modified only as a result of the fiscal year 1999 appropriation must be maintained; within the TPC, there must be an adequate contingency. (2) The SNS project must continue as a five-laboratory collaboration with ORNL as the preferred site. (3) In accord with the recommendations of the Basic Energy Sciences Advisory Committee (BESAC) regarding the technical

specifications of the SNS, the design must be sufficiently flexible so that the SNS can be operated at a significantly higher power in a later stage. Furthermore, the upgrade path must minimize downtime for the users. (4) Finally, it is very important that the design maximize scientific capability through a large and robust initial suite of instruments and through other accommodations to the needs of the neutron science user community.

Other recommendations of BESAC were that the design rely on low-risk technology initially, the linear accelerator design not exclude direct injection of long pulses into a spallation target, and the source have a predictability and reliability as set forth in the Kohn report and be capable of operating at least 240 days annually. You should consider these recommendations as you undertake your assessment of the project.

We have also agreed to work with you and the Laboratory to accommodate needs related to recruitment and retention incentives for the SNS senior management team and other issues. Please let me know if there is anything that I can do to expedite your review. I look forward to your presentation to me and to the Office of Basic Energy Sciences. Again, I want to sincerely welcome you into the SNS collaboration and offer my full support and help during the coming weeks.

Sincerely,

MARTHA A. KREBS,
Director, Office of Science.

Senator DOMENICI. I do not want to burden the record on it, but I just want to say it concerns me greatly that we are in this position, and it should concern you, concern the Department of Energy. The Department of Energy does not have the greatest record of getting these kind of major projects through completion. I do not care to use statistics, but that record is not very good. I would hope that this Spallation Neutron Source machine, which everybody thinks is a great tool for science, that we do not mess it up in terms of managing its construction and early operation.

Dr. KREBS. I have a great concern for it, too. I consider this project to be a critical element of the Department's role and the Office of Science's role as a provider of major unique scientific user facilities. We have paid a lot of attention to the management of the project.

The difficulties that were discovered were discovered by our process, which is an extremely open one, and we took very strong, prompt action, and we will continue to do that as the project goes along.

EMPLOYMENT LEVELS

Senator DOMENICI. The Office of Science, which you head, has one of the lowest ratios of program direction funds to program funds. In other words, your office uses very few Federal employees to oversee a great deal of research funds. Are you able to attract and retain sufficient employees to do this kind of work, and/or do you have authority to go outside and contract for them?

Dr. KREBS. This is a hard question to answer. We have some very dedicated, extraordinarily bright, committed people who work for the Office of Science. About 50 percent of them are eligible for retirement, so I have been able to keep them on board, because they care a great deal about the programs that we support.

Our headquarter's FTE number has gone down in the last 5 years from 380 to about 270. So as I look forward in the next 2 to 5 years, I think the ability to attract, retain, and compensate the kind of people we have now is a big concern for me.

Senator DOMENICI. Are you starting to plan now?

Dr. KREBS. Sir, the Secretary has engaged in a Workforce-21 planning exercise, by which he has reviewed the commitments that the Department made, I guess now 3 or 4 years ago, I cannot remember, and there are adjustments being made, so we will be able within the next year to begin to address some of these issues.

Mr. REICHER. Mr. Chairman, if I could make a brief comment.

Senator DOMENICI. Please.

Mr. REICHER. In line with what Dr. Krebs said, under Workforce-21 Secretary Richardson has recognized that under the Strategic Alignment Initiative, which brought down the FTE levels in the Department substantially, we do now face a situation where there are some specific technical and other personnel needed in the Federal ranks to run our programs. In the case of my office, our staff, our Federal staff, is down somewhere on the order of 27 percent in the last few years, and our budget is up somewhat.

What we found is that we do not have, in fact, adequate federal staff to administer the taxpayers' dollars as well as we think we need to, and so part of Workforce-21 is designed to address some of those disconnects in the staffing of the Department of Energy and a variety of offices. I think all are hopeful that in your consideration of the various budget requests that these targeted increases in Federal staffing would be supported. Thank you.

Senator DOMENICI. Thank you. Thanks to both of you. I wonder if Workforce-21 also reviews the areas where we are not short to see if there is an excess elsewhere.

Dr. KREBS. I think it looked across all of the organizations in the Department, and I cannot tell you whether they shifted from one to the other. I do not know that.

Senator DOMENICI. Well, we get a constant barrage of inquiries about whether or not the OE, in skinning down, because of budget restraints, has more people in Washington than they need and reduced forces elsewhere, they reduce jobs elsewhere. I do not know the answer to that, but——

Dr. KREBS. May I make a comment?

Senator DOMENICI [continuing]. I am concerned that we have such a shortage in these areas, and we have to do some planning, especially in the one you described, about 50 percent being ready to retire. I mean you need corporate memory, but you need to have some talented people.

Dr. KREBS. May I make a comment?

Senator DOMENICI. Sure.

FIELD STRUCTURE

Dr. KREBS. I think that it is important to distinguish the way different programs at the Department of Energy use the field structure. The Environmental Management Program, for example, really operates very strongly in the field and manages their programs in the field.

For a program like the Office of Science, where we reach across so many different disciplines in the scientific community, it is very difficult to reproduce that capability in the field, so that the planning, program execution and oversight in large measure stays at headquarters rather than being—and some contract management, some project management for big facilities like the Spallation

Source does take place in the field, and so we have a different balance than, for example, the Environmental Management Program might have. The Office of Energy Efficiency and Renewables, or our Nuclear Energy, might be similar in that regard.

Senator DOMENICI. Do you wish to comment on that, Mr. Reicher?

Mr. REICHER. Yes. We have a mix of both R&D like the Office of Science, and then some deployment-oriented programs, so what we are focused on is ensuring we have the core capability at headquarters to manage the cross-cutting R&D, but then we also have important Federal workers in the field in six different cities who help us with the deployment of these technologies.

So striking that balance has been a part of the Workforce-21, and I would also add the Secretary's review of the whole field structure.

Senator DOMENICI. Mr. Magwood, I would assume your portion of the Department got so small that you must have a problem that everybody is new.

Mr. MAGWOOD. I think that our situation is similar to Dr. Krebs'. In fact, our outlook for retirement is worse than the Office of Science. We have one of the older offices in the Department, and we have already lost a great deal of important talent, partially because of the need to downsize to meet the strategic alignment initiatives, but also, quite frankly, because there is some exacerbation on the part of some of the professionals in Nuclear Energy about the direction of the program over the last few years.

We have reversed that, and a lot of people we think are going to hang on for a while. I really am focused now on trying to bring some younger people into our office to make sure that the expertise we have can perpetuate into the future. We are very pleased with the outcome of the Workforce-21 initiative, and our program direction request reflects our expectations there.

LOW DOSE RADIATION RESEARCH

Senator DOMENICI. Dr. Krebs, everywhere we look in terms of nuclear waste disposal, any area where we have a potential for low-level radiation, we are confronted with the fact that almost everybody tells us that we do not know the effects properly, and that most of them say we overstated the effect of low-level radiation.

We have finally come to a point at which I am very pleased to be part of, where Congress provided $12 million for a research program to try to help us understand the health effects of low-level ionizing radiation, that is, whether there is at very low levels a linear relationship between radiation exposure and cancer, which we have all, based on one major study, accepted the linear relationship, and even a non-scientist can look at an explanation of it and have some real wonder about whether it truly is scientifically extendable, as it has been.

I understand that in response to that money you have put out solicitations for a $7 million proposal, and that you received $60 million or $70 million worth of applications.

Dr. KREBS. Correct.

Senator DOMENICI. Are they good institutions and partnerships that want to do this research? Are they among the best in the country?

Dr. KREBS. Yes. I think they range across all of our laboratories and all of the major research universities, so we think that we will be able to run an external peer review process that will assure that we have the best and the most relevant research to the program plan, within the program plan.

Senator DOMENICI. Do you share my enthusiasm that the country ought to get this done?

Dr. KREBS. I think that this is a particularly opportune time for the scientific community to take another look at this problem. Given the tools that we have developed within the genome program, and since the damage that occurs, that induces any kind of radiation response arises first at the genetic and genomic level, we now have the tools so that we can take a look at it, so it is a particularly appropriate time.

Senator DOMENICI. Now, the biological and environmental research advisory committee has helped you develop the research plan for this effort, is that right?

Dr. KREBS. Correct, sir. I requested last year that they provide a plan, they have submitted it. I believe that it has been shared with you.

Senator DOMENICI. Does your budget for 2000 fully fund the program set out by the advisory committee.

Dr. KREBS. It does not, sir, as far as I understand.

Senator DOMENICI. How much are you short?

Dr. KREBS. I would have to provide you, for the record, but my understanding is that we have $10 million in the budget, and to completely take advantage of all the opportunities that the scientific community has identified would take more than $20 million.

[The information follows:]

LOW DOSE RADIATION RESEARCH PROGRAM

Senate Report 105–206 dated June 5, 1998, directed the Biological and Environmental Research (BER) program to provide the Senate Energy and Water Subcommittee of the Senate Appropriations Committee a draft plan for the Low Dose Radiation Research Program. A draft program plan called for the program to spend $3 million in fiscal year 1998, $5 million in Fiscal year 1999, and $10 million per year in fiscal year 2000–2007. The fiscal year 1999 Energy and Water Development Appropriation provided $8 million for this program ($3 million in the BER budget and $5 million in the budget for Environmental Management), for a total of $13 million in fiscal year 1999, and called for the development of a long range program plan. The Biological and Environmental Research Advisory Committee (BERAC) prepared a program plan that was delivered to Congress in March 1999. This plan called for $22.4 million in fiscal year 2000, in contrast to the fiscal year 2000 request of $10 million.

Senator DOMENICI. More than what?

Dr. KREBS. $20 million.

Senator DOMENICI. Okay. We thought it was about $22 million, is that about right?

Dr. KREBS. Yes.

Senator DOMENICI. The reason I ask and the reason I will be concerned about documentation and what the advisory group said is because I do not think you want to do one of these and not get it right. You must do the peer review, you have to get the right answer so that when we are finished we do not have everybody that is anti-nuclear questioning the results. They will anyway, therefore, it is critical that we be scientifically sound.

Dr. KREBS. You want to do the right science——

Senator DOMENICI. You have it.

Dr. KREBS [continuing]. The fastest way.

HIGH FLUX BEAM REACTOR

Senator DOMENICI. Can we talk a minute about the High-Flux Beam Reactor?

Dr. KREBS. Certainly.

Senator DOMENICI. The Department intends to decide in June whether to re-start the High-Flux Beam Reactor at Brookhaven. Would your request provide sufficient funds to re-start the reactor or shut it down, depending on the decision?

Dr. KREBS. Let me provide that for the record. Right now, we are about to release in late May or early June the draft environmental impact statement for the future of the high-flux beam reactor. We can release that draft without a preferred alternative.

If we release the draft that way, then when the final report is released come next November or December that would be the time when we would have to finally determine a preferred alternative.

The Secretary has indicated that he is willing to consider an early decision, but we have not engaged him in the review of the issues that would lead to that decision that might lead us to have a preferred alternative with the draft. If the decision were to restart, we would still have a considerable amount of activity to undertake to prepare for actually turning on the reactor.

If the decision were to shut down, we would still need, again, approximately the same amount of funding that is in our 2000 budget request to prepare the facility for a safe shutdown. A decision, even an early decision to restart, would require some 16 months before we could expect the facility to operate again, and the funding in a shutdown case does not account for any of the decommissioning and decontamination costs.

[The information follows:]

HIGH FLUX BEAM REACTOR FUNDING

Yes, the fiscal year 2000 funding request for the High Flux Beam Reactor is adequate for restart or shutdown activities.

During the first quarter of fiscal year 2000, before completion of the Environmental Impact Statement (EIS) and the associated Record of Decision, activities that are common to all of the EIS alternatives will continue. These activities are part of the High Flux Beam Reactor (HFBR) Transition Project initiated in 1998. These include the canal liner, as well as the seismic upgrades to the operations level crane and the control room, the repiping of the stack drains, the installation of Suffolk County Article 12 leak detection instrumentation, and the Safety Analysis Report (SAR) update implementation.

If the DOE decision is to restart the reactor, restart related activities will start when DOE authorization is given. It will take about 16 months from the time the decision is made to restart for the reactor to start operations. These activities include, the secondary water basin, piping, and isolation valve upgrade, canal internals fabrication, SAR implementation of corrective actions, Operational Readiness Review implementation, and hiring and training of personnel.

If the DOE decision is to shut down HFBR, activities will start to place HFBR in safe shutdown. These activities include draining and removal of all radioactive fluids and removal of activated components in the pressure vessel. These activities will continue throughout fiscal year 2000.

BATES LABORATORY FUNDING

Senator DOMENICI. Let me just talk a minute about the MIT Bates facility. Your budget request includes no funding for the continued operation of that facility at MIT.

Dr. KREBS. Correct.

Senator DOMENICI. After the submission of the request I understand Secretary Richardson committed to submit a budget amendment to provide some continued funding for the Bates facility. Can you tell us when we will receive that amendment, and what you would propose to do at MIT next year?

Dr. KREBS. My best understanding at this moment is that an amendment was cleared by OMB last night. The details of how that facility will operate in fiscal year 2000 I will have to provide you for the record. But it would be our intention to complete the BLAST detector and to operate the facility through the year 2004, to complete the science that can be obtained from BLAST. We may be able to operate another detector as well, but we need to look at that carefully.

Senator DOMENICI. From where are you going to get the money? Have you decided that yet?

Dr. KREBS. Well, I think that is in the budget amendment, sir.

Senator DOMENICI. Oh, good. We will be interested in it. It seems to me that this facility, I have great respect for MIT, it seems like it just cannot die. It must have some very excellent supporters somewhere. Do you have any idea whom they might be?

Dr. KREBS. Well, sir, what I can tell you—certain kinds of support you probably know better than I, but in terms of scientific support, I can tell you that last year we asked the Nuclear Science Advisory Committee to review the medium energy physics program, and they came in very high on the Bates facility.

So to the extent that the Administration has been able to find additional funding for this project, it is a good thing to do.

Senator DOMENICI. That would not be the only scientific facility around that there would be great science support for, would it? I think that probably you and I could come up with 50 or 60 before this hearing is over.

Dr. KREBS. I am sure you could.

Senator DOMENICI. In any event, the Secretary made a nice turnaround there, and he is entitled to make a few changes, just so he cuts the right programs to pay for it. It would be all right with me.

[The information follows:]

NUCLEAR PHYSICS

The budget amendment will provide sufficient funding to maintain support of the staff, operate the accelerator for research, fabricate the Bates Large Acceptance Spectrometer Toroid detector (BLAST), and develop the capabilities to carry out a research program using BLAST when it is completed.

The Bates Laboratory will operate 2000 hours for research during fiscal year 2000. This time will primarily be used to pursue new investigations using the recently completed Out-of-Plane Spectrometer System (OOPS). OOPS fabrication has been supported by the National Science Foundation and the Department of Energy. The OOPS system will be used with continuous wave (cw) beams extracted from the new South Hall Pulse Stretcher Ring.

Fabrication of the BLAST detector will continue. BLAST will utilize the very high current, cw, polarized electron beams which circulate in the new Pulse Stretcher Ring.

Upon completion of BLAST in fiscal year 2001, the Bates scientific program will shift primarily to BLAST, and it is expected that a three-year program of research will be carried out with that new detector.

At the end of fiscal year 2004, the Bates Laboratory will begin a planned termination of activities, reaching a Decommissioning and Decontamination (D&D) level of support in fiscal year 2006.

MIT plans to provide additional support in fiscal year 2000 and fiscal year 2001 for enhanced research operations.

CLIMATE CHANGE TECHNOLOGY INITIATIVE

Senator DOMENICI. With reference to climate change technology initiative, I am trying to determine if the climate change technology initiative is a new effort or a relabeling of the current work. For example, within the geoscience budget, the core program would drop $6.9 million under your request, but the geoscience climate change technology initiative would go up 6.8. Is this new work, or simply relabeling the old program?

Dr. KREBS. There is no question that within the Basic Energy Sciences Program and some parts of the Biological and Environmental Research Program the climate change technology initiative begun last year was essentially an extension and expansion of directions that were already being pursued, and it simply allowed us to engage more fully in opportunities that we had identified.

This year, in order to accommodate the directions of the initiative, we had to make some hard decisions about the activities that were not necessarily so clearly connected.

Senator DOMENICI. Unless any of you have some comments that have been provided by either answers or questions, we have completed this round. Yes, Mr. Reicher.

Mr. REICHER. Just a quick follow-up, Mr. Chairman. On the climate change technology initiative, I wanted to echo what Dr. Krebs said, and that is that I think there has been something of a misunderstanding that the climate change initiative represents a whole new category of work, but, in fact, it is pulling together a whole host of activities that have been undertaken by the Department and other agencies for a long period of time that can address climate change as well as a host of other challenges we faced, and to that, or added some new activities, but the bulk of the work are solid existing programs that span all the energy technologies and efficiency work that we have been doing for a great deal of time.

ACCELERATOR TRANSMUTATION OF WASTE

Mr. MAGWOOD. Just one thing. I mentioned to you that we met with a large contingent from Japan to talk about cooperation, and one area that they were very interested in talking to us about was the accelerator transmutation of waste, a subject I know you are very familiar with.

We are working closely with the Office of Civilian Radioactive Waste Management to move forward with the road map to study accelerator transmutation of waste. After listening to what the Japanese had to say, I think that there is a very significant opportunity to cooperate with them over the long term with this program, and we will be looking forward to doing that. I just wanted to let you know that that this activity is underway.

Senator DOMENICI. Thank you very much. We are going to have questions that we will send to you that are from Senators Reid, Craig, and McConnell. Let us use the 2-week return that we had agreed upon with Senator Reid for all three.

POTENTIAL PROGRAMMIC PROBLEM AREAS

Let me ask each of you, with reference to the things you manage and things under your control, I will start with you, Dr. Krebs, is there any program activity, construction project, or the like, that is in trouble out there that you think a subcommittee ought to know about, and if something breaks at least we have been informed? It is sort of like asking the Corps of Engineers are your dams safe.

We have given them money to make sure that they are and they report every dam is safe. We get surprised frequently on things that do not turn out exactly as we would like at the Department of Energy, and I am not referring to the spying or the espionage issue. Do you understand my question?

Dr. KREBS. I think I do, sir. It is hard for me, when I think about having to answer this, knowing that, in fact, my colleagues in the scientific community come in to talk to you on, or talk to any number of people here in Washington on a regular basis, if you want me to tell you that they have all the money they think they need——

Senator DOMENICI. Oh, no.

Dr. KREBS [continuing]. They do not. If on the other hand you want to know that within this budget are we operating our facilities in an at least optimized way, I think I can say that we are. In terms of facilities that are under construction, there will be no surprises, because, again, our program reviews and our project reviews are very open, and you hear almost as soon as we do when there are difficulties, and right now, outside of the Spallation source, we anticipate no problems.

Senator DOMENICI. You have a lot of nuclear reactors that you have responsibility for. Are any of them leaking?

Dr. KREBS. One is shut down, namely, the High-Flux Beam Reactor, and the other is being upgraded, namely, the reactor at Oak Ridge.

Senator DOMENICI. Are there any projects, major projects, that are running over the cost estimates?

Dr. KREBS. It depends on how you count it, sir. GAO might say something differently than we would. But right now, we are wrapping up the B factory, the Relativistic Heavy Ion Collider, the Fermi Main Injector, and the Combustion Research Facility. To my knowledge, they are pretty much on schedule and on cost.

Senator DOMENICI. Maybe what you ought to do for the record, and just consider this a question to be answered, maybe you ought to list all the major projects you have going on, what their estimated costs are, where we are in——

Dr. KREBS. Yes, sir.

Senator DOMENICI [continuing]. The construction phasing, and where the estimates are.

Dr. KREBS. Okay.

[The information follows:]

CONSTRUCTION PROJECTS

[In thousands of dollars]

Title, Location and Project Number	TEC	Appropriation To Date	Remaining Approp. Needed	Estimated Completion	Total Actual Obligations to Date (4/30/99)	Total Actual Costs to Date (4/30/99)
ENERGY SUPPLY—NUCLEAR ENERGY:						
TRA LANDLORD:						
Fire and Life Safety Improvements Idaho Engineering And Environmental Laboratory Idaho 95–E–201	15,446	11,366	4,080	4th Qtr 2001	11,366	6,559
Electrical Utility Upgrade Idaho Engineering And Environmental Laboratory Idaho 99–E–200	6,700	341	6,359	4th Qtr 2003	341	88
ISOTOPE SUPPORT: Isotope Production Facility, TA–53 Los Alamos, New Mexico 99–E–201	14,000	6,000	8,000	3rd Qtr 2001	6,000	1,069

CONSTRUCTION PROJECTS

[In thousands of dollars]

Title, Location and Project Number	TEC	Appropriation To Date	Remaining Approp. Needed	Estimated Completion	Total Actual Obligations to Date (3/31/99)	Total Actual Costs to Date (3/31/99)
BASIC ENERGY SCIENCES: Spallation Neutron Source: Oak Ridge National Laboratory Oak Ridge, Tennessee 99–E–334	1,159,500	101,400	1,058,100	1st Qtr 2006	32,835	18,448
HIGH ENERGY PHYSICS:						
Neutrinos at the Main Injector (NuMI) Fermi National Accelerator Laboratory Batavia, Illinois 98–G–304	76,200	19,800	56,400	2nd Qtr 200	19,800	3,548
Wilson Hall Safety Improvements Fermi National Accelerator Laboratory Batavia, Illinois 99–G–306	15,600	6,700	8,900	3rd Qtr 2002	6,700	93

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY—CONSTRUCTION PROJECTS

[In thousands of dollars]

Title, Location and Project Number	TEC ($000) [1]		Appropriations To Date	Remaining Appropriations Needed	Estimated Completion [1]	Total Actual Obligations to Date (3/31/99)	Total Actual Costs to Date (3/31/99)
	DOE	MNVaP					
Minnesota Alfalfa Project (MAP) Granite Falls, Minnesota DE–FC36–96GO10147	49,821	182,179	11,040	([2])	1st Qtr 2001	11,040	10,354

[1] Total Estimated Cost (TEC) and the estimated completion is the original estimated project cost and completion date for the project.

[2] Due to recent developments, Minnesota Valley Alfalfa Producers have requested the project be restructured as a co-firing project which will reduce the TEC by not requiring new construction. DOE participation and costs are yet to be determined.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. Does anybody else have any comments there? I think I will ask the same question of each of you. That last one should apply to each of you, if you would, and also when you leave during the next—in preparing the answers, if there is something you think the committee should know about that may not go exactly as planned, or there is evidence that it might not, I would appreciate you telling me about it in the answers that you give us.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR MCCONNELL

DEPLETED URANIUM HEXAFLUORIDE

Question. How much appropriated funding has the Department requested for the maintenance of depleted uranium hexafluoride cylinders stored at Paducah, Portsmouth, and Oak Ridge. Specifically, how much has been allocated to each facility for fiscal year 2000?

Answer. The Department requested fiscal year 2000 appropriations totaling $10.9 million for depleted uranium hexafluoride cylinder maintenance at the Paducah, Portsmouth, and Oak Ridge sites. Initial plans call for about $2.8 million to be allocated to Paducah, $2.7 million to be allocated to Portsmouth, and about $3.7 million to be allocated to Oak Ridge. Approximately $1.2 million will be used in managing cylinder maintenance at the three sites in an integrated manner. Lastly, about $0.5 million will be used to perform engineering development type work necessary to sustain, optimize and enhance the cylinder storage system. In addition, the Department will apply funds obtained under the Memoranda of Agreement with USEC to conduct cylinder maintenance activities and to build storage yards associated with accepting USEC-generated DUF_6 cylinders.

Question. The Department of Energy entered into two Memoranda of Agreement with USEC totaling $66 million for the management of cylinders transferred from USEC to DOE. How will this money be spent and will any of the MOA funds duplicate already appropriated funds or requested funds?

Answer. The Memoranda of Agreement (MOA) funding will not duplicate already appropriated funding or requested funding. The Department projects the $66 million will be utilized over the fiscal year 1999 through fiscal year 2009 time frame for cylinder maintenance, yard construction, conversion facility preparations, and required near-term activities as shown on the attached table. Approximately $24 million of the $66 million has been earmarked for additional conversion preparation, and required near-term activities with specific yearly funding levels predicated upon the Department's evaluation of the private sector response to the Expression of Interest (EOI) and the need to support the Department's rapid implementation of the program. As required under the MOAs, the funds will only be used for purposes that are attributable to accepting and managing the cylinders received from USEC. However, Memoranda of Agreement funds will be used in conjunction with appropriated funds for procurement activities, NEPA activities, and other near-term activities associated with the DUF_6 program.

Question. Please outline for the Committee the schedule and key milestones DOE has identified for the Depleted Uranium Hexafluoride Conversion plan.

Answer. The Department's current schedule and key milestones are attached (see attached table). This is an aggressive schedule that should result in the awarding of contracts in 2000 and the initiation of construction activities in 2002. This schedule would, therefore achieve the goals anticipated in Public Law 105–204 two years earlier than required by the law.

The Department intends to issue a Final Plan for the Conversion of Depleted Uranium Hexafluoride by the end of May. The Final Plan will reflect the Department's review of the responses to the Expression of Interest ideas from affected members of the local communities, Congress and other stakeholders. This document will provide a more detailed, final schedule for the DUF_6 conversion project.

Question. Recently the Department issued an Expression of Interest on the DUF_6 conversion plan. Please inform the Committee the number of responses the Department has received and which organizations responded to the Department's request.

Answer. The Department has convened a Source Evaluation Board (SEB) to analyze the responses to the EOI, prepared the draft Request for Proposals, and other acquisition responsibilities associated with contracting for DUF_6 conversion. The Department was pleased with the industry's response to the EOI. The number of respondents to the EOI far exceeded our expectations and we have gained important insights from the responses. Regarding your specific questions, the SEB considers the number of EOI's received and the company names providing the EOI's to be Source Selection Sensitive information. Thus, the Department cannot release this information at this time. However, the Department recognizes Congressional interest in this process and is evaluating whether it can release summary, non-proprietary EOI data to the Congress and public. A determination from the Office of General Counsel is expected soon.

Question. The Department has proposed to use $5 million associated with conversion of depleted uranium cylinders. Please explain for what purpose this funding will be spent.

Answer. The $5 million will be used for site specific National Environmental Policy Act (NEPA) activities to enable the Department to begin conversion facilities construction and begin acquisition activities to meet the schedule anticipated by Public Law 105–204. It should be noted that the budget request to Congress specified that some of the funds would be used for preparation of a Request for Proposals. The Department currently plans to issue the Request for Proposals prior to the beginning of fiscal year 2000, enabling remaining funds to be used to accelerate required NEPA analysis.

MOA FUNDS BY FISCAL YEAR

[In millions of dollars]

Major activities	1999	2000	2001	2002	2003	2004	2009–09	Total
Cylinder Maintenance	6.27	6.98	4.38	1.65	1.85	1.65	4.50	27.28
Yard Construction	7.92	3.50	.....	.....	.....	.....	.....	11.42
Conversion Preparation	3.30	.....	.....	.....	.....	.....	.....	3.30
Funds Available for Additional Conversion Preparation, and Required Near-Term Activities	TBD	TBD	TBD	TBD	TBD	TBD	TBD	24.00
Total	.....	.....	.....	.....	.....	.....	.....	66.00

FULL-SCALE DUF_6 CONVERSION CAPABILITY SCHEDULE AND KEY MILESTONES

Approximate Dates	Key Milestone
First Quarter 1999	Issue a request for Expressions of Interest (EOI).
	Complete and issue the final PEIS.
Second Quarter 1999	Receive EOI responses.
	Issue the PEIS Record of Decision.
	Issue Final Plan.
	Issue draft Request for Proposals (RFP) for conversion contract.
Third Quarter 1999	Receive comments on draft RFP.
	Issue final RFP for conversion contracts.
Fourth Quarter 1999	Receive proposals.
	Begin proposal evaluation.
2000	Award DUF_6 conversion contract(s).
2002	Complete design, and start construction of full-scale facilities.

ARMED GUARDS AT THE PADUCAH GASEOUS DIFFUSION PLANT

Question. In the Energy and Water bill from last year, there was a provision to restore arming and arrest authority to the security guards located at the Paducah Gaseous Diffusion plant. The legislation, which was developed in cooperation with

your office and USEC, requires that the two parties split the costs appropriately. Nearly eight months later, this problem has not been resolved and I am told this problem might not be resolved for another eight months. Please explain why this problem hasn't been resolved and when you expect the law to be fully implemented.

Answer. As you know, the Department's regulatory oversight over the United States Enrichment Corporation (USEC) ended on March 3, 1997, when the Nuclear Regulatory Commission assumed oversight authority over USEC. With the enactment of the fiscal year 1999 Energy and Water Development Appropriations Act, the Department of Energy and the United States Enrichment Corporation (USEC) have been working together and have now established a process to restore the arming, arrest and use of deadly force authority for the guard force at the Paducah Gaseous Diffusion Plant consistent with the Act. A conservative estimate of the time needed, these authorities should be restored to the entire guard force by no later than December 31, 1999. Although the responsibility for rearming the guard force largely rests with USEC, the Department will take those steps under our control to accelerate this process. We believe based on discussions with USEC and a recently completed assessment of their program, discussed below, that they are well on the way to restoring these authorities and that by the end of August, there will be guards at Paducah who have completed the requisite training and qualification and who have been issued Weapons Authorization Cards by the Department.

There are two major activities that USEC must complete in order for the Department to reissue Weapons Authorization Cards to the guard force: one, demonstrating that pertinent federal requirements for arming, arrest, and use of deadly force authority have been put into place and following this, training and qualifying the guard force to meet the regulations. The regulations themselves are extensive, derived principally from Titles 10 and 27 of the Code of Federal Regulations and addressing a wide range of topics: physical protection of property, medical fitness implementation, limited arrest authority, use of force by protective officers, and pertinent regulations of the Bureau of Alcohol, Tobacco and Firearms. Meeting these requirements demands a significant investment of time, resources and infrastructure by USEC (e.g., employing firearm safety professionals, medical professionals, maintaining a firing range and exercise facilities).

Based on a recently completed on-site inspection by DOE of Paducah, we believe that USEC has made substantial progress in re-establishing the supporting program for these authorities and that they should be ready to start training and qualifying guards by the end of July 1999. To further accelerate this process, DOE will issue Weapons Authorization Cards to individual guards as they complete their training. Ultimately, the time needed to fully restore these authorities is under the control of USEC, who is responsible for training and qualification, including the scheduling of training.

QUESTIONS SUBMITTED BY SENATOR BURNS

GENERAL

Question. I noticed in your testimony that you state 85 percent of domestic energy use comes from fossil fuels. And of that, almost 30 percent is from coal. Then you point out that this level of consumption will not likely change in the coming decades. My state can help here since Montana has the largest coal reserves of any state in the United States (120 billion short ton). So what are you doing to promote the development of coal within this country?

Answer. Coal is the most abundant and lowest cost energy form in the United States. However, there are challenges to using coal cleanly to reduce both traditional pollutants and greenhouse gases. The Department of Energy's (DOE) role includes meeting the research and development (R&D) challenges of improving the efficiency of the fossil energy cycle in a clean, environmentally friendly manner in order to continue to benefit the Nation through the economic advantages of coal. These challenges include further technological improvements to meet new smog and particulate standards and possibly new requirements for air toxic emissions. Land constraints will increase the need to reduce solid wastes. Also, pressures will increase to find economically acceptable ways to reduce both emissions and atmospheric concentrations of greenhouse gases.

DOE's R&D effort is, therefore, aimed at providing a combination of ultra-high efficiency technologies and low-cost carbon capture and disposal technologies could make it possible to significantly reduce, if not eliminate, these environmental concerns over coal and permit the Nation to continue to prosper from coal's economic benefits. Technology now appears within reach that can double today's power plant

efficiencies, virtually eliminate air emissions, release no net carbon dioxide, and still produce power that is low enough in cost to be competitive with the best of today's pulverized coal plants. It may also be possible to use coal as a low-cost resource in an integrated "energy complex" to produce high-grade, low-pollution transportation fuels that, coupled with improved engine technology, could double fuel combustion efficiency and further reduce air emissions from the transportation industry.

While much remains to be done to ensure that coal use remains a domestic energy option well into the next century, the DOE has already achieved much to enable "clean" coal technologies to be a cost competitive and environmentally superior option in the near term through its successes in the Clean Coal Technology (CCT) Demonstration Program. For example, barriers to using the Nation's vast low-sulfur, but low-energy-density western coal resources are being addressed through two advanced, coal-upgrading projects under this cost-shared program. In the ENCOAL project in Campbell County, Wyoming, and Rosebud SynCoal Partnership project in Rosebud County, Montana, a stable coal product is produced which has a low-moisture content, low-sulfur content, and a high heating value (12,000 Btu/lb). Additionally, the ENCOAL project produces a liquid product equivalent to No. 6 fuel oil. The products from these two projects are being sold to utility and industrial consumers.

Notwithstanding these and many other near-term commercial successes, ongoing research activities to provide future opportunities for clean coal technologies, advanced power generation systems, and advanced clean fuels are being promoted by the Department.

Advances through clean fuels research will provide, in the longer term, for coal-derived substitutes for traditional petroleum products that have the potential to provide the secure supply of transportation fuels that is needed by major sectors of the Nation's economy. Development of such a coal-based fuels industry will positively affect our balance of payments, create high-paying jobs, and ensure a stable alternative source of supply as increase in demand is expected after 2015. In addition, these fuels will be more environmentally friendly than petroleum-based products, while using the Nation's vast domestic coal resources to provide the necessary level of energy security. This research is carried out by the Department in partnership with industry, academia, and other Government agencies and laboratories at the national and state levels.

Question. I understand, from your testimony, that you are focusing on developing modeling tools to evaluate future combustion systems. What will these modeling tools do and how will these modeling tools consider different combustion sources (coal, gas, and oil)?

Answer. A Virtual Demonstration Program, which was recently initiated in Fossil Energy, will increase the effectiveness of advanced power plant designs by providing the modeling tools and computational framework necessary to enhance overall predictive capability and process understanding. The result will be to reduce the time and costs associated with the transition from pilot-to commercial-scale development of the next generation of combustion systems. It will also help identify the power and fuel system advanced research needs in power and fuel system r&d. Those r&d efforts will focus heavily on developing the fundamentally-oriented data and integration tools required to support fuel-flexible (coal, oil, natural gas, biomass, etc.) integrated gasification combined cycle and pulverized coal-based technologies, such as Vision 21 high performance power and fuels systems.

The modeling tools to be developed will take advantage of the most recent advances in the field of virtual demonstration to include: 3D visualization technology, integrated information management, process simulation, advanced numerical techniques for control and process simulations, and overall model integration.

Since these models are based on fundamental scientific principles (the laws of fluid dynamics, chemical kinetics and thermodynamics, structural mechanics, radiation, etc.), their results and their applications will not be limited to one fossil fuel feedstock but will be applicable to coal, oil and gas as well.

Question. I noticed your fiscal year 2000 budget request is generally increasing. This reassures me that you recognize the importance of supporting our domestic energy industries. As you know, we are losing much of our domestic production capabilities, such as in the oil and gas industries, due to low energy prices. Even though I am working to address that problem, development of renewable energy sources in the United States is another area that I have much interest. However, the fiscal year 2000 budget is tight as you well know. Since we probably won't be able to fund all of your requested increase, what are your priorities in fiscal year 2000?

Answer. Increased investments in technology research, development and pre-commercial deployment are of critical importance to meeting the energy and environmental challenges of our times and of the next century. However, we realize the ex-

istence of budget constraints and will work closely with the Committee to identify priorities.

SOLAR AND RENEWABLE RESOURCES

Question. You may have heard about a proposed ethanol plant to be constructed in Great Falls, Montana. This project hasn't yet be constructed even though it has all of the necessary permits and plans approved. They are having financial troubles. This plant plans to convert wheat waste into ethanol. I understand you are developing demonstration plants to convert agricultural products into ethanol such as:

—sugarcane wastes in Louisiana;
—rice straw in California; and
—solid wastes in New York.

What are the Department's plans to develop other demonstration projects to produce ethanol from other dedicated crops, such as wheat, and forest waste?

Answer. The Department has requested funds to develop partnerships for commercial scale technology demonstrations, using agricultural residues and forestry wastes, in industry owned plants to produce ethanol and co-products. These plants will be "first-of-a-kind" waste to ethanol facilities in the United States. We believe that these low cost cellulosic waste materials offer opportunities to produce ethanol at competitive costs in the near term. The Department's major role with our partners has been to provide technical and engineering assistance in obtaining process data and engineering warranties. Our industrial partners will obtain private financing to construct, operate, and own these cellulosic-based facilities. The Department's approach in developing these new technologies avoids some of the financial difficulties that may be experienced when depending on commodity crops that also supply higher valued food markets. Our longer term plans call for the use of dedicated crops (switchgrass, hybrid poplar, willow) which are being developed for high biomass productivity at low cost, in the year 2004. Our understanding is that the facility planned for Great Falls, Montana will use wheat and barley grain, which employs a starch based process that has been used for many years by the corn ethanol industry. In most cases, there are few, if any, process and engineering technology or warranty issues requiring resolution.

SOLAR AND RENEWABLE RESOURCES

Question. I have a keen interest in your biomass/biofuels program given my state produces a fair amount of agricultural products which could be converted into producing electric power or transportation fuels. I understand that for fiscal year 2000 you will be increasing funding for the development of biomass conversions systems for:

—wood into ethanol in Vermont;
—alfalfa into ethanol in Minnesota;
—willow and coal into ethanol in New York; and
—switchgrass into ethanol in Iowa.

What other biomass conversion systems, such as wheat into ethanol, have you considered? How can we help encourage you to consider such conversion systems?

Answer. The Department shares your interest in converting agricultural products into electric power or transportation fuels. We have requested additional funds under the Bioenergy Initiative, which will integrate activities critical to the future viability of a biomass based industry that will produce products such as fuels, power, and chemicals. Technologies and systems that are developed and demonstrated under the initiative could be applied to a broad range of feedstocks, including those that are grown in Montana. The projects in Vermont, Minnesota, New York, and Iowa are actually biomass power projects that will demonstrate gasification and biomass co-firing options. Results from these projects will also apply, in large measure, to Montana. With regard to ethanol, the biomass conversion systems that the Department is considering will apply to most agricultural residues, including wheat straw.

DOE STRATEGY/PLANS TO DEVELOP CO-FIRING DEMONSTRATIONS

Question. Since it has been shown that biomass can replace up to 15 percent of the fuels used by existing coal power plants, what are your strategy and plans to develop cost-sharing demonstrations for such co-fired (biomass and fossil fuels) plants in fiscal year 2000?

Answer. DOE's strategy has been to demonstrate co-firing options in a broad cross-section of boiler types with a variety of dedicated crops and residues in order to expand the base of utilities employing co-firing in existing generating units. This is being accomplished on a cost-shared basis with utilities and other partners.

To further the commercial application of biomass co-firing, certain issues remain that need to be addressed. These include examining numerous types of biomass can be used for co-firing including wood, energy crops such as switchgrass, and agricultural residues. Similarly, coals (which can range from a lignite coal to an anthracite), have varying characteristics that can affect the success of co-firing. Additional issues that need to be addressed involve materials handling, how materials are delivered into the boiler itself, and boiler design that can vary from either a stoker design to pulverized coal type. Furthermore, utility restructuring is changing the ownership profile of utility boilers which will affect the planning and ultimate decision making process by the owners of the generating stations.

With these factors in mind, it is our intent to pursue additional partnerships in other areas such as rural electric cooperatives, federal facilities, and non-utility generators, including colleges and universities where coal is used to either generate heat or power. These cost-shared demonstrations are envisioned as part of a new program element that will round out the examination of the various options and approaches to cofiring in order to resolve any remaining technical barriers and identify the characteristics that will lead to viable ongoing co-firing operations by the private sector.

HYDROGEN PROGRAM

Question. Regarding other renewable resources, such as hydrogen, what are the Department's plans and funding requests in fiscal year 2000 to develop fuel cells from hydrogen?

Answer. In support of the President's Council of Advisors on Science and Technology's report, the Hydrogen Program is collaborating with the other fuel cell programs within the Offices of Transportation Technologies and Building Technologies. The Hydrogen Program does not independently develop fuel cells, but uses the technology developed by the other programs to support industry apply the technology for electricity generation. In the fiscal year 2000 budget, the Hydrogen Program has requested $1.5 million to build prototype 50kW and 25kW Proton Exchange Membrane fuels cells for stationary power in remote villages and battery replacement applications, respectively.

USER FEES

Question. I understand that the Basic Energy Sciences Program involves the use of major facilities at various national laboratories. And I understand that these national laboratories consume much of the budget for the Basic Energy Sciences Program. What considerations have you made to adopt a user fee concept for these facilities to cover more of their increasing costs since other organizations use these national labs?

Answer. The Basic Energy Sciences (BES) facilities are part of the Department's system of scientific user facilities, the most sophisticated and successful of its kind in the world. These facilities enable researchers to gain the new knowledge necessary to achieve the Department's missions and, more broadly, to advance the Nation's entire scientific enterprise. The magnitude of these user-facility investments exceeds the resources of all but the federal government. These investments allow the most promising scientific opportunities to be addressed and attract the world's brightest scientists to unlock nature's most challenging secrets, thus helping the United States maintain its industrial and technological competitiveness. Access to these extraordinary tools is provided by DOE on a no-charge basis to all qualified researchers whose intention it is to publish in the open literature.

The Department's longstanding user fee policy was formulated to encourage use of these unique facilities by leading researchers under the following philosophy:

—to promote increased cooperation among Government, industrial, and academic researchers for the benefit of the entire Nation and to enable the United States to maintain its industrial and technological competitiveness in the world,

—to encourage industry and academia to conduct basic research of direct programmatic interest to DOE,

—to encourage investment by industry and academia in facilities through the fabrication of instrumentation and beamlines, thus leveraging the Government's investment in its facilities,

—to make available the instrumentation and beamlines constructed by participating research teams to general users.

DOE also recognizes that several committees that have considered the issue of user fees to supplement the base operating expenses of national user facilities have not recommended implementation of user fees. These studies include the 1991 "Report to Congress on the Department of Energy's User Fee Assessment and Collec-

tion Practices," the study by the OECD Megascience Forum Working Group on Removing Obstacles to International Cooperation (June 1998 report of the Subgroup on Access to Large-scale Research Facilities), the November 1997 report of the Basic Energy Sciences Advisory Committee (BESAC) Panel on Synchrotron Radiation Sources and Science, the report by the OSTP Interagency Working Group on Structural Biology at Synchrotrons ("Synchrotron Radiation for Macromolecular Crystallography," January 1999), and the NAS study "Developing a Federal Materials Facilities Strategy" supported by the Board on Chemical Sciences and Technology of the Commission on Physical Sciences/Mathematics and Applications.

A few of the reasons that the implementation of a user fee policy may adversely impact user facilities are:

1. A large amount of cost sharing already occurs at BES user facilities with respect to beam line construction, instrumentation and facility upgrades. Levying user fees upon NSF and NIH researchers to supplement operating costs may well reduce these agencies' support of instrumentation.

2. Sharing base operating expenses among offices/agencies that use a facility has been shown not to work—such arrangements result in unclear ownership responsibilities and increased funding uncertainties.

3. User fees discourage industrial use of facilities, thus decreasing long-term industrial research and technology transfer activities.

4. Fragile international collaborations relating to user facilities are all based on DOE's current policy; if this changes, the U.S. could be forced to pay user fees at foreign facilities. The adoption of policy to charge foreign users a fee to access U.S. facilities would open the door for foreign facilities to do likewise. Implications of such a change could be enormous. For example, it is estimated that the U.S. uses about 25 percent of CERN (the European Laboratory for Particle Physics). The annual budget for CERN is approximately $600M, so the U.S. could be asked to pay up to $150M for use of this facility alone. It should be noted that U.S. activities at CERN and at other European laboratories are now largely balanced by foreign usage, and in-kind contributions to DOE (i.e., the High Energy Physics facilities for this example).

5. Since most research (over 75 percent) at the BES facilities is federally funded, the effect of charging user fees for nonproprietary research would be to transfer funds from one agency to another.

DOE's longstanding user fee policy was developed within the framework of OMB Circular A–25 and was implemented in 1979.

QUESTIONS SUBMITTED BY SENATOR CRAIG

TERMINATION AND ELECTROMETALLURGICAL TREATMENT FUNDING AT ARGONNE NATIONAL LABORATORY

Question. One of my greatest concerns with DOE's fiscal year 2000 budget request is the $20 million shortfall for Argonne National Laboratory-West in the area of electrometallurgical processing. The funding request for the Termination account is $20 million lower than the fiscal year 1999 appropriation. Finding a remedy for this shortfall is one of my highest priorities. A cut this deep would result in several hundred layoffs at Argonne National Laboratory. In fact, to minimize the overall impact, the layoffs would have to occur just a few short months from now. Why aren't these layoffs mentioned in the DOE budget request?

Answer. The Department's fiscal year 2000 request will support the continued work of the Laboratory's skilled workforce until a decision is made on the future use of the technology. Their work to investigate the application of electrometallurgical technology to the Department's spent fuel management challenges is essential to enabling the Department to make an informed decision on the future use of this technology. After the Department completes its Environmental Impact Statement on the use of electrometallurgical technology, it will issue a formal Record of Decision in January 2000. No lay-offs will occur prior to this decision. If the Department decides to proceed with the use of this technology, we will seek to reallocate sufficient Department funds to implement such a decision; if, instead, the Department decides against using electrometallurgical technology, we will proceed to terminate program activities.

Question. I understand that the Department plans to complete early next year the environmental impact statement on the treatment of sodium-bonded spent fuels. Therefore, assuming a positive outcome to the EIS, funding will be required in fiscal year 2000 to initiate full-scale treatment of sodium bonded fuels. However, the budget that the Administration submitted to Congress includes no funding for treat-

ment in fiscal year 2000. Does that mean that the Administration is anticipating a negative outcome from the EIS process?

Answer. We remain optimistic about the application of the electrometallurgical treatment technology to the Department's inventory of sodium bonded spent nuclear fuel. As you know, the demonstration project will be completed in fiscal year 1999. Additionally, by the end of the calendar year, the National Research Council will complete their independent technical review of the electrometallurgical treatment technology. Thus far, the National Research Council has indicated that there is no other technology sufficiently developed, with the exception of the PUREX process, that could be used for treatment of sodium bonded fuel. Further, they have indicated that any other technology, including PUREX, would require a significant investment of funds and time for development and demonstration.

We are confident that the EIS and the review by the National Research Council will provide a strong basis for a decision on whether to use this technology for the treatment of the remaining sodium bonded fuel. Once a decision is made, the Department will seek appropriate adjustments in its fiscal year 2000 budget.

Question. Is it true that the electrometallurgical technology that is being developed by Argonne has potential application in concepts such as accelerator transmutation of waste, metal cooled reactor systems, and other concepts?

Answer. Electrometallurgical treatment technology development at Argonne National Laboratory is directed only to the Department's mission of conversion of spent nuclear fuel into durable high-level waste forms which can be qualified for disposal. I understand that related, but different, technologies may be applicable to the accelerator transmutation of waste concept. This possibility is part of a roadmap now being prepared by the Department's Office of Civilian radioactive Waste Management.

NUCLEAR ENERGY RESEARCH INITIATIVE

Question. The fiscal year 2000 budget requests only a modest increase in DOE's Nuclear Energy Research Initiative—from $19 million this year to $25 million in fiscal year 2000. This does not seem to demonstrate a very strong commitment on the part of the Administration to support nuclear energy R&D.

The DOE request of $25 million for fiscal year 2000 will allow only about $6 million in new awards in fiscal year 2000; the other $19 million will be required to fund the second year of projects that will be initiated in fiscal year 1999. By comparison, for fiscal year 1999 DOE received $19 million for NERI, and received 307 proposals requesting a total of $300 million dollars.

Do you believe that an increase of $6 million next year is adequate to support the large number of worthy new proposals anticipated in the next fiscal year?

Answer. The fiscal year 2000 request of $25 million, a $6 million increase over fiscal year 1999, will allow the start of some new research efforts in fiscal year 2000 in addition to continuation of the second year of research for the awards made in fiscal year 1999. We believe the modest funding increase from $19 million in fiscal year 1999 to $25 million in fiscal year 2000 will allow the Nuclear Energy Research Initiative (NERI) program a controlled growth that will assure effective program implementation and goal achievement. However, as evidenced by the overwhelming response from the nuclear community to the fiscal year 1999 NERI solicitation, the number of new proposals funded in fiscal year 2000 will likely be significantly smaller than number of worthy proposals expected to be received. It is our hope that this program will grow as we demonstrate its value to the Nation.

Question. Given the importance that the Administration has assigned to issues of climate change, and given the obvious advantages of nuclear power in addressing climate change, I'm puzzled as to why the Administration has requested a $270 million increase for conservation and renewable energy research programs, but only an $11 million increase for nuclear energy research programs. In fact, the Administration's request for nuclear energy research is lower than last year's request. Can you explain the logic behind the Administration's request?

Answer. The Administration's budget request for fiscal year 2000 includes $25 million for NERI, an increase of $6 million, and $5 million for Nuclear Energy Plant Optimization (NEPO), a proposed new program. The fiscal year 2000 budget request of $25 million for the NERI program builds on the work started in fiscal year 1999 and funded by the Congress at $19 million. We believe that the moderate increase in funding we have proposed is appropriate and will provide time to assure that the program is effectively accomplishing the objectives. It is our hope that the program will grow as we demonstrate its value to the Nation. With respect to the NEPO Program, we believe that the request of $5 million is sufficient to begin to demonstrate the benefits of this program. Both the NEPO and NERI programs are essential to

retain nuclear energy as a viable option and key component of the Nation's energy mix.

Question. With the large number of research proposals that will be funded under NERI, how does the Department plan to integrate this research into a rational, long-term nuclear energy research and development program?

Answer. The focus of NERI is the resolution of the longer-term issues affecting the future use of nuclear energy. These issues, namely proliferation, economics and waste generation, were clearly identified in the November 1997 Report of the Energy Research and Development Panel of the PCAST. The PCAST report also provided recommendations for research in certain key areas: proliferation resistant reactor and fuel technology, new reactor designs with higher efficiency, lower cost and improved safety; low-power reactors; and new techniques for on-site and surface storage and permanent disposal of nuclear waste. These recommendations are the focus of the Department's long-term R&D program and the basis for the fiscal year 1999 and fiscal year 2000 budget requests.

The Department views NERI as a "birthing place" where the scientific and engineering ideas of our Nation's brightest researchers can be developed into more focused and specific projects that will provide solutions to the nuclear energy issues. R&D activities under NERI will initially be small to moderate in size and scope, and typically be conducted over a three-year period. The Department plans to monitor the progress and success potential of each R&D effort. The R&D conducted during the initial three-year period will identify promising scientific and engineering solutions and technological advancements that will require specific project efforts to achieve R&D objectives necessary to effectively resolve or reduce the effects of the nuclear issues.

The Nuclear Energy Research Advisory Committee (NERAC), established by the Department in 1998, will conduct periodic reviews of on-going R&D programs and advise the Office of Nuclear Energy, Science and Technology on its long range R&D plans, priorities and strategies.

Question. Will you draw on the facilities and expertise at Idaho's laboratories for the integration and conduct of this long-term research and development?

Answer. The Idaho National Engineering & Environmental Laboratory (INEEL) and Argonne National Laboratory (ANL–W) represent the Department's core nuclear research and development capability. The Office of Nuclear Energy, Science and Technology will continue to depend on assistance from these Idaho national laboratories in crafting our long term nuclear technology research and development strategy, and to provide key nuclear research. For example, INEEL and ANL–W were among the many organizations that submitted R&D proposals to the Nuclear Energy Research Initiative. Both organizations were successful in having several proposals selected for funding. The INEEL is a participant is five of the proposals that were funded, and ANL is a participant in 10 proposals that were funded.

UNIVERSITY REACTOR FUEL ASSISTANCE AND SUPPORT

Question. DOE has proposed $11.345 million for university reactor fuel assistance and support in fiscal year 2000, a modest $345,000 increase over fiscal year 1999. This program is essential to ensuring an adequate supply of nuclear-trained professionals for the nuclear power industry, the national laboratories, the environmental restoration industry, and a host of other industries. This program also provides funding to support the operation of the 28 university-based nuclear research reactors in the U.S. Given the importance of university nuclear engineering programs and university research reactors to maintaining the viability of nuclear power in the U.S., do you believe this funding level is adequate?

Answer. While the University Reactor Fuel Assistance and Support Program has had significant funding increases over the past several years, the need to further strengthen the nuclear engineering infrastructure remains. Our request of $11.345 million in fiscal year 2000 will continue a level of effort in important areas such as the Nuclear Engineering Education Research (NEER) initiative. However, as we enter the next century, there are challenges that must be met to strengthen our educational infrastructure and train the next generation of nuclear scientists and engineers. Clearly, more resources from the Department can help assure that the Nation meets these important challenges. But this work will also require a rededication by the universities, our national laboratories, and particularly industry to modernize research reactors and enhance university nuclear engineering programs.

CLEAN AIR CREDITS AND ATLANTIC COUNCIL REPORT

Question. A report by the Atlantic Council recommended that governments assure the financial integrity of nuclear power by giving credit to nuclear energy for avoid-

ed emissions. This is something that is not currently done under the Clean Air Act for SO_2.

What is DOE's reaction to a proposal such as this in the context of the Administrations electricity restructuring bill? Do you see this as a viable proposal for acknowledging nuclear's non-emitting contribution to our electricity supply?

Answer. The primary focus of the Administration's bill on electricity restructuring is on competition and consistent with that focus, the bill does not include significant environmental provisions. However, we understand that the type of allocation suggested could be accommodated under the existing law. Several utilities have discussed this issue with the Department and the Environmental Protection Agency, which has the primary jurisdiction in this area. The matter remains under consideration. The individual states have considerable discretion in how to reach emission levels specified in their State Implementation Plants.

The Department believes that a reliable and affordable electric power supply is critical for the U.S. to enjoy a strong economy and sustained growth. Such a supply of electricity requires diversity in its fuel mix—we need to maintain a diverse, secure energy portfolio of fossil fuels, nuclear energy, and renewables. Nuclear energy has been an important part of this diversity and generates electricity without emitting any greenhouse gases or other harmful air pollutants such as sulfur oxides and nitrogen oxides. The 104 nuclear power plants in the U.S. provide approximately 20 percent of the electricity generated and avoid more than 150 million metric tonnes of carbon emissions annually. With new requirements for lower emissions of sulfur dioxide and nitrogen oxide for fossil plants, particularly in the eastern part of the nation, the contribution of existing nuclear power plants in avoiding harmful air emissions becomes even more important.

We are at a critical juncture with respect to the continued operation of nuclear power plants. Many U.S. nuclear plant owners are approaching a key decision point as to whether their plants should be shutdown at or before their initial license period, or whether they should apply for a twenty-year extension on that license. U.S. nuclear power plant licenses will begin to expire in large numbers in 2010; licenses for 13 plants representing some 11,700 MWe will expire in 2014 alone. Faced with regulatory and economic uncertainties, some utilities already have exercised their option to close nuclear facilities well before their initial license expiration date. This trend has resulted in the closing of 6 reactors before license expiration, a loss of approximately 4,000 megawatts of U.S. generating capacity, in the past three years. Critical issues facing the continued operation of existing nuclear power plants need to be addressed in the near term so that this trend does not continue.

Production costs (operating and maintenance costs plus fuel costs but excluding capital costs) for existing nuclear power plants at 1.91 cents per kilowatt-hour [kwh] are comparable to those for coal at 1.83 cents per kwh and are significantly less than those for natural gas at 3.38 cents per kwh. An appropriate credit for avoided emissions would allow existing nuclear plants to better compete in the restructured market. Continued operation of existing plants is a prerequisite for the Nation to preserve the option of continued and expanded use of nuclear energy.

PROPOSAL FOR ON-SITE STORAGE OF UTILITY FUEL

Question. With respect to DOE's proposal to compensate utilities for the on-site storage of their spent nuclear fuel in lieu of taking possession in response to DOE's 1998 waste acceptance obligation, as the Director of the DOE program office which is most familiar with the nuclear power industry, do you foresee any concerns about the feasibility, safety, licensing or other regulatory issues associated with DOE's implementation of this on-site storage proposal?

Answer. The Department currently is engaged in discussions with utilities concerning the feasibility of the Secretary's proposal to take title for on-site storage. The feasibility of implementing this proposal would depend on the willingness of the utilities to accept this proposal and the ability of DOE to fund the costs.

Implementation of the on-site storage proposal would not be the long term permanent solution nor will it alleviate the need for additional spent fuel storage capacity required for continued operation of existing power plants. Although spent fuel may be safely stored at nuclear power plants under Nuclear Regulatory Commission regulations, current plants were designed only for short-term storage until spent fuel could be moved to the permanent repository being built by the Department.

RENEWABLE ENERGY

Question. According to DOE's budget there was over $1 billion in annual U.S. renewable energy technology sales in 1998. Can you tell us how much energy that represented?

Answer. The reference to annual renewable energy technology sales was to the value of equipment sales and related services provided by U.S. industry. The $1 billion consists of approximately $100 million in sales of wind plants (112 MW), $228 million in sales of photovoltaic modules (54 MW), $400 million in sales for geothermal power plants (380 MW) and $450 million in sales of geothermal heat pumps. These are total sales, both domestic and export, for these U.S. renewable energy industries. However, if one wanted to look at the sales of electricity produced by the installed renewable energy power plants in the U.S., the nearly 2,300 megawatts of geothermal power in the states of California, Hawaii, Nevada, and Utah alone produces 14–17 billion kilowatt-hours per year of electricity, which is worth about $1 billion in annual utility sales, according to the geothermal industry.

Question. It sounds like this is a rather robust market for renewable energy. We are also told by the Administration that consumers will be willing to pay more for so-called "green power". Given this robust market, why should the federal government continue to subsidize renewable power technologies at $325.2 million for fiscal year 2000?

Answer. While $1 billion in sales may seem to indicate a "robust" market for renewable power technologies, such a market size is still quite small in comparison to the scale of conventional energy technology markets. For example, the U.S. electric power industry as a whole has annual sales of about $215 billion. As to the market for "green power," it is difficult to forecast human behavior in future restructured electric markets. It is not plausible at this time to assume with any confidence that demand for "green power" alone will be sufficient to create a large enough demand for renewable energy (and a corresponding level of profits for the industry to fully sustain its own R&D) so that the Federal Government should reconsider the level of R&D commitment to these technologies. In fact, we believe that sustained and even increased investments in renewable energy R&D are of critical importance to the nation. These technologies will improve local environmental quality, improve the diversity and security of our energy supply, reduce greenhouse gas emissions, and improve our long-term economic competitiveness. In part due to the past support of this Committee, the U.S. maintains a leadership position in some, but not all, renewable energy technologies. However, our economic competitors recognize, as we do, that a massive market for clean energy technologies, especially in the developing world, is emerging. Many studies and industry observers have concluded that developing these technologies and successfully competing for the global markets in clean energy technologies is of major importance to the U.S. These technologies are essential to meeting the energy, environmental, and economic challenges as we begin the next century.

INTERNATIONAL RENEWABLE ENERGY TECHNOLOGY PROGRAMS

Question. Please describe DOE's international renewable energy technology programs.

Answer. The Solar International Program's mission is to encourage greater acceptance and private-sector use of U.S. renewable energy technologies in overseas markets in ways that support U.S. national interests and policies. The primary goal of the program is to facilitate the expansion of U.S. renewable energy and energy efficiency technology exports to help meet the energy needs of developed and developing countries, reduce the rate of consumption of finite global resources, and address local and transnational environmental issues.

The International Solar Energy Program addresses specific problems that slow the acceptance and use of new and existing technologies, and speeds the deployment of technologies by targeting distinct market barriers. It supports efforts to increase the competitiveness of the U.S. renewable energy industry in large and rapidly growing global energy markets. These efforts also support the U.S. industry's ability to make continuing technological improvements and achieve cost reductions that are critical to enhancing the competitiveness and market penetration of renewables in the United States. The program works cooperatively with the private sector and by increasing the in-country understanding of local renewable energy potential, and promoting dialogue and interaction with U.S. firms.

The program has been redirected in response to Congressional direction to continue support for the U.S. Initiative on Joint Implementation but also to refocus activities into three broad program areas: Emerging Global Environmental and Energy Issues, Facilitate Market and Trade Development, and Advance U.S. Energy and Environmental Security Interests.

The Emerging Global Environmental and Energy Issues will be implemented specifically through and in conjunction with the U.S. Initiative on Joint Implementation (USIJI). USIJI is a DOE-lead interagency program that supports the development

of flexibility mechanisms under the U.N. Framework Convention on Climate Change (U.N. FCCC) such as Joint Implementation (JI), flexibility mechanisms, and Emissions Trading. This element will also focus on encouraging meaningful participation by developing countries in the U.N. FCCC.

The Market and Trade Development element will accelerate reductions in technology production costs and advance deployment of technologies through overseas market expansion. It will stimulate global economic development and regional economic stability, and accelerate domestic economic growth and employment. This element will be implemented in key regions through bilateral (e.g., Gore-Mbeki in South Africa) and multilateral (e.g., Asia Pacific Economic Cooperation, Hemispheric Initiatives and International Energy Agency) technology cooperation activities and information exchange and dissemination. Private sector technology development will be encouraged while private sector deployment in strategic and emerging markets will be stimulated through project based activities.

The Energy and Environmental Security element is designed to advance U.S. strategic interests in bilateral and multilateral energy and environmental security activities and will provide specialized assistance in the utilization of appropriate technologies. This element will be implemented in support of existing and emerging bilateral and multilateral treaties and agreements. This element will also assist the Department in meeting U.S. obligations and commitments to provide disaster relief and assistance by facilitating private sector technology development and deployment in strategic and emerging markets.

Question. Are these programs really an export subsidy?

Answer. The Solar International Program is not an export subsidy program. The purpose of the program is to stimulate global economic development and regional economic stability, and accelerate domestic economic growth and employment. One of the ways this will be accomplished is by facilitating international technology cooperation in bilateral and multilateral discussions, agreements and treaty negotiations. Developing and facilitating the deployment of appropriate technologies offers U.S. industries the opportunity to adapt existing or emerging technologies to meet unique needs and conditions of developing and transition countries. Technologies that may face significant commercial barriers domestically may be readily adaptable to large and growing markets in the developing world. Thus the program facilitates private sector technology development and deployment in strategic and emerging markets through project based activities.

Question. If so, should we be doing the same for export of other non-emitting energy technologies such as nuclear and hydropower?

Answer. Hydropower is a long-standing renewable technology and the International Solar Program is encouraging the acceptance and use of U.S. hydropower in developing and transition country markets. Additionally, the development of environmentally-friendly hydropower turbines (to mitigate impacts on fish and water quality) by DOE's Hydropower Program will help meet critical domestic and international needs at both existing and potential new hydropower sites. With adequate Congressional support and funding, research and development on these turbines should lead to commercially available products by about 2010.

The International Solar Program supports the export of renewable energy technologies and nuclear power is not considered a renewable technology. Nuclear energy technologies receive Congressional support independent of the International Solar Program. Consequently, it is inappropriate for this program to encourage acceptance of U.S. nuclear power technologies in developing and transition countries.

CLIMATE CHANGE

Question. Has DOE developed any analysis regarding the "credit for early action" legislation introduced by Senators Chaffee and Lieberman? If so, could you please provide a copy of this analysis for the record?

Answer. In an ongoing effort, DOE, together with other agencies, is reviewing the "early credit" legislation introduced by Senators Chaffee and Lieberman to better understand its provisions. We have begun some exploratory work to assess how an early action crediting system might affect existing voluntary programs. To date, however, no report has been produced to analyze the possible efforts of this proposed legislation.

Question. In 1998, the National Academy of Sciences/National Research Council released a report entitled, "Global Environmental Change: Research Pathways for the Next Decade." Has DOE factored into its budget and programs the recommendations of this report regarding climate change research priorities? If not, why not?

Answer. This important NAS/NRC report contributes to national understanding of the climate change issue and increasingly, DOE is embracing central themes of the NAS/NRC report.

The emerging issue of climate change presents a need for more comprehensive integration of the efforts and budgets of multiple federal agencies. For this cross-cutting issue, the existing budget process reveals a legacy of funding single issues and single agencies. We need to work hard to coordinate formerly independent approaches to address the issue of climate change.

Among its many findings, the report discusses a very important national need to "prepare for surprises." To this end, the report offers the pathway structure noted above as a way of casting a wide net while maintaining selective depth in important focal areas.

> Scientists believe strongly that unfocused research on the complex and varied Earth system is unlikely to be productive. On the other hand, scientists who view the world through pinholes are likely to bump into trees and fall off cliffs. How can needed focus be given to the USGCRP while still casting the research net sufficiently wide to catch the unexpected?

How to prepare for surprises is a challenge and one of the reasons that the DOE Strategic Plan is shaped with a central guiding pathway structure:

—Science and Technology Leadership
—Energy Resources /Security
—Environmental Quality
—National Security

With limited federal budgets, there is a need to maintain a focus on important areas. EERE develops clean and efficient energy technology. We help the US economy by reducing its energy intensity, often measured as energy consumed normalized by economic activity (E/GDP). Even conservative estimates place this improvement at about 1 percent per year. During the decade of oil shocks, energy technologies were improving (becoming more efficient) as measured by this ratio at an annual rate of about 3 percent or more—which shows the importance of an enduring signal in sustaining improvements. DOE was heavily involved in this national success, and recently examined only five of several hundred technologies for long-term performance. Setting aside the considerable environmental benefits of these technologies, DOE worked with GAO to establish their cost-effectiveness. That study found that these five technologies cumulatively saved more than $28 Billion in avoided energy costs during the period 1978–1997. This compares quite favorably with the cumulative total investment in the federal energy efficiency and renewable energy programs for that same period of about $8 billion.

We will continue to factor into our budget and programs the recommendations of the NAS/NRC report.

Question. How does DOE set its priorities for climate change research?

Answer. Priorities for the DOE energy technology R&D programs are set on the basis of projected benefits of these programs in terms of the strategic goals of the Department, the expected program costs, and likelihood of success. The strategic goals of the Department are:

—improve the efficiency of the energy system;
—ensure against energy disruptions;
—promote energy production and use in ways that respect health and environmental values;
—expand future energy choices; and
—cooperate internationally on global issues. In order for a technology program to be funded, it must contribute to multiple DOE goals—not just climate change.

Question. Has DOE participated in United Nations programs associated with the Global Environment Facility? If so, what projects?

Answer. The Office of Energy Efficiency and Renewable Energy (EERE), through the interagency U.S. Country Studies Program (CSP), provides technical assistance and guidance to some Global Environmental Fund (GEF) funded projects. The intent is to improve the technical quality of deliverables and products from GEF funded activities. Specifically, U.S. CSP provides some technical assistance to improve the quality of country National Communications to the United Nations Framework Convention on Climate Change.

The following countries are currently receiving technical assistance: Bangladesh, Bolivia, China, Egypt, Indonesia, Mexico, Micronesia, Philippines, Tanzania, Thailand and Uruguay.

AGRICULTURE

Question. I appreciate DOE's efforts in implementing the 1995 Memorandum of Understanding between DOE and the Department of Agriculture by adding Agriculture as one of its Industries of the Future. As you know, I am a signatory to that MOU and have a long-standing interest in DOE's agriculture-related activities. The Administration's fiscal year 2000 Budget Request for the Industries of the Future program includes $4 million for Agriculture. How would this money be spent? Would precision agriculture technologies fit into your planned activities?

Answer. We appreciate your support over the years for agriculture-related research and development at the Department. One of our newest efforts to help America's farmers is the Agriculture Team in the Industries of the Future program, which received $2 million of funding this fiscal year. The Team recently issued its first solicitation for projects, targeting two areas of industry's technology roadmap: processing and utilization. Product separation and new, more effective catalysts are examples of high priority topics in the first category; the structure and functionality of different plant parts are such examples in the second. The selection of winning proposals for that solicitation will occur in June. Those projects will likely require at least an equal amount of funds in fiscal year 2000 to complete or continue their planned work. Assuming the Agriculture Team receives the full funding requested, that would leave $2 million or less for new project starts in the Team's request for proposals for the next fiscal year, which it now plans to issue in mid-summer.

The Team has not yet had full discussions with its industry partners in the agricultural, chemical and forestry communities to learn their views about the focus for the fiscal year 2000 solicitation. Given the high level of interest in the current solicitation topics; the technical hurdles still to be overcome in just the processing area, for example, where the Idaho National Engineering and Environmental Laboratory has historically shown technical expertise; the need to avoid duplicating research work elsewhere, such as at the U.S. Department of Agriculture; and, the amount of funding that could be applied to new projects by the Agriculture Team next year, it seems unlikely that industry leaders would encourage us to broaden our focus to the other areas of the roadmap, plant science or production, where precision agriculture is included. However, we want to emphasize that no decisions have been made yet about the specific details of the Team's fiscal year 2000 solicitation.

FISH FRIENDLY TURBINES

Question. I am pleased to see that DOE's budget request includes $7 million for continuation of research into advance—or what are sometimes called "fish-friendly"—turbines. I think this research is key to a continued role for emissions-free hydropower as part of our electric generation system. Can you describe the status of DOE's work on fish-friendly turbines and how fiscal year 2000 funding would be utilized?

Answer. Competitively-selected advanced turbine conceptual designs with improved environmental performance were completed by Voith Hydro, Inc. and the Alden Research Laboratory in 1997. Features of an advanced Kaplan-type turbine design developed by Voith are already being incorporated in the rehabilitation of the Bonneville Dam hydropower plant. These features include a minimum-gap runner, low flow turbulence, improved blade design with thicker entrance edges, smoother surfaces, and oil and grease reduction, all of which reduce injury and mortality to fish. Voith, teamed with Georgia Tech, will also conduct computer analyses to predict fish behavior in turbines. DOE is initiating pilot-scale proof-of-concept testing of the innovative Alden design in order to verify predicted biological performance. Biological studies of shear stresses experienced by fish in the turbine environment are being completed by the Pacific Northwest National Laboratory (PNNL) and the results will be factored into design criteria by the DOE program for both engineering design and prototype fabrication.

In fiscal year 2000, DOE program funding will continue the biological studies being conducted by PNNL, specifically addressing the issues of turbulence, pressure and gas supersaturation. Proof-of-concept testing for the Alden design will be completed, and a competitive solicitation will be issued to select one or more industry partners to develop advanced turbine engineering designs, leading to full-scale prototype fabrication and testing at one or more operational hydropower sites.

QUESTIONS SUBMITTED BY SENATOR REID

FEDERAL RESEARCH INVESTMENT IN RENEWABLE ENERGY

Question. After billions of dollars of Federal Research investments in renewable energy technologies, these still produce only about 2 percent of U.S. electricity. Can you tell me why I should continue to support the funding requests for renewable technologies?

Answer. Although most renewable technologies are competitive in limited market segments (for example, off-grid photovoltaics; biopower where low cost or negative cost waste feedstock is available or where cogeneration is appropriate; and geothermal where there are established high quality resources), these technologies have not yet reached the point where they can capture a large share of the overall electricity market. However, significant progress on technology cost, performance, and reliability has been made and several technologies are poised to make market inroads over the next decade.

Since the mid-1970s when most of the renewable energy technology R&D programs began in earnest, the total investment has in the range of $5 to $6 billion (actual dollars). Since then, we have cut costs dramatically. For example, the cost of electric power from wind turbines which ranged from 30 to 40 cents a kiloWatt hour in 1980 has now dropped to between 4 and 6 cents a kiloWatt hour because of aggressive R&D. The next generation of turbines now under development should bring costs down to as low as 2 and a half cents per kiloWatt hour by 2002. Likewise, the first commercially available photovoltaic (PV) panels in the 1980s produced power at a cost of $1 per kiloWatt hour. Depending upon the materials used and the technology application, PV systems will be capable of delivering electricity for as low as 12 to 20 cents per kiloWatt hour, and in the next decade it should drop to below 10 cents through continued R&D by 2010. By this timeframe, the price of photovoltaic generated electricity is expected to be competitive with conventional sources of power in remote locations, rural areas where transmission and distribution costs are high, and urban areas where transmission and distribution systems are congested.

While non-hydropower renewables do only provide about 2 percent of our nation's electricity today, continuing reductions in technology production and O&M costs—combined with enhanced efficiencies and extended system lifetimes—will enable much further domestic market penetration of these clean power technologies. Though actual market generation rates will be determined by a number of factors such as growth in consumer electricity demand, competition from other generation technologies (particularly natural gas), and access to investment financing, we strongly believe that amount of power generated by renewables will at least triple by 2010.

Finally, as more clean renewable energy technologies enter the commercial marketplace here in the U.S. and sales of our advanced technologies increase overseas, our economy will be strengthened as more jobs are created for the people of this nation. For these reasons, I strongly urge your continued support for the research and development of these technologies.

RESEARCH AND DEVELOPMENT OF ALTERNATIVE ENERGY SOURCES

Question. Isn't it the case that research and development of alternative energy sources is essential to maintain access to affordable energy for future generations? Can't it be said that we are striving to find alternative sources not only because of environmental issues but for future access?

Answer. Certainly part of the rationale for the Department's research and development on alternative energy resources is to ensure reliable access to affordable energy for future generations. We want to make sure that our nation's children—and all those that follow—continue to have the energy resources available that are essential to a strong economy and the American quality of life.

We also believe, though, that our work on these technologies is already making significant impacts. For many U.S. citizens living in remote or underdeveloped portions of our country, power supplied by renewable resources can make the difference between having electric lights, refrigeration, and electronic communications or not. We strive to find clean and renewable electric power and transportation fuels for a variety of reasons, including: developing a variety of clean, domestic energy choices and thereby enhancing our energy security access to these energy resources in the future; mitigating environmental and human health impacts associated with energy production, consumption, and use; and to return economic benefits to the American taxpayer through the creation of skilled, high-wage jobs domestically and sales of the technologies they produce around the world.

USE OF THE NEVADA TEST SITE

Question. Nevada is a prime area for expansion of alternative energy resources. The Nevada Test Site is an ideal location for test and evaluation of renewable energy and alternative fuel technologies. How do you propose to use the Nevada Test Site for future research and design efforts?

Answer. There are a number of hydrogen projects which have been discussed with Nevada personnel and which would be complementary to the Nevada Test Site. One project which includes a 50kW generation plant that can co-produce hydrogen and electricity has already been implemented. The Department issued a competitive solicitation in March to develop a prototypical hydrogen refueling station in Nevada. This fueling station will enable the refueling of either hydrogen or blends of natural gas and hydrogen into vehicles. As the number of alternatively fueled vehicles increase, a need for additional satellite fueling stations are expected. We anticipate the Nevada Test Site will be considered as the Department develops this refueling infrastructure through the competitive process.

In the areas of Photovoltaics, concentrating Solar Power and Energy Storage, with ample space and excellent solar resources, Nevada is an ideal location for the test and evaluation of renewable energy and alternative fuel technologies such as storage systems. The Test Site is one possible location, but there are also other locations in Nevada that might be advantageous. The Nevada Portfolio Standard may provide an excellent incentive for commercial solar energy deployment in the near-to-mid term if it is implemented.

WIND ENERGY PROGRESS

Question. What advances have been made regarding wind power? Have any strides been made toward getting wind power competitive with other technologies?

Answer. We've made great progress in improving wind power in the last ten years. Cost of wind turbine projects has been reduced from 2,000 to $/kW to less $1,000 while the cost of producing electricity is now in the range of 4–6 center per kWh. Additionally, rotor size has increased from 15 meters to 40 meters or more, generator size from 100 kW to 750 kW or larger, and capacity factors from 0.2 to 0.35 to 0.40. Total capacity installed in the United States will increase to over 2,000 MW this year, as the world total increases to over 10,000MW. We've also made major strides in understanding the physics of wind energy technology. These improvements, together with industry's experience in manufacturing and operating new turbines, are being applied in design of advanced wind turbines. Within the Next Generation Turbine project, seven conceptual designs of advanced turbines have been completed, and two projects are moving forward. The Next Generation Turbine effort, together with several other ongoing and planned joint projects with U.S. manufacturers, should substantially upgrade U.S. industry's wind technology capabilities and narrow the gap between wind and other competing forms of electric generation. These turbines are expected to bring costs down to as low as 2½ cents/kWh in good wind sites.

SOLAR CELLS DEVELOPMENT

Question. Solar cells that produce electricity directly from sunlight have been under development for a long time. Your program is trying to develop a solar cell that is only 40 percent efficient, so that's less than half of the solar energy would be converted to electricity. Why would such an inefficient power source be valuable?

Answer. A 40 percent solar cell is not inefficient. Quite the contrary, development of a 40 percent solar cell would be a significant scientific accomplishment. When solar cells were first developed by RCA Bell Laboratory in the 1960s, efficiencies were in the 4 percent to 6 percent range. The Department of Energy began an earnest R&D program in the mid-1970s, and over the past two decades has made dramatic improvements in the technology. Today, multijunction cells under concentrated sunlight can routinely achieve efficiencies in the 28 percent to 32 percent range. Efforts to develop a four-junction device that could achieve 40 percent efficiency would yield dramatically reduced dollar per Watt values (greater than 50 percent) for terrestrial photovoltaics. It should be noted that the efficiency of the average automobile gasoline engine is less than 25 percent, yet everyone values the transportation they provide. Furthermore, coal fired plants are less than 40 percent efficient.

A conservative estimate of the average residential roof size in the U.S. is 200 square meters (10 meters by 20 meters). The amount of energy in sunlight is 1000 Watts per square meter, which means 200,000 Watts, or 200 kilowatts, strike the average residential roof in the U.S. (enough for 50 homes). Using a solar cell system

that is just 10 percent efficient would produce 20 kiloWatts of electricity, which is more than five times the amount of energy the home needs. Therefore, typical photovoltaic systems for residential use take up only a fraction of the space on the roof, and, at 10 percent, 20 percent or someday 40 percent efficiency, add significant value to a home's energy needs.

Photovoltaic technology adds value to the nation's energy mix. Photovoltaic solar cells are a versatile electricity technology that can be used for any application, from the very small to the very large. It is a modular technology that enables electric generating systems to be incrementally built to match growing demands. It is a technology in which systems are easy to install, maintain, and use. And it is a convenient technology that can be used anywhere there is sunshine and that can be mounted on almost any surface, from rooftops, to roadsides, to mobile units, virtually anywhere there is sunshine.

Photovoltaics (PV) also offer additional benefits. For example, PV presents a domestic reserve of energy that will never be depleted and makes the U.S. less vulnerable to international energy politics and volatile fossil fuel markets. Photovoltaic solar cells are made from materials, such as silicon, which are domestically abundant.

Finally, PV systems produce no greenhouse gases, so their use can help offset carbon dioxide emissions and their possible consequences. Consequently, building a photovoltaic infrastructure would provide an insurance policy against global warming and climate change.

With so many positive attributes, photovoltaic energy is clearly a valuable natural resource.

Question. The United States is not alone in solar cell development. Can you compare the budgets and progress of our efforts in this country with solar cell research and development programs in Europe and Japan?

Answer. The European and Japanese R&D programs are very strong and aggressive, resulting in a recent upsurge of competition to the U.S. photovoltaic industry. The Japanese budget alone is over three times the U.S. R&D budget in fiscal year 1999 ($230M vs $72.2M). Both the Japanese and German governments spend hundreds of millions of dollars on subsidies for their residential roof programs, which have dramatically increased sales for their industries. For example, Japanese PV manufacturers reported shipment increases of 41 percent, from 35 megaWatts in 1997 to 49.2 megawatts in 1998. In the same time period, U.S. shipments rose only 5 percent, from 51 megaWatts in 1997 to 53.7 megaWatts in 1998. If this trend continues, Japan may well surpass the U.S. next year and become the world leader, a position the U.S. has held since 1993. Overall, in both the U.S. and in foreign countries, the efficiency of commercial solar cells has increased by about 30 percent in the last 20 years. However, production costs have steadily fallen I all countries, so that the cost per unit power ($/Watt) is now about ¼ of what it was 20 to 25 years ago.

1999 PHOTOVOLTAIC R&D BUDGETS BY COUNTRY

[In thousands of dollars]

	United States	Japan	Germany
Total R&D Program	72,200	230,000	180,000
Million Solar Roofs [1]	1,500	130,000	100,000

[1] Japan has a residential solar roof program that installs 10,000 PV roofs per year which subsidizes one third of the cost of the PV system, and Germany just approved a six-year, 100,000 PV roof program to be funded at one billion Marks, or $600M.

WORLD PV CELL & MODULE SHIPMENTS

[MW]

	1997	1998
United States	51.0	53.7
Japan	35.0	49.2
Europe	30.4	30.1

WORLD PV CELL & MODULE SHIPMENTS—Continued

[MW]

	1997	1998
Rest of World	9.4	18.7
4Total	125.8	151.7

PROVIDING DISPATCHABLE SOLAR POWER

Question. Solar power is produced only when the "sun is shining" so that some means of providing power after sunset must be developed. What concepts and research efforts are being developed to solve this dilemma?

Answer. Both the Photovoltaic (PV) and Concentrating Solar Power (CSP) Programs at the Department are pursuing various methods of harnessing the sun's energy for use after sunset. This ability to dispatch solar power when it is needed greatly enhances the economic value and broadens the application of solar technologies.

The simplest and most practical approach for PV energy storage is by using batteries. The battery of choice is the deep-cycle flooded lead-acid battery. Other battery types are being investigated, particularly nickel-cadmium batteries for use in inaccessible environments (e.g., microwave repeater stations on mountain tops). These batteries are more expensive but have a longer lifetime and less sensitivity to deep discharge. Most stand-alone PV systems use flooded lead-acid batteries for energy storage. R&D is being conducted to improve the integration of batteries with PV to optimize system performance and battery life. Other storage research is focused on improved batteries and advanced storage technologies (e.g. flywheels) that are lower cost, longer life, and more robust in the rigorous standalone application environment. In longer-term R&D, energy storage through the electrolysis of water and subsequent production of hydrogen is being investigated. After sunset, the hydrogen can be combined with oxygen in the air to yield electric power through a fuel cell.

Another concept to eliminate the need for storage in some photovoltaic applications is to tie the PV system to the utility power grid. When the sun is out, the PV system provides power to the application, such as a home or business. If there is excess electricity being produced by the PV system, the solar system will run the utility meter backwards and the user gets credit for the electric power delivered to the grid. At night, the home or business is powered by the grid, thus eliminating the need for storage batteries. In this sense, the utility grid is the storage.

For CSP technologies—dishes, troughs, and towers—there are different approaches depending on the type of system. Because CSP systems generate heat to produce power, all three technologies may be hybridized with fossil fuels (e.g., diesel fuel for dishes; natural gas or coal for troughs and towers). The 354 MW of trough plants operating in the California desert are a fine example of a solar/natural gas hybrid system. For stand-alone CSP systems, one option under investigation is a solar dish/hydrogen fuel cell combination, where the high-temperatures generated by solar dish systems produce power during the day and electrolyze water to produce hydrogen for use in a fuel cell to provide power at night. Like PV, dish systems can also use conventional battery storage. While efficient thermal storage is being considered for trough technology. This storage mechanism has been successfully demonstrated for power tower systems using molten-salt technology. In a test last summer, Solar Two produced power for 153 consecutive hours (over 6 days) using only sun and salt.

SOLAR POWER VS. STORAGE

Question. Is energy storage technology ahead of solar power technology, or is solar power ahead of storage?

Answer. An argument could be made that solar power systems are more commercially developed than efficient storage methods for kW-scale power. This is due to the expense and (in the case of lead-acid batteries) the relatively short life of deep-cycle batteries. However, energy storage in PV systems today makes use of commercially available battery technologies that are produced in large-scale for solar and many other applications. Both PV and energy storage technologies have made significant advances in recent years in terms of cost reduction and improved life. Improved durability of batteries continues to be researched while large-scale manufac-

turing processes are being developed for PV. Better system integration of these technologies is another focus of research that is expected to pay large dividends in the coming years.

LOCATIONS RECEIVING FEDERAL R&D FUNDS FOR SOLAR POWER

Question. Solar power production is more effective in some areas of the country than in others. Do you think there is any relationship between the areas of most valuable solar resource and locations of Federal R&D in solar power?

Answer. In the case of both solar photovoltaic and concentrating solar power, there is a close relationship between areas of high yearly insolation and the location of R&D facilities. Although photovoltaic systems have been tested in many sites all across the country and under almost all environmental conditions, all five research facilities within the Photovoltaic Program are located in areas of high insolation. The National Renewable Energy Laboratory (NREL) is located in Denver, Colorado; Sandia National Laboratories is located in Albuquerque, New Mexico; the Southwest Technology Development Institute is located in Las Cruces, New Mexico; the Photovoltaics for Utility Scale Applications (PVUSA) test site is located in Sacramento, California; and the Florida Solar Energy Center is located in Cocoa, Florida. The first four facilities are located in dry, very sunny areas, and the last facility is located in a sunny, but very humid area. The CSP Program uses the labs at Sandia and NREL (combined to form "SunLab") and has directed most of its R&D efforts in the U.S. Southwest where the solar radiation is ideal for CSP systems.

LOCATING SOLAR R&D IN AREAS OF HIGH SOLAR RADIATION

Question. Can you make a case for co-location of solar technology test and evaluation in areas of maximum solar power potential?

Answer. As stated above, in the case of both solar photovoltaic and concentrating solar power, there is a close relationship between areas of high yearly insolation and the location of R&D facilities. Most of the R&D funded by both the PV and CSP Programs is conducted in the U.S. Southwest. Though more so for CSP than for PV technologies, co-locating solar technology test and evaluation in areas of high solar radiation allows for optimal test results and more closely emulates the environment where these technologies will be used in commercial applications.

HYDROGEN PROGRAM

Question. What are the expected benefits of systems that are powered by hydrogen?

Answer. There are multiple benefits that are accrued by using hydrogen fuel cells. Hydrogen fuel cells are expected to improve the efficiency of energy systems by making more productive use of energy resources that protect the environment and enhance national security. For electric generation systems, the hydrogen fuel cell can be better integrated at the site of electric power utilization as a distributed system that can provide both electricity and heat, and thereby achieve an overall efficiency of 80 percent. For transportation applications in non-attainment areas there would be a significant improvement in the air quality due to the fuel-cell exhaust being primarily water. Also, natural gas or renewable/electrolysis of water can be substituted for petroleum as the source of hydrogen, which would decrease global warming emissions and decrease the Nation's reliance on imported oil.

Question. The deployment of a "hydrogen infrastructure" is frequently referred to as a major obstacle to hydrogen-powered vehicles. What is the Federal Government's role in overcoming this obstacle? What are your plans and progress for developing a hydrogen infrastructure?

Answer. There are several barriers that need to be overcome in order for the public to accept hydrogen-powered vehicles. There is an issue associated with the establishment of a sufficient number of hydrogen stations that can dispense a fuel at competitive prices to today's petroleum-based fuels. There is also the need to provide the cost for the infrastructure to support those stations. The Department has issued a solicitation for a refueling station in Las Vegas, NV that will co-produce electricity from a stationary fuel cell and hydrogen for dedicated vehicles. It is expected that this option will lower the cost of both producing the electricity and the hydrogen fuel to levels that will enhance the commercial deployment. As a distributed system that uses natural gas as the feedstock, it is expected to have a lesser impact on supporting infrastructure requirements. As advanced reformer and fuel cell technology becomes available from 2001 to 2004, future refueling stations will be considered as cost-shared joint ventures with industry.

In addition, there is the need to ensure that the public will be able to fuel their vehicle safely and in a reasonable amount of time. The Department is working with

the industry, the National Hydrogen Association and the International Safety Organization on the development of an appropriate set of codes and standards. The Department is also supporting the development of safety plans and testing for projects, and the deployment of pre-commercial systems in public environments. It is expected that the automobile industry will first develop hydrogen fuel cell buses and fleet vehicles for niche markets that will facilitate further deployment of these systems in the marketplace prior to requiring an infrastructure to support the general public's personal vehicles.

Question. Fiscal year 1999 Appropriations for hydrogen research directed completion of a facility in Nevada that would produce and store hydrogen and use a pathbreaking fuel cell to supply power. What is the status of that facility?

Answer. A solicitation was issued on March 18, 1999 with a closing date of May 14, 1999 for a 50/50 cost-shared project to build and operate a 50 kW stationary fuel cell electric generation system and hydrogen/natural gas quick-fueling station at a site near the Nevada Operations Office in northern Las Vegas. It is expected that this station will be built and operational by September 30, 2000.

NEVADA TEST SITE

Question. Nevada is primed and ready for implementation of alternative energy resource facilities. A majority of the State is Federally owned and unsettled. Additionally, the Nevada Test Site is available for use. What are your plans for constructing facilities or using existing facilities in Nevada?

Answer. As you have asserted, Nevada is blessed with numerous renewable energy resources and is primed for the use of alternative energy resources. To facilitate the increased use of solar energy in Nevada, the Office of Power Technologies awarded a $183,000 grant to the Corporation for Solar Technology and Renewable Resources (CSTRR) September 1998. CSTRR joined with Pulte Home Corporation to develop a strategy for the wide scale installation of solar water heating systems in Nevada and Arizona. To help them, they formed a team which includes Nevada Power Company, University of Nevada Las Vegas , University of Nevada Reno, and the Nevada State Energy Office. The team augmented the DOE grant with $297,000 of its own. Through this grant, they have evaluated a number of solar water heaters and selected two systems that best fit Pulte's performance and reliability requirements. They have been integrated into the design of Pulte's homes and have been installed on several model homes in Las Vegas. Educational materials are being developed by Pulte, as is a marketing strategy. Las Vegas' abundant solar resource and rapidly growing population makes it an ideal location to show that solar technology can be an inexpensive energy option. The goal of the project is to develop a sustainable market that results in solar water heaters on thousands of buildings and facilities throughout Nevada and the rest of the Southwest.

Within the Photovoltaic Program, the State of Nevada is a Million Solar Roofs (MSR) partner and has made a commitment to install up to 10,000 solar roofs. The Photovoltaic Program is also providing financial support to several utility companies within the state to install grid-tied PV systems. UtiliCorp United and the Nevada Power Company are teaming on a project to install kW PV systems on residences to examine their contribution to voltage stability, harmonics and power quality. Sierra Pacific Power is part of a team led by Central and South West Services to purchase in volume and install 180 PV powered fluid handling systems. Finally, the Corporation for Solar Technology and Renewable Resources (CSTRR) is located in Las Vegas and the Program has worked with CSTRR to identify PV projects in Nevada.

In the area of the Geothermal Energy Program, today there are 14 power plants in Nevada with a capacity of about 208 MW. Using current technology and known resources Nevada has a potential of up to 500 MW, although there are no known plans to commercially develop these additional resources. Two geothermal power companies, Oxbow Geothermal and Ormat are headquartered in Reno and Sparks, respectively. Both companies have major projects within Nevada, and the Department has partnered with them in developing improved geothermal technology. In addition, there are 80 MW thermal installed at 34 sites for direct use applications such as space heating and industrial processes. Another 31 sites have a potential for development of almost 1400 MW thermal, mainly for space heating.

The State of Nevada may also be a candidate for an alternative energy test bed to assess various renewable energy and power delivery technologies, especially in a distributed power mode. DOE is considering development of such a site through a competitive process in the fiscal year 2001 time frame.

RANKING THE VALUE OF MAJOR RENEWABLE TECHNOLOGIES

Question. Looking into the future, can you rank in order the overall value of the major renewable technologies?

Answer. Unfortunately, there are too many variables to look into the future to rank the overall value of the major renewable energy technologies in any meaningful way at this time. Factors such as domestic market utilization rates, the level of international sales of domestically-produced technologies, private sector investment, consumer preferences, the value of environmental (e.g., emission) benefits, foreign competition, foreign market barriers and subsidies, resource availability, and the great variances among emerging State laws and regulations make such rankings essentially impossible.

Certainly, it appears that some technologies will enter the marketplace in a substantial manner sooner than others, but this is not an accurate indicator of their eventual value ranking. In fact, this would merely be an estimate of market penetration and the cumulative benefits provided at a given point in time. Other technologies may require a somewhat longer research and development process, but may eventually be more suitable to wider market penetration and greater overseas sales and thus surpass their market entry predecessors. Finally, while oftentimes the various renewable technology resources complement each other (e.g., when the sun goes down, the wind oftentimes increases, yielding opportunities for hybrid renewable energy technology supply systems), there may well be some level of competition among the technologies in certain geographic regions that will be decided by consumers and the marketplace itself.

USE OF HYDROGEN AND HYDROGEN RESEARCH

Question. You say your mission hasn't changed and that it includes developing energy technology options. My understanding is that your office is pursuing the use of Hydrogen as an optional technology. Efficiency requires coordination with the Energy Efficiency and Renewable Energy Office. What steps are you taking to ensure that appropriate communication is taking place between your staff and Dr. Reicher's staff?

Answer. I agree that coordination between the Office of Science (SC) and the Office of Energy Efficiency and Renewable Energy (EE) is critical. The largest activity that supports hydrogen research within the Office of Science is in the Energy Biosciences subprogram of the Basic Energy Sciences program. In addition to one-on-one meetings between program managers, there are several other coordination activities. For example, one of our program staff has served as a reviewer of the EE Hydrogen program; and currently, the Director of our Energy Biosciences Division participates in the Office of Energy Efficiency and Renewable Energy's Bioenergy Energy weekly staff meetings, thus providing both EE and SC with unique perspectives of each others problems and opportunities.

Question. What do you see in the future for Hydrogen Technologies? Are we looking at decades of research before this technology becomes effective and efficient?

Answer. Hydrogen can be used by many energy technologies, from combustion to fuel cells. The impediments are, however, two fold. The first is one of infrastructure. Our fuels infrastructure is based on transporting and distributing hydrocarbons. This infrastructure depends on pipelines and trucks eventually leading directly to our homes and places of work for heat or distribution centers. Much of this infrastructure, perhaps even the majority, is not suitable to handle hydrogen safely. The second is one of efficiency in production of hydrogen. There are current technologies for converting hydrocarbons to carbon dioxide and hydrogen. However, they are not yet economically competitive. There are some new ideas being developed and explored both at university and government laboratories and in industry that have the potential to solve this problem. Longer term research is going to be needed to enable the splitting of water as a source of hydrogen using solar energy, either by artificial or natural photosynthetic processes.

Question. What amount of the fiscal year 2000 budget request within Energy Research will be directed to hydrogen research?

Answer. The Office of Science is responsible for broad support of the science base for all the technology offices within the department. The mechanism by which this is accomplished is competitive peer review of all applications. In fiscal year 1998, we provided $2.3 million in support of meritorious applications for research on hydrogen. In fiscal year 1999, we are currently providing $2.2 million and have received applications in the Climate Change Technology Initiative (CCTI) that are relevant to hydrogen. Because the review of the CCTI applications has not been completed, it is not possible to provide an exact number for fiscal year 1999. The same is true for fiscal year 2000. There will be a solicitation in fiscal year 2000 for the

CCTI that will address among other relevant issues, hydrogen. In addition, applications relevant to hydrogen are submitted to the base programs; and selection is done on the basis of peer review. The amount that will be funded in fiscal year 2000 will depend on the applications submitted and the outcome of the peer review. We anticipate the fiscal year 2000 funding will approximate the fiscal year 1999 funding.

OBJECTIVES OF STRATEGIC PLAN GOALS

Question. I see that the objectives of your "Fueling the Future" and "Protecting our Living Planet" goals are to 1) find energy systems that are more efficient and environmentally sound and 2) to determine how our energy use affects environmental systems. Will you be addressing the environmental issues of nuclear energy, especially waste management and disposal, as a part of these?

Answer. The Office of Science will soon release its new Strategic Plan to guide its research through the next 25 years. Much of this research, because it is basic, has broad potential applications, some presently understood and some not. Having said this, there are areas of basic research which will have relevance and benefit for nuclear waste management and disposal. For example, programs in materials sciences will investigate materials used to contain waste (such as metals, glasses, ceramics and polymers), and the corrosion, welding properties, fracture behavior, and radiation resistance of such materials. Chemical Sciences projects will explore the molecular level reactions of actinide compounds necessary for the safe handling, storage, and disposal of radioactive wastes. Geoscience investigations will examine the transport of contaminants in porous media and the transformation of wastes by the subsurface environment. And, programs in plant and microbial sciences will study how these biological systems interact with nuclear waste products, leading to potentially new or improved remediation strategies and technologies.

NUCLEAR WASTE PROJECTS IN THE BUDGET REQUEST

Question. The budget request includes $411.2 million for Biological and Environmental Research and $342.9 million for Nuclear Physics. Are any of these projects focused on storage of nuclear waste?

Answer. There are no projects in the budget request for either of these programs that are focused on storage of nuclear waste.

ACCELERATOR TRANSMUTATION OF WASTE (ATW)

Question. I understand that there are feasible techniques to reduce the hazardous lifetimes of radioactive wastes. Is your Office doing research on these techniques ?

Answer. The Office of Science is not doing research on these techniques directly, but accelerator technology developed by the Office of Science, et al, is the focus of a $4 million DOE R&D roadmap for one of these techniques: the accelerator transmutation of (radioactive) waste (ATW). The roadmap is due to be completed and submitted to Congress by October 1, 1999. The effort is being led by the DOE Office of Civilian Radioactive Waste Management (RW), with participation by the DOE Offices of Defense, Nuclear Energy and Science. Four technical working groups have been formed, in addition to a group of international experts.

OVERSIGHT OF MAJOR CONSTRUCTION RESEARCH FACILITIES

Question. Isn't the Office of Science responsible for providing research and oversight of major construction of research facilities? Do you have plans for constructing facilities or using existing facilities in Nevada?

Answer. The Office of Science is only responsible for the construction oversight of Office of Science funded research facilities.

The BER Program is currently supporting a research project that is using the Desert Free Air Carbon Dioxide Enrichment (FACE) facility. The project, "Effects of Elevated CO_2 on Root Dynamics and Root Function in a Mojave Desert Ecosystem," is undergoing peer review for continued support. The site is located outside of Las Vegas, Nevada, at the Department of Energy's Nevada Test Site.

COMPETITIVENESS OF NUCLEAR POWER

Question. You say that nuclear energy is essential in reducing carbon dioxide emissions. There are many other "green" technologies that could also reduce carbon dioxide emissions. At this time, these other technologies are not competitive on the open market. My impression is that nuclear energy is also not competitive on the open market. No new reactors have been built in more than 20 years. Many of the old reactors are being decommissioned.

Public distaste for nuclear power incurs hidden costs that can be offset only by real reductions in capital and operating expenses for nuclear power facilities. Otherwise, the industry will continue to turn to other opportunities. How do you plan to decrease the costs associated with nuclear energy (including waste disposal) in order to make it competitive on the open market and attract industrial power advocates?

Answer. Nuclear power plants are among the most efficient sources of baseload electricity available today, with operating costs averaging at about 1.9 cents per kilowatt-hour. Rather, the unacceptably high costs historically attributed to nuclear power plants are from the high costs and long lead times associated with construction and licensing of these plants. Since the enactment of the Energy Policy Act of 1992, much has changed that would make economics associated with building and operating new plants more economic. We believe that nuclear energy is and will continue to be an important source of electricity for the nation and with the right strategies by industry and government to address barriers to use of nuclear energy, both existing and new nuclear plants will be competitive with other energy sources in the next century.

A few years ago, with the shut down of several older, smaller nuclear power plants, and with electricity restructuring looming, many believed that existing nuclear power plants could not compete in the electricity supply market. However, this has not proven to be the case. Today, the trend is toward consolidation of ownership of nuclear plants as states favorably address stranded costs, as we see a growing recognition of the importance of nuclear to meeting international commitments on climate change, and as we see that these plants can be operated efficiently, reliably, and safely. Already, several plants are proceeding well ahead of schedule with license extension and others have expressed their intent to proceed with license extension. We believe that the majority of existing plants will continue to operate well into the next century. To support their continued operation, the Department is proposing to launch the Nuclear Energy Plant Optimization (NEPO) program, in fiscal year 2000. With a modest level of funding, leveraged with industry funding, we believe we can begin addressing important issues that can remove barriers to extended operation of the existing plants. This program conducted in at least 50–50 cost-shared cooperation with the Electric Power Research Institute (EPRI) and with coordination with the Nuclear Regulatory Commission (NRC), would seek to increase plant capacity from 71 percent in 1997 to 85 percent in 2010 by addressing issues such as materials degradation, plant aging, and other issues affecting plant reliability, economics, and safety.

In the 1980's and mid-1990's the Department and industry funded and completed, the Advanced Light Water Reactor (ALWR) program. This program is the foundation for restoring favorable economics and increased confidence in nuclear power in the United States. Three improved, simplified U.S. plant designs were submitted for NRC Design Certification in cooperative, cost-shared programs of DOE and the U.S. industry: the General Electric Advanced Boiling Water Reactor (ABWR) and ABB-Combustion Engineering System 80+ large plants (1350 MWe), and the smaller Westinghouse AP–600 (600 MWe) simplified passive plant. The ABWR and System 80+ received NRC Design Certification in May 1997. The AP600 received NRC Final Design Approval in September 1998, and should receive Design Certification in 2000. We believe that design certification, coupled with the latest NRC one step licensing process, reduces the uncertainty and risk that characterized many nuclear plant projects in the 1970's and 1980's. In addition, the significant improvements and simplification of these plant designs, will reduce the time and cost required to construct nuclear power plants.

In fiscal year 1999, with advice from the President's Committee of Advisors on Science and Technology, the Department proposed and Congress funded $19 million for the Nuclear Energy Research Initiative. This program is specifically aimed at conducting new and innovative research to address barriers to long term use of nuclear energy, such as waste, proliferation, and economics. As an investigator-initiated, peer reviewed research program, proposals were solicited from universities, national laboratories, and industry in the following general areas:

—Proliferation resistant reactor and fuel technology
—New reactor designs to achieve improved performance, higher efficiency and reduced cost; also, low output power reactors.
—Advanced nuclear fuels
—New technologies for nuclear waste management
—Related fundamental science and technology.

We received over 300 proposals in response to the solicitation and in May 1999, the Department awarded grants to the top 45 research projects. The majority of these awards were for collaborative research among universities, laboratories, and industry, including significant collaboration with international R&D organizations.

The NERI program is expected to produce significant innovative research and development that will contribute to the reduction of nuclear plant costs and construction schedules and to improvements in proliferation resistance, nuclear waste technology, and other promising areas of nuclear energy development.

In the final analysis, the long-term use of nuclear power in the United States will depend on economics. This in turn will depend on the efficacy of the R&D that is conducted, on demonstrating the benefits of nuclear power, and on restoring and maintaining a sufficient infrastructure of the needed technical qualifications in industry, universities and laboratories.

NUCLEAR ENERGY RESEARCH INITIATIVE WASTE MANAGEMENT ACTIVITIES

Question. It is the focus of Nuclear Energy Research Initiative (NERI) to determine how, if possible, nuclear energy can be used over the long term as an environmentally responsible and reliable energy source. You are requesting an increase of $6 million over fiscal year 1999 funding to address obstacles affecting the future of nuclear energy in the U.S. Do these obstacles include nuclear waste management and storage?

Answer. Yes. Nuclear waste, principally spent fuel is one of the five main research areas of the fiscal year 1999 NERI research program. The focus of the NERI nuclear waste research is to address issues related to the management and interim or onsite storage of commercial spent fuel. The fiscal year 1999 NERI research solicitation identified waste research needs in the following specific areas: new concepts for onsite or interim storage of spent fuel; strategies and technology for the reduction of high level waste volume; and fundamental research to eliminate storage corrosion processes. The NERI nuclear waste research effort is being coordinated with other Department offices including the Offices of Civilian Radioactive Waste Management, Science, and Environmental Management to avoid duplication of research.

Question. How will these additional funds be used to address waste disposal uncertainties?

Answer. The Office of Nuclear Energy, Science and Technology plans to utilize approximately $19 million of the requested $25 million in fiscal year 2000 to fund the second year of the R&D proposals awarded in fiscal year 1999. The additional $6 million will be used to fund new research in several key areas, including nuclear waste management, proliferation resistant reactor and fuel technologies, new reactor designs, and advanced nuclear fuels. The Department is seeking new alternatives and technological solutions to minimize the impact of spent fuel-nuclear waste while maintaining compatibility with the policy for ultimate disposal in a geological repository. NE will select and fund the best scientific and engineering research proposals received from U.S. universities, national laboratories and industry based on a competitive, peer reviewed selection process.

NUCLEAR ENERGY—SOCIAL ACCEPTABILITY AND COST

Question. How will the Department address what could be the two biggest obstacles to nuclear energy—social acceptability and cost?

Answer. The Department recently completed the Advanced Light Water Reactor Program (ALWR) which produced three advanced nuclear power plant designs that have been approved by the Nuclear Regulatory Commission (NRC). The General Electric Boiling Water Reactor (ABWR) and the ABB-Combustion Engineering System 80+ received NRC Design Certification in May 1997. Design Certification of the Westinghouse AP600 is expected in 2000. These ALWR designs have made significant advancements in the already robust safety features and life cycle cost aspects of nuclear energy.

In order to keep the nuclear energy option viable for the United States, the Department has proposed in its fiscal year 2000 budget, research and development activities under the Nuclear Plant Optimization (NEPO) program. NEPO is a new initiative proposed in fiscal year 2000, to cooperate with the industry to develop key technologies that can help assure the long-term viability of our nation's existing nuclear power plants. This initiative is particularly important as utilities deal with uncertainties associated with electricity restructuring. NEPO seeks to develop and apply new technologies to improve plant economics, reliability and availability, and resolve issues related to plant aging while maintaining a high level of safety.

The proposed NEPO program would help reduce the production costs of existing plants because the R&D conducted: (1) would provide a better understanding of material degradation mechanisms and how they occur, enabling development of cost-effective aging management strategies which will provide capabilities to easily prevent, detect, or repair the degradation; (2) would improve equipment reliability, lower operating costs, and increase power output while maintaining high level of

safety; and (3) would optimize power generation through efficiency and productivity improvements by making use of technology advancements in computers, communications, materials, sensors, digital electronics, and artificial intelligence.

Nuclear energy can become competitive for new capacity additions, if its capital costs can be reduced. Reduction in capital costs can be achieved through the application of advanced technologies in all phases of design, licensing, fabrication, construction and operation; through the use of tools such as probabilistic risk assessment to simplify designs; and by the application of risk-based regulations as a means to streamline the regulatory requirements and process. NERI focuses in part on developing technologies which would make the option of nuclear energy more competitive in the future.

The NERI program, which was initiated this year, will address the principal obstacles to expanded future use of nuclear energy—proliferation, economics and nuclear waste management. NERI research is focused on improved proliferation-resistant reactor and fuel technologies; new reactor designs and technologies to improve efficiency, enhance safety and reduce cost; advanced nuclear fuels to improve fuel economics and reduce waste by-products; and new technologies to manage and temporarily store spent nuclear fuel. NERI complements NEPO by addressing our nation's long term nuclear energy future by funding investigator initiated research and development at universities, national laboratories, and industry to advance nuclear power technology.

NUCLEAR ENERGY RESEARCH INITIATIVE AND NUCLEAR ENERGY PLANT OPTIMIZATION FUNDING

Question. I am impressed that NERI and the Nuclear Energy Plant Optimization (NEPO) program are so successfully coordinating with outside industry, national labs, and universities. Where do the Federal dollars allocated to these programs go?

Answer. There was an overwhelming response by the science and technology community to the fiscal year 1999 NERI solicitation; 308 researcher-initiated R&D proposals were received from 68 different institutions including 40 universities, 9 national laboratories and 19 industry companies totaling over $100 million in first-year funding and a total of $353 million for the three-year period. Over 210 of the proposals involved collaborations among several R&D institutions, particularly with universities, to foster and maintain a nuclear energy R&D infrastructure. In May 1999, the Department selected the top 45 projects for award of fiscal year 1999 funding. The projects selected will involve 21 universities, 8 national laboratories, 16 private sector organizations and with a substantial level of interest and collaboration with international R&D organizations. Funding for NERI is used to fund new and innovative research at the universities, national laboratories and industry.

The proposed NEPO program would involve the nation's national laboratories, universities, and industry in addressing issues associated with operating nuclear power plants in cost-shared cooperation with the Electric Power Research Institute (EPRI) and in coordination with the Nuclear Regulatory Commission (NRC). The research and development program is cost-shared with industry providing a minimum of 50 percent of the cost. The Department, national laboratories, and EPRI have developed a Joint DOE–EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants. This plan was issued on March 20,1998 and was based on inputs from the national laboratories, NRC, universities, and other key stakeholders. This plan, which will be updated in fiscal year 1999, identifies critical R&D needs which are not currently being addressed or planned to be addressed by the industry, NRC, or others. The plan also defines a process for selection of the highest priority projects based on available funding. Project selection will be guided by the Nuclear Energy Research Advisory Committee (NERAC). The federal dollars would fund the organizations which are best suited to conduct the research and development selected for funding. It is expected that efforts at national laboratories, universities, and industry will be funded.

Question. Are they provided as grants to universities and national labs?

Answer. NERI awards to universities and industry will be in the form of grants or cooperative agreements. Funding for the national laboratories will be provided using the standard DOE work authorization process.

The proposed NEPO program is a collaborative cost-shared program with industry providing a minimum of 50 percent of the cost. The government and industry, through EPRI, will identify and prioritize work and use an independent peer review process to select performing organizations. We expect that universities, national laboratories and industrial organizations will all be involved in NEPO R&D activities.

Question. Are any of these funds provided to Nevada researchers?

Answer. Selection of proposals for funding was completed and awards were announced in May 1999. Although no proposals were submitted from researchers in State of Nevada, there is substantial nuclear-related expertise in Nevada, at the universities and industry, and we look forward to receiving future proposals from your State for participation in NERI, and if appropriated by Congress in fiscal year 2000, for participation in NEPO.

QUESTIONS SUBMITTED BY SENATOR STEVENS

LOW INCOME WEATHERIZATION PROGRAM

Question. The Department of Energy's Office of Energy Efficiency and Renewable Energy focuses its research, development, and deployment efforts on transportation, industry, buildings and the federal government. In transportation, DOE focuses on cleaner fuels and great fuel efficiencies. It has highlighted nine industries that account for more than 75 percent of industrial energy use, including forest products, petroleum refining, and mining. For buildings, DOE tries to reduce the $220 billion of energy consumed in homes and offices each year through R&D in lighting, heating, cooling, and ventilation, as well as better construction practices and energy delivery systems. Through the Federal Energy Management Program, DOE seeks to reduce the $8 billion the federal government spends annually on energy through cost-saving incentive programs. The President has proposed a 3.4 percent reduction from fiscal year 1999 in the energy conservation budget.

The fiscal year 2000 weatherization assistance program will provide federal assistance to more than 76,900 low-income homes. There are Alaskans living in third world conditions above the Arctic Circle who pay more than 50 cents per kilowatt hour for energy. In much of my state, more than half of a family's annual income goes to energy in much of my State. Is this program scaled towards those poor families with the lowest incomes AND with the highest energy costs?

Answer. The mission of the Department of Energy's Weatherization Assistance Program is to reduce the energy costs of low-income families, especially those with children, persons with disabilities, and the elderly, while ensuring their health and safety. Each state's annual Weatherization program plan lays out how priorities will be determined by the local agencies which perform the weatherization service throughout the state. Energy burden is a factor that is considered by weatherization agencies in Alaska, in prioritizing homes for Weatherization service.

In Alaska's case, however, many families living in remote areas have homes which need far more assistance than is either allowable or affordable within the national Weatherization program's legislative constraints. Many rural Alaskan homes need major repair or rehabilitation before energy efficiency measures make sense. Furthermore, the expense of delivering energy efficiency measures to these remote communities is so high that the average cost per home far exceeds the maximum average allowable under DOE's program, which in 1999 is $2,032. As a complement to the DOE Weatherization program, the state of Alaska provides for these homes by allocating state funds (about $3 million in the current year) that can be used for repair and rehabilitation as well as energy efficiency improvements. The cost per home averages between $5,000 and $14,000. Unlike the DOE funds, there is no cap on the amount of state funds that can be used for each residence.

EFFICIENT DELIVERY SYSTEMS IN REMOTE VILLAGES

Question. Your budget proposal includes funding for a number of advanced fuel technologies. However, most rural Alaskan communities rely on diesel generators for their power. Clean, efficient, modern technology is not yet an option for many of these folks. What can your agency do to help make the existing energy delivery systems in our villages more efficient?

Answer. Since fiscal year 1996 the Department has been engaged in efforts to assist rural Alaskan communities to integrate wind energy systems with existing diesel generation units to increase the efficiency, and reduce the cost of operating those diesel systems. In the village of Kotzebue, for example, approximately $4.5 million of DOE funds have been made available to date to install a 1.5 to 2.0 megaWatt wind energy system to augment an existing 11.3 megaWatt diesel system. When fully operational, the wind energy system at Kotzebue will be able to provide as much as 25 percent to 30 percent of annual electricity requirements, and reduce diesel fuel costs by a similar 25 percent to 30 percent figure. The Kotzebue project, with ten 66 kW wind turbines currently installed, is serving not only as a model to reduce dependence on expensive and difficult to maintain diesel generation systems, but also as a "center of excellence" to share lessons learned with other com-

munities in the state to help them harness wind resources available to them. In addition to the Kotzebue project, the Department is also supporting a high-penetration 130 kW wind energy system at the Village of Wales. This system, to be installed in the Summer of 1999, will in periods of high winds have the ability to provide all of the electricity required by the village, and will serve as a model for wind energy installations in other small villages in the state. Further, the Department is working with the Alaska Department of Community and Regional Affairs (DCRA) to help the villages of Gambell, Mekoryuk, Point Hope, St. Michael, and Unalakleet to perform detailed measurements of their wind resources as a first step leading to the possible installation of wind energy systems in those communities. In support of DCRA the Department also funded a market assessment of the potential for wind energy use in approximately 80 rural Alaskan communities. DCRA and the Institute for Social and Economic Research at the University of Alaska -Anchorage are now analyzing that data to determine additional rural communities that might be candidates for wind energy installations to augment their existing diesel generation systems.

A multi-year program that was initiated as part of the hydrogen program in the fiscal year 1998 budget concerned the development of 3 to 5 kW fuel cells for residences and buildings that could operate with a diesel fuel. The fuel cells can be deployed within or next to the building and be used to co-produce heat as well as power. Overall efficiencies for these systems are anticipated to be in the 80 to 90 percent range, and can thereby decrease the fuel requirements by half. Also, if several of these systems were to operate in a village environment as a distributed network, then it is expected that the reserve requirements for backup systems will be less. A demonstration of a fuel cell system in an arctic climate is planned to be operated by the end of 2000.

In addition, hybrid systems of diesel generators with batteries have been shown to enhance diesel efficiency by as much as 50 percent while leveling out fluctuating load patterns. Several such systems are being studied along the Alaskan coast in cooperation with Chugach Electric and the State of Alaska. Installation and field testing of a prototype generator/storage system is scheduled for fiscal year 2001.

Funded by DOE, a 1.4 MWh energy storage system now operates on the remote Metlakatla island in southeastern Alaska. The state-of-the-art system is charged by hydropower and is expected to pay for itself within three years. The hybrid system eliminates the use of a noisy, polluting 3 MW diesel engine and handles large load spikes caused by the lumber mill that is also the main employer on the Indian reservation. Data collected on the performance of this system could be used by other Alaskan sites to improve their power supply and power quality situations.

Finally, in the fiscal year 2000 budget request, the Department has asked for funding for a Competitive Solicitation Program (one of the two programs in the solar Program Support line item) that could be of assistance to communities in Alaska and other states seeking to improve their energy delivery systems. (This program is a proposed integration of two previous lie items: the Renewable Indian Energy Resources Program and the Federal Buildings/Remote Power Program.) Through competitive awards, the Department would carry out targeted field validation projects that prove the availability of clean, affordable, and reliable electric power supply options in remote and/or economically challenged areas of our Nation. These projects would not only benefit the requirements but also provide essential data on operational performance, reliability, and benefits of renewable energy and hybrid renewable energy generation/cogeneration systems in various geographic locations and climatic conditions.

QUESTIONS SUBMITTED BY SENATOR DORGAN

RENEWABLE ENERGY

Question. Could you comment on the progress being made to make renewables competitive relative to other more established fuels. How long is it going to take to get a mature technology? I'm especially interested in progress with wind.

Answer. Research and development has significantly reduced the cost of producing electricity from renewable resources over the last twenty years. For example, in the early 1980's the cost of producing power from the first photovoltaic (PV) systems was more than $1.00 per kilowatt-hour (kWh), while today's PV technology can produce electricity from sunlight at less than a quarter of that cost. By fiscal year 2000 we expect PV systems to be able to deliver electricity for as low as $0.12–$0.20 per kWh. The cost of electricity from wind turbines in 1980 ranged from $0.30–$0.40 per kWh, while today it is between $0.04 and $0.06 per kWh. Although many re-

newable technologies are competitive in limited market segments (for example, off-grid photovoltaics, biomass where low cost or negative cost waste feedstock is available or where cogeneration is appropriate, geothermal where there are established high quality resources), they have not yet reached the point where they can capture a large share of the overall electricity market. Concurrent with the impressive reductions in the cost of producing electricity from renewable resources, for a number of reasons (including deregulation of the natural gas and oil industries and the railroads) the price of fossil fuels has fallen significantly, which, together with improvements in conventional power generation technology, has lowered the cost targets at which renewable technologies become competitive with conventional fuels in a significant portion of electricity markets. Assuming success in meeting the technology cost and performance goals for our R&D programs—and we believe we will continue to be successful and meet these goals—a number of the renewable technologies will become competitive in the 2010 to 2020 time frame. Wind is expected to achieve costs of between $0.025 and $0.03 per kWh by 2010, somewhat lower than today's average costs for electricity from fossil plants. The cost of electricity from photovoltaic systems is projected to be under $0.10 per kWh in 2010, decreasing to about $0.065 per kWh by 2020. This should allow photovoltaics to be competitive with electricity delivered from the grid in at least some retail commercial and residential markets.

Both technology improvements and market penetration typically follow an "S" curve, with slow progress initially, followed by accelerated developments for a period of time and then, finally, slow progress again when the technology matures. Generally it takes decades after a technology is introduced into the market place for the technology to mature with respect to technology improvements or market penetration; however, we expect the Federal R&D role to be completed long before the technologies reach "full maturity" and that the marketplace will provide most of the incentives for incremental technology improvements during this "full motivation" phase.

PROSPECTS FOR WIND

Question. What are the prospects for wind generally, especially in remote locations? Do you see a time when wind could help these areas reduce their electricity costs?

Answer. In remote villages without connection to a central grid and where the cost of diesel fuel is often one to two dollars per gallon or more, use of wind energy appears very competitive. What is still necessary is to develop control strategies and retrofit packages to join wind power with existing diesel power systems or other technologies such as fuel cells. To that end, the Department is working on three projects in Alaska to evaluate the performance of wind/diesel hybrid systems and to establish the performance of wind turbines in the Arctic climate. Moreover, we are proposing an expansion of this effort through the Hybrid Systems for Village Power project in the fiscal year 2000 request.

Over 800 MW of wind technology will be installed in 1998 and 1999 in the United States, largely because of the purchaser's desire for clean, green energy and because of the temporary production tax credit. The pace of wind development for windfarms thereafter depends on a great many factors. The Administration has proposed a five-year extension of the temporary production tax credit and that would provide a major economic motivation to overcome the initial higher cost of wind projects. In addition, we would expect wind energy to capture a significant share of a renewable portfolio standard if the Congress enacts the Administration's proposal. There is also inherent demand for green power although we do not have a good handle on its size. For wind farm applications, if environmental and other factors are not included, the cost of wind energy is not yet competitive with that from new natural gas plants. New wind technologies under development will narrow the gap between wind and natural gas technologies.

CO-FIRING BIOMASS WITH LIGNITE

Question. What are the prospects for co-firing biomass with lignite? In other words, could biomass be burned along with liginte to improve its efficiency and air quality characteristics?

Answer. The prospects for co-firing biomass with lignite appear promising. An assessment of co-firing alternatives was conducted at the coal-fired boilers of Central & South West Utilities. One of the conclusions drawn from this assessment is that biomass and lignite are very similar, in terms of fuel characteristics. There is very little difference between the energy content of biomass and the lignite coal; lignite

generally has a heating value of 6,400 BTU/lb and biomass fuel 5,000 BTU/lb. Both can be readily fired in coal-fired boilers with minimum modifications.

Question. If current biomass technologies aren't appropriate, do you see some other kind of technology that would be compatible with lignite?

Answer. As stated in the previous question, current biomass technologies are appropriate for co-firing biomass with lignite. In fact, the differences between biomass and lignite are less than those between coal and biomass, due to the high moisture content and low BTU of lignite relative to coal. In general, lignite has low BTU content and an ash that tends more to slag than coal ash and, therefore, is fired in boilers with larger size and larger gas flow passages to prevent clogging due to the slag. Hence, in some ways the co-firing prospects for lignite seem more promising.

Question. Could co-firing with lignite be done at EERC?

Answer. We are aware of the Energy & Environmental Research Center's (EERC) capabilities in the field of energy, particularly fossil energy. We are also aware of the EERC's experimental capability to conduct co-firing tests with lignite.

SUBCOMMITTEE RECESS

Senator DOMENICI. We stand in recess. Thank you. The subcommittee stands in recess.

[Whereupon, at 11:32 a.m., Tuesday, April 13, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2000

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—At the direction of the subcommittee chairman, the following statements received by the subcommittee are made part of the hearing record on the Fiscal Year 2000 Energy and Water Development Appropriations Act.]

CALIFORNIA WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF MICHAEL D. MADIGAN, CHAIRMAN, CALIFORNIA WATER COMMISSION

The California Water Commission is an official agency of the State of California. It is composed of nine representative citizens from throughout the State. The Commission is charged by statute with representing State of California and local interests before your Committee. The Commission is coordinating the filing of the statements of a number of State and local agencies. On behalf of the California Water Commission, I would like to express our sincere appreciation for the support this Committee has given California water, fishery and flood control appropriations over the years. I am privileged to submit to you the official recommendations of the State of California for fiscal year 2000 appropriations and request it be included in the formal hearing record along with the testimonies listed on the attached Statement List.

The Commission would like you to know that it supports projects as shown on the attached document entitled, *California Water Commission—Final Recommendations for fiscal year 2000 Federal Appropriations for California Water, Fishery and Flood Control Projects, March 5, 1999.* That document contains recommendations adopted by the Commission at its March 5, 1999 meeting in Sacramento, California, where individuals from throughout the State testified on individual projects.

This year the recommended add-ons to the President's budget for the Corps of Engineers are not as extreme as last year. However, the proposed amounts in some of the large ongoing flood control construction projects are inadequate to maintain the construction schedule. Stopping and starting construction projects can significantly increase the cost, as well as putting the respective project areas in jeopardy of severe damage from flooding of a partially completed project. The Commission has supported projects over the years that are funded under "Continuing Authorities", such as Sections 205, 206, 503 and 1135. These projects compete for very limited funds. This year the Commission voted to request Congress consider increasing the funding in these Authorities, so more of the needed projects in these categories can be funded.

The California Water Commission has long recognized water recycling as an important element in the management of California's water resources. It is the Commission's view that water recycling projects should be supported in concert, within the limitations of available federal funds, giving due consideration to other potential sources of funds that could be available to effect their implementation. The Commission agreed to work with USBR on language which will give the local sponsor greater assurance of future year support. This will also encourage sponsors to go ahead with expanded facilities with greater expectation of out-year funding.

SPECIAL RECOMMENDATIONS FOR FUNDS

The Commission recommends that special consideration be given for appropriation of funds for projects of the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation as shown in the following table. The Commission believes that these projects merit special consideration for the reasons set forth in the information shown on the tables on the following page.

CWC No.	Project and county	Presidents budget fiscal year 2000	CWC final recommendation fiscal year 2000
	U.S. ARMY CORPS OF ENGINEERS		
90	Bay-Delta Ecosystem Restoration	$500,000	$1,000,000
110	Sacramento & San Joaquin Rivers Comprehensive Study	2,000,000	3,000,000
210	American River Watershed	5,000,000	5,000,000
238	Arroyo Pasajero	150,000	2,685,000
302	Sacramento River Restoration at Glenn-Colusa Irrigation District	3,000,000	6,000,000
333	Kaweah River (Tulare)		2,500,000
381	Los Angeles County Drainage Area Project	30,000,000	50,000,000
382	Santa Ana River Mainstem	20,000,000	28,000,000
387	Norco Bluffs Bank Stabilization Santa Ana River		2,200,000
400	Flood Control Act of 1948, Section 205 Flood Damage Prevention	26,000,000	50,000,000
420	Water Res. Development Act, 1996, Section 206, Aquatic Ecosystem Restoration	4,500,000	10,000,000
430	Water Res. Development Act, 1996, Section 503, Watershed Mgt. Restoration & Development	15,000,000	30,000,000
440	Water Res. Development Act, 1986, Section 1135, Project Modification for Improvement of the Environment Program	8,500,000	20,000,000
	U.S. BUREAU OF RECLAMATION		
500	Bay-Delta Ecosystem Restoration	95,000,000	95,000,000
612	Coleman National Fish Hatchery Modification	1,500,000	1,500,000
621	Winter-Run Chinook Salmon, Captive Broodstock Program	520,000	520,000
622	Hamilton City Pumping Plant Fish Facility	2,250,000	3,750,000
	663. Arroyo Pasajero Studies Cantua Creek Strm Group-EIS		920,000
701	Central Valley Project	72,617,000	72,617,000
900	Public Law 102–575, Title XVI and Amended by Public Law 104–266 (Mid-Pacific Region)	3,000,000	3,000,000
1000	Public Law 102–575, Title XVI and Amended by Public Law 104–266 (Lower Colorado Region)	26,100,000	26,100,000
1108	Salton Sea Research Project	1,000,000	1,000,000
1302	Title I Division (Lower Colorado)	13,092,000	13,092,000
1304	Basin-wide Program	12,300,000	17,500,000

U.S. ARMY CORPS OF ENGINEERS

CWC 90—Bay-Delta Ecosystem Restoration.—The CALFED Bay-Delta Program is an open collaborative, state-federal-stakeholder effort seeking to develop a comprehensive long-term plan to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. The Program is developing a comprehensive package of Program elements that, together, must:

—Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.
—Provide good water quality for all beneficial uses.
—Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.
—Reduce the risk to land use and associated economic activities, water supply infrastructure, and the ecosystem from catastrophic breaching of Delta levees.

The CALFED Bay-Delta Program is a cooperative effort among State and Federal agencies and the general public to ensure a healthy ecosystem, reliable water supplies, good water quality, and stable levees in California's Bay-Delta. The Corps of Engineers is an official part of the ongoing effort and needs to be adequately funded to allow the Corps' experts to officially participate in CALFED activities.

CWC 110—Sacramento and San Joaquin Rivers Comprehensive Study.—In January of 1997, the Central Valley of California was confronted with the largest and most extensive flood disaster in the State's history. The Sacramento River and its tributaries sustained two major levee breaks. In the San Joaquin River Basin, extensive damages resulted from over two dozen levee breaks, sedimentation, and deposition of sand and silt in the fields where flood water poured through the levee breaks. As a result, Congress appropriated $3 million in fiscal year 1998 and $3.5 million in fiscal year 1999 to initiate a comprehensive flood damage reduction and environmental restoration assessment for the Sacramento and San Joaquin River Basins.

The State of California and the Army Corps of Engineers have initiated a four year Comprehensive Study. The Comprehensive Study will build on existing data outlined in investigations such as the Sacramento River Watershed Management Plan, the State's San Joaquin River Management Program, the Central Valley Project Improvement Act (CVPIA), and integrated with these and other existing programs. The first phase of the Comprehensive Study is 18 months long. This interim report is nearing completion and will be sent to Congress in April of 1999.

Phase II will result in full development and calibration of basin-wide hydrologic and hydraulic models. Phase II report will include a programmatic EIS/EIR which describes a broad range of potential flood damage reduction measures and integrated ecosystem restoration measures. Some "early implementation projects" will be identified, developed, and to the extent possible recommended for authorization and implementation. Early implementation projects must (1) address identifiable flooding problems, (2) be consistent with the strategy, (3) be singularly effective in achieving program goals, (4) demonstrate broad acceptability, and (5) be readily implementable.

CWC 210—American River Watershed.—Recently the U. S. Army Corps of Engineers said, "Sacramento has one of the lowest levels of flood protection of any U.S. city its size." Located at the confluence of two major rivers, a large portion of the Sacramento area is threatened by flooding from the American River and the Sacramento River. The area of risk covers over 100,000 acres and consists of over 160,000 homes and structures, 400,000 residents and over $37 billion in developed property.

The Reclamation Board supports at a minimum Congressional Authorization of Folsom Dam modifications as part of the Water Resources Development Act of 1999. This would increase the level of protection from 1 in 77 to about 1 in 110. The Folsom modifications are common to all plans currently under consideration by Congress.

CWC 238—Arroyo Pasajero.—At present, DWR, USBR, and the Corps are only a few months away from completion of the Draft Feasibility Investigation Report, which will identify two candidate alternatives that show a federal interest in a Corps flood control project. The two projects, the enlarged Westside Detention Basin and the Pasajero Gap Detention Dam, are estimated to cost approximately $260 and $229 million with benefit cost ratios of roughly 1.7:1 and 1.1:1, respectively. While both plans provide significantly improved flood protection to the Aqueduct where the overwhelming majority of the flood control benefits are accrued, the Gap Dam provides roughly double the level of protection to most of the Arroyo Pasajero flood plains that cover nearly 100,000 acres within Westlands Water District and the Tulare Lake Basin.

Severe flooding has been experienced five times at the Arroyo between 1969 and 1993. On March 10, 1995, during the largest Arroyo Pasajero flood on record, a section of Interstate 5 upstream of the Canal collapsed when flood flows peaked on the Arroyo. Seven people lost their lives and there was substantial local property damage. Flood damage claims filed by private landowners adjacent to the Canal have exceeded $12 million from this one flood alone.

CWC 302—Sacramento River Restoration at Glenn-Colusa Irrigation District.—Finding a solution to the fish passage problem at Glenn-Colusa Irrigation District's Pump Station is an important element to Central Valley fish restoration. The agencies that have worked cooperatively to develop the Glenn-Colusa Irrigation District's Fish Screen Improvement Project include Glenn-Colusa Irrigation District, the United State Bureau of Reclamation, the United States Army Corps of Engineers, the Department of Fish and Game, the National Marine Fisheries Service, the

United States Fish and Wildlife Service, the Department of Water Resources and the Reclamation Board.

The project consists of two important elements, the fish screen facility and the gradient facility. Construction began on the approximately 600-foot extension to the existing flat-plate fish screen in May of 1998.

The second critical element of the Fish Screen Improvement Project is the design and construction of the gradient facility in the mainstem of the Sacramento River. It is designed with the characteristics of a natural riffle, providing a "hard point" in the river that will stabilize the Sacramento River in the project reach, and restore the minimum water surface elevations at the fish screen to provide adequate water speed for efficient screen and fish bypass performance. Construction of the gradient facility is expected to begin subsequent to the fish screen construction in 2000 and be completed by 2001.

CWC 333—Kaweah River (Tulare).—Terminus Dam was authorized by the 1944 Flood Control Act and was constructed by the U. S. Army Corps of Engineers in 1962. Since construction of Terminus Dam, damaging floods have occurred in many years. Downstream communities and areas adjacent to the flood plain are at risk of future flooding.

Initially, various alternatives were evaluated, including alternative storage sites, detention basins, construction alternatives, and nonstructural measures. Based on technical, economical, and environmental criteria, the only feasible alternative is to raise and widen the spillway at Terminus Dam. The Corps' Authorized Plan includes raising the elevation of the existing Terminus Dam spillway. Reservoir storage capacity would be increased by 42,600 acre-feet (about 30 percent). This feature will save an estimated seven million dollars of the approximate 40 million dollar Project cost.

The State of California sponsor is The Reclamation Board and the local sponsors of the Project are the Kaweah Delta Water Conservation District (lead agency), City of Visalia, Tulare Lake Basin Water Storage District, Tulare County, and Kings County.

CWC 381—Los Angeles County Drainage Area Project (LACDA).—The Los Angeles County Drainage Area, current population of over 9 million, is partially protected by an urban flood control system which includes Corps flood control structures consisting of 5 major reservoirs, 22 debris basins, and 470 miles of channel improvements. The existing system, protecting the second largest urban metropolitan area in the United States, has prevented over $3.7 billion in damages since construction. However, the flood of 1969 in Los Angeles County caused widespread damages of over $12 million, $56.5 million at 1996 prices.

The LACDA Project involves raising of 21 miles of existing levees which were originally built 40–50 years ago and modifying 21 bridge crossings. The Project was authorized by Congress in 1992. Construction began in February 1996. Six construction contracts which included 4.5 miles of levee raising and modifications to seven bridges have been completed.

The President's Proposed Budget for fiscal year 2000 includes $30 million for this Project, and if not increased, would delay the completion of the project by at least one to two more years. This will prolong the risk of flooding and continue to jeopardize the safety of those living in the 75-square-mile overflow area. Such a condition is unacceptable.

CWC 382—Santa Ana River Mainstem (Includes San Timoteo).—The project is located along a 75-mile reach of the Santa Ana River in Orange, Riverside, and San Bernardino counties southeast of and adjacent to metropolitan Los Angeles, California. Construction of this project will primarily provide protection to lands and improvements within Orange County downstream of Prado Reservoir. A severe flood threat exists in this area, which could cause damages in excess of $15 billion and could endanger and disrupt the lives of over three million people living or working in the floodplain.

The $28 million request includes $20 million dollars to continue construction on Seven Oaks Dam and the Lower Santa Ana River plus $8 million to begin construction (a new start appropriation is required) at Prado Dam. Commencement of construction on improvements to Prado Dam is very important. This feature of the SAR Project is the key link in providing the level of flood protection envisioned by Congress when it authorized the SAR Project in 1986.

CWC 387—Norco Bluffs Bank Stabilization-Santa Ana River.—The study area is located approximately 40 miles southeast of Los Angeles in the City of Norco along the south bank of the Santa Ana River. Flood induced migration of the main channel of the Santa Ana River to the base of the bluffs has resulted in undercutting and subsequent bank de-stabilization which threatens residential development along the edge of the bluffs.

The purpose of this project is to protect a susceptible 65 foot high bluff in Norco from further retreat into the residential neighborhood. Severe bank sloughing results when flood flows within the Santa Ana River attack the toe of the bluffs. Water Resources Development Act of 1996, Section 101b(4), provided for the authorization of the project based on a Chief's Report dated December 23, 1996 that recommended the project for construction. Certain geotechnical design considerations have resulted in an increased cost for the project, and the Commission is therefore seeking supplemental funding in the amount of $2,200,000 in fiscal year 2000 for completion of construction of the Norco Bluffs Bank Stabilization Project.

CWC 400—Flood Control Act of 1948, Section 205, Flood Damage Prevention.—The California Water Commission heard testimony at its March 5, 1999 meeting requesting support on individual projects. Each of these projects have merit and are needed to prevent recurring flood damages in the local areas. The Commission supports these projects for funding from this Continuing Authority for small projects.

The Commission has witnessed many successful projects in California over the years that have been funded from this Authority. However, the list of project requests are exceeding the funding level. The Commission voted to support a request to Congress to increase the nationwide funding level from the present $26,000,000 to $50,000,000.

CWC 420—Water Resources Development Act, 1996, Section 206, Aquatic Ecosystem Restoration.—The California Water Commission heard testimony at its March 5, 1999 meeting requesting support on individual projects. The Commission supports these projects to improve the quality of the environment. Section 206 directs the Secretary of the Army to carry out such projects if the Secretary determines that the project will improve the quality of the environment and is in the public interest; and is cost-effective. The cost-sharing provisions state that the non-Federal interests shall provide 35 percent of the cost of the construction of any project carried out under this section, including provision of all lands, easements, rights-of-way, and necessary relocation.

The Commission voted to support a request to Congress to increase the nationwide funding level from the present $4,500,000 to $10,000,000.

CWC 430—Water Resources Development Act, 1996, Section 503, Watershed Mgt. Restoration & Development.—The California Water Commission heard testimony at its March 5, 1999 meeting requesting support on individual projects. The Commission supports fiscal year 2000 appropriations for the projects. This provision gives the Secretary of the Army the authority to have the Corps provide technical, planning and design assistance to nonFederal interests for carrying out watershed management, restoration and development projects at locations listed in Section 503, Water Resources Development Act, 1996.

The Commission voted to support a request to Congress to increase the nationwide funding level from the present $15,000,000 to $30,000,000.

CWC 440—Water Resources Development Act, 1986, Section 1135, Project Modification for Improvement of the Environment Program.—The California Water Commission heard testimony at its March 5, 1999 meeting requesting support on individual projects. The Commission supports fiscal year 2000 appropriations for each of these projects. Water Resources Development Act of 1986, Section 1135, directs the Secretary of the Army to review the operation of water resources projects constructed before the date of the Act to determine the need for modifications in the structures and operations of such projects for the purpose of improving the quality of the environment in the public interest. The Commission voted to support a request to Congress to increase the nationwide funding level from the present $8,500,000 to $20,000,000. Additional funds are needed as this list of important projects increase.

U.S. BUREAU OF RECLAMATION

CWC 500—Bay-Delta Ecosystem Restoration.—At the confluence of California's two largest rivers, the Sacramento and San Joaquin, the San Francisco Bay and adjoining Sacramento-San Joaquin Delta (Bay-Delta) together form the largest estuary in the western United States. The Bay-Delta is a haven for plants and wildlife, supporting over 750 plant and animal species. The Bay-Delta supplies drinking water for two-thirds of California's citizens and irrigation water for over 7 million acres of the most highly productive agricultural land in the world.

The CALFED Bay-Delta Program is an open collaborative, state-federal-stakeholder effort seeking to develop a comprehensive long-term plan to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. The Program is fundamentally different from previous efforts because it

seeks to address ecosystem restoration, water quality, water supply reliability, and levee and channel integrity as co-equal program purposes.

On December 18, 1998, CALFED released the Revised Phase II Report which outlined the draft preferred alternative for solving the problems in the Bay-Delta system. The CALFED Program expects to release a Revised Draft EIS/EIR in the spring of 1999. This release will be followed by a public comment period and further refinement of the proposed plan. The goal is to have a final EIS/EIR certified by December 1999 with implementation of the plan to begin in the year 2000.

CWC—612—Coleman National Fish Hatchery Modification.—The Coleman National Fish Hatchery was built by the U.S. Bureau of Reclamation (USBR) on Battle Creek in 1942 to mitigate damages to salmon spawning areas in the Sacramento River system caused by the construction of Shasta and Keswick Dams. Federal custody and operation were transferred to the U.S. Fish and Wildlife Service (USFWS) in 1948. Title 34 of Public Law 102–575 (Central Valley Project Improvement Act) specifies that USBR provide funding for completion of the rehabilitation of the Coleman National Fish Hatchery: 50 percent will be reimbursable from water and power users and 50 percent non-reimbursable.

Remaining rehabilitation facilities are additional water treatment facilities which include one sand filter, an air compressor, and one ozone contact/stripper capable of treating 15,000 gallons per minute and installation of various ozone equipment. Also, installation of a 54-inch pipeline from the ozone treatment plant to the large raceways. The replacement of facilities for administration, the fish health laboratory and public contact area will be the final items to complete the modifications at Coleman NFH.

CWC 621—Winter-Run Chinook Salmon, Captive Broodstock Program.—The captive broodstock program arose from shared concerns for the fate of the Sacramento River winter-run chinook salmon. Active participants have included representatives of U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Bureau of Reclamation, Bodega Marine Laboratory of the University of California, Steinhart Aquarium of the California Academy of Sciences, California Department of Fish and Game, California Department of Water Resources, Pacific Coast Federation of Fishermen's Associations, Tyee Club and California Water Commission.

The program has promoted the genetic conservation of winter-run chinook salmon. Analyses of the effective size of the winter-run stock showed that a properly managed artificial propagation program to which the captive broodstock program contributes gametes is not likely to have a negative effect and may, instead, be helping to maintain or slightly increase the genetic diversity of the stock.

The captive broodstock program was initiated as a rapid response to the endangerment of the Sacramento River winter-run chinook salmon. To date, the program has realized many of its objectives. Gametes from captively reared broodstock have contributed to artificial propagation of the winter-run population. In each year since its inception, the program has provided progressively better spawners, gamete quality, fertilization and production of juvenile fish. The artificial propagation program is actively pursuing improvements to rearing facilities and genetics and mating protocols to eliminate concerns about hybridizing Spring run. The recently completed Livingston Stone NFH below Shasta Dam is expected to successfully imprint the young fry on Sacramento River water. Most important, the scientific and technical advances by the program will provide an important legacy to salmon biology.

CWC 622—Hamilton City Pumping Plant Fish Facility.—Finding a solution to the fish passage problem at Glenn-Colusa Irrigation District's Pump Station is an important element to Central Valley fish restoration. The agencies that have worked cooperatively to develop the Glenn-Colusa Irrigation District's Fish Screen Improvement Project include Glenn-Colusa Irrigation District, the United State Bureau of Reclamation, the United States Army Corps of Engineers, the Department of Fish and Game, the National Marine Fisheries Service, the United States Fish and Wildlife Service, the Department of Water Resources and the Reclamation Board.

The project consists of two important elements, the fish screen facility and the gradient facility. Construction began on the approximately 600-foot extension to the existing flat-plate fish screen in May of 1998. Included in the screen structure are three internal bypasses that will allow for reduced fish exposure to the screen. The bypasses will exit the fish into the lower oxbow channel. Significant improvements are being made to the lower oxbow channel and training wall to meet hydraulic criteria past the facility. In addition, a water control structure (weir) with a removable bridge to allow access to Montgomery Island for routine dredging operations has been designed by Glenn-Colusa Irrigation District and constructed under Reclamation's contract.

Adequate funding for completion of construction is essential to meeting the important goals of a long-term fish passage solution at Glenn-Colusa Irrigation District's main pump station and to assist with Central Valley fish restoration.

CWC 663—Arroyo Pasajero Studies—Cantua Creek Strm Group-EIS.—The Cantua Creek Stream Group consists of seven western San Joaquin Valley ephemeral streams, as well as several smaller unnamed drainages located west of the San Luis Canal segment of the California Aqueduct extending between 20 and 50 miles north of the Arroyo Pasajero.

Flood water overtopped the western embankment of the Canal in 1969 and 1995, causing extensive damage to the concrete lining. Since the 1960s, over 40,000 acre-feet of Cantua Creek Stream Group flood water and an estimated 2.5 million cubic yards of sediment have entered the Canal from overtopping or through the drain inlets. These streams have also deposited as much as 2.9 million cubic yards of sediment upslope of the Canal, eliminating 1,600 acre-feet (about 50 percent) of the original impounding capacity. The Cantua Creek Stream Group poses a flood risk with a potential to breach the Canal and disrupt water service to millions of people in southern California and the southern San Joaquin Valley. In addition, the cost associated with the degradation to water quality from uncontrolled flood inflow is a substantial expense to both the Canal operators and water customers. The situation is continually worsening as additional sediment is deposited along the west side of the Aqueduct.

The Department of Water Resources, with cost sharing by USBR, is completing a reconnaissance study of these drainage and sedimentation problems and will be performing feasibility level investigations during fiscal year 2000 to seek solutions. In addition, interim improvements to restore diminished impounding capacity and improve sediment decanting capabilities for smaller flood flows will extend into fiscal year 2000. Under the San Luis Unit Joint-Use Facilities Agreement, USBR is responsible for 45 percent of the cost of this work.

CWC 701—Central Valley Project.—The Nation's public works infrastructure is aging. We must ensure that adequate levels of funding are provided to protect the public's investment in facilities which we rely upon daily to provide water supply, flood protection, public safety, and other benefits. California's population of 32 million people depends upon a network of local, state, and federal infrastructure developed over the past decades. Today, governments at all levels are finding it increasingly difficult to find funds to properly maintain existing facilities. The competition for funding raises important public policy questions about the relationship of funding for new projects and programs as opposed to funding to maintain and rehabilitate existing infrastructure.

Too often, the temporary solution used by all levels of government to meet budgetary constraints is to defer maintenance funding. However, deferred maintenance does not come without a price.

Given the increasing competition for federal dollars, we must be prepared to make the difficult choice of deferring studies and new projects until we are assured that existing federal facilities are receiving appropriate levels of safety review and maintenance.

CWC 900—Public Law 102–575, Title XVI and Amended by Public Law 104–266 (Mid-Pacific Region); CWC 1000—Public Law 102–575, Title XVI and Amended by Public Law 104–266 (Lower Colorado Region).—The California Water Commission has long recognized water recycling as an important element in the management of California's water resources, both for cleanup of municipal, industrial and agricultural discharges and to improve the quantity and quality of water supplies. The Department of Water Resources' Bulletin 160–98, California Water Plan Update, January 1998, identifies up to 800,000 acre-feet of total potential additional water recycling in California by the year 2020.

It is the Commission's view that both water recycling programs and the other ongoing USBR programs are highly important and that they should be supported in concert, within the limitations of available federal funds, giving due consideration to other potential sources of funds that could be available to effect their implementation. The Commission agreed to work with USBR on language which will give the local sponsor greater assurance of future year support. This will also encourage sponsors to go ahead with expanded facilities with greater expectation of out-year funding.

CWC 1108—Salton Sea Research Project.—Over the last several decades there has been concern over the increasing salinity of the Salton Sea and the impacts it has had on the Sea's ecology. Increasing salinity and other water quality issues are threatening biological values and recreational uses of the Sea. An additional concern is the rising water surface elevation. The raising water surface has flooded much of the developed area and the shoreline wildlife habitat used by a number of dif-

ferent bird species. The rising sea also has inundated much of the Salton Sea National Wildlife Refuge at the south end of the sea. The full impacts of increasing salinity, the decline in other water quality attributes, and water surface elevation on endangered species that inhabit the sea are unknown, but studies are presently ongoing. In order to identify and evaluate possibilities for improving the condition of the sea, a program of additional planning, research, and environmental impact analysis are needed.

The objectives of this program are to identify and evaluate alternatives to: improve water quality conditions; maintain quality habitat for migratory birds and endangered species; enhance the fishery; and protect human recreation values in and around the Salton Sea. Environmental scoping and scientific research of remediation alternatives currently is underway.

CWC 1300—Colorado River Salinity Control Program; CWC 1302—Title I Division (Lower Colorado).—The California Water Commission heard testimony at its March 5, 1999 meeting requesting support for federal funding levels that are required to meet the numeric criteria and standards that have been established for salinity on the Colorado River.

The Commission supports fiscal year 2000 appropriations of $13,092,000 for Title I of the Colorado River Basin Salinity Control Act, which covers delivery of water to Mexico, pursuant to the 1944 Mexican Water Treaty and Minute 242 of the International Boundary and Water Commission.

CWC 1304—Basin-wide Program.—The California Water Commission heard testimony at its March 5, 1999 meeting requesting support for federal funding levels for water quality programs under Title II of the Colorado River Basin Salinity Control Act. The Commission voted to support a request to Congress to increase the Basin-wide funding level from the present $12,300,000 to $17,500,000. The Commission believes that this increase is necessary to meet the established numeric criteria and standards for salinity in the Colorado River.

Final Recommendations For Fiscal Year 2000 Federal Appropriations
For California Flood Control, Water and Fishery Projects
Adopted by the California Water Commission on March 5, 1999

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
U.S. ARMY CORPS OF ENGINEERS									
90	Bay-Delta Ecosystem Restoration (CALFED)(See CWC 500 & 1500) (Funding under Remaining Item)	Corps			795,000	1,000,000	Support	500,000	1,000,000
100	**General Investigation - Surveys**								
101	Lake Siskiyou Area Watershed Specific Plan								100,000
102	Northern California Streams, Sacramento River Riparian Revegetation(Solano,Yolo)	Corps NonFed Total	1,970,000 1,350,000 3,320,000	649,000	300,000	250,000	Support	200,000	200,000
103	Northern California Streams Dry Creek (Middletown)	Corps NonFed Total	400,000 300,000 700,000	100,000	34,000	100,000	Support	150,000	150,000
105	Northern California Streams Middle Creek	Corps NonFed Total	1,095,000 495,000 1,590,000	600,000	25,000	200,000	Support	150,000	300,000
107	Colusa Basin Wetland Project								Support
108	Sutter Basin(Sutter)	Corps NonFed Total	1,100,000 1,000,000 2,100,000	0	84,000	100,000	Support	60,000	100,000
109	Strong & Chicken Ranch Sloughs(Sacramento)	Corps NonFed Total	800,000 700,000 1,500,000	0	84,000	100,000	Support	500,000	500,000
110	Sacramento & San Joaquin Rivers Comprehensive Study	Corps NonFed Total	12,750,000 8,250,000 21,000,000	3,793,000	2,240,000	3,500,000	Support	2,000,000	3,000,000
115	Cache Creek Flood Protection	Corps NonFed Total	1,250,000 1,250,000 2,500,000						750,000
120	Sacramento-San Joaquin Delta Investigation	Corps NonFed Total	5,940,000 2,975,000 8,915,000	5,164,000	190,000	555,000	Support	200,000	200,000
122	San Joaquin River Basin Stockton Metropolitan Area (Section 211)	Corps NonFed Total	1,611,000 756,000 2,367,000	895,000	336,000	500,000	Support	200,000	380,000
124	San Joaquin River Basin Stockton Metropolitan Area (Farmington Dam)	Corps NonFed Total	706,000 491,000 1,197,000	205,000	35,000	400,000	Support	150,000	150,000
125	San Joaquin River Basin Cosumnes and Mokelume Rivers	Corps NonFed Total	850,000 750,000 1,600,000	60,000	40,000	18,000	Support	50,000	50,000
129	San Joaquin River Basin Tuolumne River and Tributaries	Corps NonFed Total	1,600,000 1,500,000 3,100,000	60,000	65,000	40,000	Support	150,000	375,000
130	San Joaquin River Basin West Stanislaus County	Corps NonFed Total	750,000 650,000 1,400,000	146,000	168,000	100,000	Support	250,000	400,000
131	Millerton Enlargement								300,000
132	San Joaquin River Basin, Habitat Restoration (Fresno)	Corps Total	1,585,000 1,585,000	1,360,000	100,000	265,000	Support	125,000	125,000
134	San Joaquin River Basin, Tule River (See CWC 234)	Corps NonFed Total	1,278,000 928,000 2,206,000	1,218,962		103,000	Support	0	0
135	White River, Poso & Deer Creek (Tulare)	Corps NonFed Total	1,100,000 1,000,000 2,100,000	0	84,000	100,000	Support	60,000	500,000
138	San Joaquin River Basin, Arroyo Pasajero (Fresno) Flood and Deposition Study (Also CWC 238 & 660)	Corps NonFed Total	4,465,000 3,600,000 8,065,000	3,665,000	168,000	200,000	Support	0	0
140	Russian River EcoSystem Restoration	Corps NonFed Total	1,850,000 1,500,000 3,350,000	360,000	40,000	1,500,000	Support	125,000	125,000
144	Napa River, Salt Marsh Restoration	Corps NonFed Total	1,806,000 1,350,000 3,156,000	656,000	252,000	300,000	Support	275,000	275,000
145	Napa Valley Watershed Mgmt.Study	Corps NonFed Total	1,100,000 1,000,000 2,100,000	0	100,000	100,000	Support	50,000	100,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
146	Santa Rosa Creek	Corps	1,152,000	252,000	140,000	150,000	Support	200,000	200,000
	Ecosystem Restoration(Sonoma)	NonFed	900,000						
		Total	2,052,000						
147	Laguna de Santa Rosa	Corps	1,100,000	40,000	110,000	150,000	Support	200,000	200,000
	Ecosytem Restoration (Sonoma)	NonFed	1,000,000						
		Total	2,100,000						
149	Marin County Streams,	Corps	1,250,000	0				25,000	25,000
	San Clemente Creek	NonFed	1,000,000						
		Total	2,250,000						
150	Bolinas Lagoon Ecosystem	Corps	967,000	535,000	100,000	100,000	Support	200,000	200,000
	Restoration (Marin County)	NonFed	857,000						
		Total	1,824,000						
152	Hamilton Airfield Wetlands	Corps	1,050,000	98,000	420,000	500,000	Support	0	0
	Restoration (Marin)	NonFed	1,000,000						
		Total	2,050,000						
153	San Francisquito Creek						Support	0	0
154	Santa Clara County/ San Francisco Bay Shoreline					300,000	Support	0	0
155	Upper Penitentia Creek	Corps	1,845,000	395,000	117,000	475,000	Support	250,000	250,000
	(Santa Clara)	NonFed	1,500,000						
		Total	3,345,000						
156	Pajaro River Watershed						Support	0	100,000
160	Morro Bay Estuary	Corps	600,000	100,000	5,000	100,000	Support	100,000	100,000
	(San Luis Obispo)	NonFed	500,000						
		Total	1,100,000						
170	Santa Ynez River	Corps	100,000	0	0			100,000	100,000
		NonFed	0						
		Total	100,000						
171	Santa Barbara County Streams	Corps	2,788,000	2,600,000	108,000	129,000	Support	0	0
	Lower Mission Creek	NonFed	689,000						
		Total	3,477,000						
175	Mugu Lagoon (Ventura)	Corps	600,000	100,000	20,000	100,000	Support	150,000	150,000
		NonFed	500,000						
		Total	1,100,000						
180	Malibu Creek Watershed	Corps	850,000	100,000	0	100,000	Support	100,000	100,000
		NonFed	750,000						
		Total	1,600,000						
181	Upper Santa Ana Watershed	Corps	100,000					100,000	100,000
		NonFed	0						
		Total	100,000						
183	Prado Basin Water Supply	Corps	968,000			333,000	Support	0	0
		NonFed	878,000						
		Total	1,846,000						
184	Newport Bay/San Diego Creek	Corps	1,220,000	100,000	20,000	500,000	Support	140,000	140,000
	Watershed	NonFed	1,120,000						
		Total	2,340,000						
185	Coastal Bluff Erosion Feasibillty Study- City of Huntington Beach								300,000
186	Aliso Creek Watershed Management	Corps	897,000	492,000	244,000	290,000	Support	161,000	161,000
	(Orange)(See CWC 189)	NonFed	675,000						
		Total	1,572,000						
187	Special Area (Orange County) Wetland Management Plan (Also known as So.Calif. Aquatic Resources					600,000	Support	0	300,000
188	Orange County,Santa Ana Rv. Basin	Corps	850,000	0	100,000		Support	100,000	100,000
		NonFed	750,000						
		Total	1,600,000						
189	San Juan Creek Watershed	Corps	1,470,000	607,000	449,000	535,000	Support	414,000	414,000
	Management (Orange)	NonFed	1,130,000						
	(See CWC 186)	Total	2,600,000						
190	Whitewater River Basin	Corps	2,080,000	1,189,000	260,000	310,000	Support	0	0
	(Riverside)	NonFed	1,655,000						
		Total	3,735,000						
192	Santa Margarita River and	Corps	1,189,000	285,000	672,000	800,000	Support	232,000	232,000
	Tributaries, includes Murrieta Creek	NonFed	1,089,000						
	(Riverside)	Total	2,278,000						
194	San Jacinto River Recon Study Riverside(Includes Mystic Lake)					100,000	Support	0	100,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
195	Mojave River Dam	Corps	1,100,000	100,000	40,000	300,000	Support	300,000	300,000
	(San Bernardino)	NonFed	1,000,000						
		Total	2,100,000						
196	San Bernardino County	Corps	850,000	0	100,000		Support	100,000	100,000
		NonFed	750,000						
		Total	1,600,000						
197	Tijuana River Valley Environmental	Corps	1,100,000	100,000	10,000	150,000	Support	250,000	250,000
	Restoration	NonFed	1,000,000						
		Total	2,100,000						
198	Tahoe Basin, Calif. and Nevada	Corps	1,200,000	200,000	25,000	400,000	Support	150,000	150,000
		NonFed	1,000,000						
		Total	2,200,000						
199	Lower Truckee River	Corps	1,223,000	943,000	193,000	230,000	Support	87,000	87,000
	(Pyramid Lake Paiute Tribe)	NonFed	435,000						
	(See CWC 299)	Total	1,658,000						
200	**Preconstruction Engineering & Design**								
202	Yuba River	Corps	1,350,000	11,000	25,000	775,000	Support	150,000	700,000
		NonFed	450,000						
		Total	1,800,000						
210	American River Watershed	Corps	30,000,000	16,130,000	542,000	5,000,000	Support	5,000,000	5,000,000
		NonFed	0						
		Total	30,000,000						
220	South Sacramento County Streams	Corps	1,211,000	161,000	550,000	900,000	Support	500,000	4,000,000
		NonFed	404,000						
		Total	1,615,000						
232	Pine Flat Dam, Fish and Wildlife	Corps	1,125,000	0	0			100,000	300,000
	Habitat Restoration(See CWC 132)	NonFed	375,000						
		Total	1,500,000						
233	Kaweah River (Tulare)	Corps	3,000,000	1,718,000	700,000	1,165,000	Support	582,000	582,000
	(Also CWC 333)	NonFed	0						
		Total	3,000,000						
234	San Joaquin River Basin,	Corps	1,125,000	0	0	500,000	Support	150,000	800,000
	Tule River (See CWC 134)	NonFed	375,000						
		Total	1,500,000						
238	Arroyo Pasajero	Corps	4,500,000	0	0	1,000,000	Support	150,000	2,685,000
	(Also CWC 138 & 660)	NonFed	1,500,000						
		Total	6,000,000						
249	San Clemente Creek (Marin)	Corps	1,350,000	1,250,000	0	50,000	Support	0	0
		NonFed	1,000,000						
		Total	2,350,000						
250	Napa River Flood Control Project	Corps	15,000,000	14,416,000	584,000	744,000	Support	0	0
	(Also See CWC 350)	NonFed	0						
		Total	15,000,000						
251	Hamilton Airfield Wetlands	Corps	800,000	0	320,000			480,000	480,000
	Restoraton (Marin)	NonFed							
		Total							
254	Pajaro River, Watsonville	Corps	2,270,000	1,795,000	273,000	433,000	Support	0	50,000
	(Santa Cruz)	NonFed	0						
		Total	2,270,000						
285	Upper Guadalupe	Corps	3,075,000	50,000	483,000	575,000	Support	300,000	300,000
		NonFed	1,025,000						
		Total	4,100,000						
290	Lower Mission Creek	Corps	1,125,000	0	0			250,000	250,000
	(Santa Barbara)	NonFed	375,000						
		Total	1,500,000						
295	Murrietta Creek	Corps	1,500,000	0	0			100,000	100,000
		NonFed	500,000						
		Total	2,000,000						
298	Truckee Meadows	Corps	7,388,000	4,451,000	924,000	500,000	Support	550,000	550,000
299	Lower Truckee River	Corps	750,000	0	0	250,000	Support	130,000	130,000
	(Pyramid Lake Paiute Tribe)	NonFed	250,000						
	(See CWC 199)	Total	1,000,000						
300	**Construction - General**								
302	Sacramento River Restoration at	Corps	16,550,000	4,476,000	700,000	2,000,000	Support	3,000,000	6,000,000
	Glenn-Colusa Irrigation District	NonFed	5,450,000						
	(Glenn)(Also see CWC 622)	Total	22,000,000						
303	Sacramento River Bank Protection	Corps	179,900,000	102,208,000	5,373,000	10,800,000	Support	7,000,000	7,000,000
		NonFed	69,500,000						
		Total	249,400,000						
304	Mid-Valley Area	Corps	14,900,000	8,135,000	1,581,000	1,700,000	Support	4,000,000	4,000,000
	Levee Reconstruction	NonFed	5,000,000						
		Total	19,900,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
305	Marysville/Yuba City Levee Reconstruction	Corps	32,260,000	33,030,000	1,070,000	12,000,000	Support	300,000	300,000
		NonFed	10,710,000						
		Total	42,970,000						
306	Upper Sacramento Area Levee Reconstruction	Corps	5,640,000	2,213,000	372,000	400,000	Support	3,055,000	3,055,000
		NonFed	1,860,000						
		Total	7,500,000						
307	Lower Sacramento Area Levee Reconstruction	Corps	4,660,000	1,458,000	385,000	952,000	Support	2,317,000	2,317,000
		NonFed	1,540,000						
		Total	6,200,000						
310	American River Watershed-(Levee Improvements on American and Sacramento Rivers)	Corps	47,600,000	7,971,000	9,948,000	26,000,000	Support	17,000,000	17,000,000
		NonFed	15,700,000						
		Total	63,300,000						
315	American Rv. Watershed(Natomas) (Includes $3,900,000 for recreation features)	Corps	28,510,000	5,286,000	13,762,000	14,500,000	Support	4,000,000	7,900,000
		NonFed	31,290,000						
		Total	59,800,000						
320	West Sacramento Project	Corps	24,700,000	9,999,000	6,088,000	13,000,000	Support	7,700,000	7,700,000
		NonFed	8,200,000						
		Total	32,900,000						
331	New Melones Lake (Calaveras, Tuolumne)	Corps	400,500,000			0	Support	0	0
		NonFed	0						
		Total	400,500,000						
332	Merced County Streams	Corps	91,800,000	18,121,000	637,000	900,000	Support	500,000	500,000
		NonFed	40,900,000						
		Total	132,700,000						
333	Kaweah River (Tulare) (See CWC 233)	Corps				500,000	Support	0	2,500,000
		NonFed							
340	Success Dam and Reservoir, Tule River, Dam Safety Seismic Remediation	Corps	30,900,000	0	1,140,000			1,250,000	1,250,000
		NonFed	0						
		Total	30,900,000						
345	Corte Madera Creek	Corps	21,900,000	11,597,000	465,000	500,000	Support	500,000	500,000
		NonFed	15,200,000						
		Total	37,100,000						
350	Napa River Flood Control Project	Corps	91,000,000	14,416,000	584,000	1,000,000	Support	4,500,000	6,500,000
		NonFed	91,000,000						
		Total	182,000,000						
353	Guadalupe River (Santa Clara)	Corps	78,500,000	62,619,000	6,509,000	8,000,000	Support	5,000,000	5,000,000
		NonFed	104,300,000						
		Total	182,800,000						
354	Coyote and Berryessa Creeks (Santa Clara)	Corps	43,300,000	32,726,000	93,000	100,000	Support	0	Support
		NonFed	34,930,000						
		Total	78,230,000						
355	Llagas Creek-Morgan Hill (Santa Clara) **Subject to Authorization**					4,000,000	Support	0	250,000
356	San Lorenzo River (Santa Cruz)	Corps	13,230,000	2,328,000	2,976,000	2,800,000	Support	4,800,000	4,800,000
		NonFed	4,370,000						
		Total	17,600,000						
361	Santa Paula Creek (Ventura)	Corps	36,000,000	16,086,000	3,719,000	2,700,000	Support	14,800,000	14,800,000
		NonFed	1,600,000						
		Total	37,600,000						
381	Los Angeles County Drainage Area Project (LACDA)	Corps	150,000,000	46,556,000	46,494,000	60,000,000	Support	30,000,000	50,000,000
		NonFed	50,000,000						
		Total	200,000,000						
382	Santa Ana River Mainstream (Includes San Timoteo)	Corps	896,000,000	590,360,000	54,414,000	76,000,000	Support	20,000,000	28,000,000
		NonFed	450,000,000						
		Total	1,346,000,000						
387	Norco Bluffs Bank Stabilization Santa Ana River (Riverside)	Corps	5,580,000		4,400,000	4,400,000	Support	0	2,200,000
		NonFed	1,794,000						
		Total	7,374,000						
400 Flood Control Act of 1948,Section 205, Flood Damage Prevention Continuing Authorities Prog.($26,900,000-all programs)*** **CWC To Request Continuing Authorities Increase For All Programs to $50,000,000)***									
401	Kidder Creek Flood Control Project								Support
402	Tehama Flood Control (Tehama)	Corps	1,750,000			Support	Support		100,000
		NonFed	1,050,000						
		Total	2,800,000						
403	Hamilton City Flood Control (Glenn)	Corps	2,300,000			Support	Support		200,000
		NonFed	1,700,000						
		Total	4,000,000						
404	Nuisance Flooding Near the 3 B's								Support
405	Rock Creek & Keefer Slough(Butte)						Support		Support

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
406	Willow Creek Flood Control Project	Corps	1,000,000				Support		1,000,000
		NonFed	1,000,000						
		Total	2,000,000						
407	Northern California Streams Magpie Creek (Sacramento)	Corps	4,593,000	1,276,000	125,000	Support	Support		Support
		NonFed	5,208,000						
		Total	9,801,000						
408	Northern California Streams Winters and Vicinity (Yolo)	Corps	1,530,000	225,000		Support	Support		Support
		NonFed	1,970,000						
		Total	3,500,000						
409	Frazier Creek (Tulare)								Support
410	Ledgewood Creek (Solano)				300,000	700,000	Support		400,000
411	Novato Urban Flood Control (Marin)				350,000	600,000	Support		600,000
412	San Pedro Creek, Pacificia	Corps	4,558,000			Support	Support		Support
413	Mission Zanja Creek (San Bernardino)	Corps	1,370,000			Support	Support		Support
		NonFed	870,000						
		Total	2,240,000						
420	**Water Resources Dev. Act, 1996, Section 206, Aquatic Ecosystem Restoration** ($4,500,000 in President's Budget for all programs.)**********CWC To Request Increase For All Programs To $10,000,000**********								
421	Clear Lake Basin Watershed Restoration (Lake)(Also see CWC 431)				252,000	2,000,000	Support		2,000,000
422	Santa Anita Creek (City of Arcadia and Sierra Madre)								600,000
423	Santa Rosa Vernal Pools (Sonoma)	Corps	750,000			Support	Support		Support
		NonFed	404,000						
		Total	1,154,000						
424	Stockton Waterfront					1,000,000	Support		Support
425	Penn Mine Remediation	Corps		625,000		Support	Support		Support
		NonFed	5,000,000						
		Total	10,000,000						
426	Elsinore Valley Municipal Water District					100,000	Support		Support
430	**Water Resources Dev. Act, 1996, Section 503, Watershed Mgt. Restoration & Development** ($15,000,000 for entire length of program.)**********CWC To Request Increase To $30,000,000 For Entire Length of Program**********								
431	Clear Lake Watershed Management (Lake) (Also see CWC 421)					250,000	Support		Support
432	Water Quality & Storm Drainage Improvements Project (City of Folsom)				100,000		Support		500,000
433	San Pablo Bay Watershed Restoration & Protection (Sonoma) (Also see CWC 940)	Corps	2,800,000			500,000	Support	50,000	500,000
		NonFed	2,700,000						
		Total	5,500,000						
434	Santa Clara Basin Watershed Mgt Initiative					500,000	Support		300,000
440	**Water Resources Dev. Act, 1986, Section 1135, Project Modification for Improvement of the Environment Program** ($8,500,000 in President's FY 2000 Budget)*********CWC To Request Increase For All Programs to $20,000,000******								
441	Northern California Streams Upper Sacramento River Murphy Slough	Corps	2,776,500			Support	Support		Support
		NonFed	925,000						
		Total	3,701,500						
442	Mormon Channel						Support		Support
443	Cherokee Canal								Support
445	Sacramento-San Joaquin Delta Prospect Island (Solano)	Corps	3,750,000			Support	Support		Support
		NonFed	1,250,000						
		Total	5,000,000						
446	Putah Creek, South Fork Preserve	Corps	1,575,000			Support	Support		Support
		NonFed	525,000						
		Total	2,100,000						
447	Pine-Flat Turbine Bypass	Corps	3,585,000			Support	Support		Support
		NonFed	1,195,000						
		Total	4,780,000						
448	Wildcat-San Pablo Creeks (Contra Costa)					Support	Support		Support
449	Dominguez Gap	Corps	1,657,500			Support	Support		Support
		NonFed	552,500						
		Total	2,210,000						
450	Gunnerson Pond (Riverside)	Corps	3,291,000			1,500,000	Support		Support
		NonFed	1,097,000						
		Total	4,388,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
480	**Public Law 101-640/104-303, Infrastructure Seismic Reliability**								
	(Authorized $3,000,000 total for program)								
481	Santa Monica Infrastructure Reliability	Corps		585,000	0	1,000,000	Support		
482	Southern California Infrastructure Studies (Arcadia and Sierra Madre)	Corps		962,000	73,000	1,000,000	Support		
483	Southern California Infrastructure Restoration Study(Huntington Beach)	Corps		200,000	0	700,000	Support		
484	So.East Los Angeles County Water Conservation & Supply Proj.(Norwalk)			991,000	89,000	1,000,000	Support		
485	Southern California Infrastructure Restoration(City of Inglewood)					300,000	Support		
486	Southern California Infrastructure Studies (Twenty-nine Palms Water District)			100,000	0		Support		
488	Southern California Infrastructure Study (Long Beach)					500,000	Support		
489	Southern California Infrastructure Study (Beverly Hills)					600,000	Support		
490	Southern California Infrastructure Study(Elsinore Valley MWD)					300,000	Support		
491	Southern California Infrastructure Study(Yucca Valley)					150,000	Support		
492	Southern California Infrastructure Study(Newport Beach)					600,000	Support		
493	Southern California Infrastructure Study(Seal Beach)					800,000	Support		
494	Southern California Infrastructure Study(West Chino Basin)					800,000	Support		
		******The full $3,000,000 Authorized for this program will be expended by the end of FY 99.******							
U.S. BUREAU OF RECLAMATION									
500	Bay-Delta Ecosystem Restoration (CALFED)(See CWC 90 & 1500)	USBR	430,000,000		75,000,000	143,300,000	Support	95,000,000	95,000,000
555	**General Planning Studies**	USBR	Continuing		189,000	250,000	Support	250,000	250,000
	CVP, Trinity River								
600	Trinity River Restoration Program	USBR	76,434,739		3,454,000	3,454,000	Support	7,550,000	7,550,000
	CVP, Shasta Division								
612	Coleman National Fish Hatchery Modification	USBR	6,347,000		1,500,000	1,500,000	Support	1,500,000	1,500,000
		Restor.	22,099,248			1,000,000			
		Total	28,446,248			2,500,000			
615	Clear Creek Restoration	USBR	1,333,253		500,000	500,000	Support	100,000	100,000
		Restor.	4,988,417						
		Total	6,321,670						
	CVP, Sacramento River Division								
621	Winter-Run Chinook Salmon Captive Broodstock Program	USBR			400,000	400,000	Support	520,000	520,000
		Restor.				150,000			
		USFWS				400,000			
		NOAA				0			
		NonFed				278,000			
		Total	12,709,800			1,228,000			
622	Hamilton City Pumping Plant Fish Facility (Glenn)(See CWC 302)	USBR	46,000,000		8,500,000	10,000,000	Support	2,252,000	3,750,000
623	Colusa Basin Drain	USBR	1,367,000		850,000	3,500,000	Support	0	1,000,000
624	Red Bluff Diversion Dam Fish Passage Program	USBR	12,677,096		310,000	310,000	Support	600,000	600,000
		Restor.	718,683						
		Total	13,395,779						
626	Red Bluff Diversion Dam Demo. Research Facility Eval.	USBR	8,883,000		1,550,000	1,550,000	Support	1,504,000	1,504,000
	CVP, American River Division								
635	Auburn-Folsom South Unit (Includes American River Alternative Study and On-going Activities)	USBR	2,555,556,309		1,754,000	1,854,000	Support	1,932,000	1,932,000
		NonFed	2,202,780						
		Total	2,557,759,089						
636	Auburn-Folsom South Unit (Permanent Pump Facility)	USBR	11,000,000		2,000,000	2,000,000	Support	335,000	8,500,000
		NonFed	2,400,000						
		Total	13,400,000						
	CVP, East Side Division								
640	New Melones Water Mgmt Study (Includes Temp. Control Eval)	USBR	190,000		0	0	Support	0	0
	CVP, Delta Division								
641	Bay-Delta Oversight (CALFED)	USBR	20,359,302		1,200,000	1,200,000	Support	1,000,000	1,000,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
643	Delta Support Program (IEP	USBR	61,068,718		4,000,000	4,000,000	Support	3,900,000	3,900,000
645	Rock Slough Fish Screen	USBR	4,576,782	700,332	2,250,000	4,000,000	Support	100,000	5,000,000
	(Contra Costa)	Restor.	1,106,257	0	1,106,257				
		****Request Amount to complete construction-not to exceed $5,000,000****							
646	Suisun Marsh Protection	USBR	60,600,000	30,561,147	1,909,000	1,909,000	Support	2,205,000	2,205,000
		NonFed	0						
647	South Delta Barriers	USBR	452,303	305,157	16,000	200,000	Support	20,000	20,000
648	Tracy Fish Facility Improvements	USBR	36,535,034	2,774,118	500,000	500,000	Support	650,000	650,000
		Restor.	13,730,012	31,421	0	1,000,000			
		Total	50,265,046			1,500,000			
	CVP, San Joaquin Division								
651	Land Retirement	USBR	38,847,266	3,137,837	2,000,000	4,000,000	Support	0	0
		Restor.	17,833,551	3,770,310	1,000,000	4,000,000		6,846,000	6,846,000
		Total	56,680,817			8,000,000			
652	San Joaquin Basin Action Plan	USBR	11,452,361	3,917,736	2,154,000	1,900,000	Support	943,000	943,000
		Restor.	8,104,626	7,512,178	2,220,000			1,600,000	1,600,000
		Total	19,556,987			1,900,000			
653	Water Acquistion	USBR	40,095,380	1,763,258	2,000,000	2,000,000	Support	0	0
		Restor.	99,358,506	21,587,700	14,147,918	14,290,000		10,000,000	10,000,000
		Total	139,453,886			16,290,000			
	CVP, Friant Division								
655	Friant Upper Basin Optimization	USBR	75,000		0	70,000	Support		
	Study		406,000	0	70,000			96,000	96,000
	CVP, W. San Joaquin Division, San Luis Unit								
660	Arroyo Pasajero Studies	USBR	7,753,740	7,753,740	0	200,000	Support	0	0
	(Also CWC 138 & 238-Corps)	NonFed	6,343,970	6,343,970	0				
		Total	14,097,710	14,097,710	0				
661	Arroyo Pasajero Implementations	USBR	4,000,000	0	0	1,125,000	Support	851,000	851,000
662	Arroyo Pasajero(Flood Easements)	USBR	12,495,289	0	0	1,000,000	Support	500,000	1,000,000
663	Cantua Creek Strm Group-EIS	USBR	1,250,000	0	0	1,710,000	Support	0	920,000
665	Real-Tim Drainage Mgt. Initiative	USBR	40,546,779	3,424,878	4,415,000	4,415,000	Support	3,306,000	3,306,000
	CVP, Miscellaneous Project Programs (Mid-Pacific Region)								
672	Anadromous Fish Screening Program	USBR	68,566,791	8,110,196	1,061,000	750,000	Support	1,000,000	1,000,000
		Restor.	32,386,719	2,086,405	1,100,000	6,850,000		2,000,000	2,000,000
		Total	100,953,510			7,600,000			
673	Anadromous Fish Restoration	USBR	42,091,000	0	0	0	Support		
		Restor.	57,137,904	13,396,500	6,524,000	8,000,000		7,000,000	7,000,000
		Total	99,228,904						
675	Central Valley Assessment/	USBR	10,200,000	0	0	0	Support		
	Monitoring Program	Restor.	17,011,412	2,527,990	1,500,000	2,500,000		1,500,000	1,500,000
		Total	27,211,412						
676	Dedicated Project Yield	Restor.	5,197,602	3,635,754	1,000,000	274,000	Support	1,000,000	1,000,000
677	Ecosystem/Water System Models	USBR	10,169,875	2,527,203	900,000	1,000,000	Support	1,000,000	1,000,000
		Restor.	982,944	1,065,526	0	0		500,000	500,000
		NonFed							
		Total	11,152,819						
679	Kaweah River Delta Corridor	USBR	1,021,325	656,505	0	0	Support	0	Support
	Enhancement Project								
680	Other CVP Impacts	Restor.	14,094,650	6,755,478	2,733,000	1,533,000	Support	2,700,000	2,700,000
682	Ongoing Contracts/CWPSC/Melones	USBR	15,372,841	9,791,257	1,604,000	1,604,000	Support	518,000	518,000
684	Reservoir Storage	Restor.	550,000	58,152	0	0	Support	50,000	50,000
685	Refuge Water Supply	USBR	24,193,634	3,009,857	5,500,000	5,500,000	Support	0	0
		Restor.	24,027,836	4,056,631	1,780,000	0		4,500,000	4,500,000
		Total	48,221,470			5,500,000			
686	Refuge Wheeling Costs	USBR	14,869,313	574,446	600,000	0	Support	0	0
		Restor.	57,029,607	10,138,436	5,000,000	10,000,000		6,900,000	6,900,000
		Total	71,898,920			10,000,000			
689	Salmon (Spring Run) Program	USBR	1,293,293	530,306	0	0	Support	31,000	31,000
700	**CVP, Operation & Maintenance (Mid-Pacific Region)**								
701	Central Valley Project	USBR	Continuing		71,183,000	61,678,000	Support	72,617,000	72,617,000
701A	CVP-San Luis Unit	USBR	Continuing		3,500,000	6,859,000	Support	4,525,000	4,525,000
		Total			74,683,000	68,537,000		77,142,000	77,142,000
701B	Sacramento River Basinwide Mgmt. Plan					1,000,000	Support		
703	Reclamation law Administration	USBR	Continuing		849,000	881,000	Support	1,380,000	1,380,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
704	Land Resources Management Program	USBR	Continuing		1,570,000	1,810,000	Support	1,310,000	1,310,000
705	Cachuma Project	USBR	Continuing		1,091,000	1,007,000	Support	992,000	992,000
706	Orland Project	USBR	Continuing		685,000	658,000	Support	570,000	570,000
707	Solano Project	USBR	Continuing		1,881,000	1,881,000	Support	2,000,000	2,000,000
740	CVP, Yield Feasibility Investigation	USBR		0	2,000,000	2,000,000	Support	2,000,000	2,000,000
755	California Water Mgmt & Tech. Assistance			0	600,000	1,863,000	Support	500,000	500,000
800	**Loan Projects(Mid-Pacific Region)**								
801	Small Reclamation Projects Administration	USBR	Continuing			15,000	Support	15,000	15,000
802	Castroville Seawater Intrusion Project (Monterey)	USBR	15,379,000		2,600,000	2,600,000		2,600,000	2,600,000
		Treas.	17,071,000			2,940,000		3,391,000	3,391,000
	Total	Fed.	32,450,000			5,540,000	Support	5,991,000	5,991,000
		NonFed	11,049,900						
		Total	43,499,900						
803	Salinas Valley Reclamation Project (Monterey)	USBR	9,876,000		1,700,000	1,700,000		1,700,000	1,700,000
		Treas.	10,543,000			1,894,000		1,894,000	1,894,000
	Total	Fed	20,419,000			3,594,000	Support	3,594,000	3,594,000
		NonFed	6,900,000						
		Total	27,319,000						
850	Klamath Project (Oregon)	USBR			5,783,000	5,783,000	Support	12,682,000	12,682,000
900	**PL 102-575, Title XVI and Amended by P.L. 104-266(Mid-Pacific Region)** - ALL PROGRAMS								
	*****CWC to work with USBR on language which will give the local sponsor greater assurance of future year support. This will also encourage sponsors to go ahead with expanded facilities with greater expectation of out-year funding.******								
901	Del Norte County/ Crescent City Wastewater Study	USBR	1,100,000	767,171	0	Support	Support	0	0
902	Fort Bragg Reclamation Study	USBR	750,000	673,961	0	Support	Support	0	0
910	Sacramento Reclamation Reuse	USBR	650,000	186,510	0	Support	Support		
915	San Joaquin Area [Tracy] (San Joaquin)					Support	Support		
920	San Francisco Area Water Reclamation Study (General Investigation)	USBR	3,790,033	4,050,700	0	500,000		0	0
		NonFed	3,790,000						
		Total	7,580,033				Support		
925	Southern Alameda County Water Reuse Project					Support Authorization	Support		
930	San Jose Area Water Reclamation and Reuse Program (Construction)	USBR	109,959,000	13,496,857	3,000,000	10,000,000	Support	3,000,000	1,000,000
		NonFed	371,021,635						
		Total	480,980,635						
935	Watsonville Area			1,022,245	0	0	Support		
940	San Pablo Baylands Water Reuse (Sonoma)(See CWC 433)			0	0	500,000	Support	0	0
1000	**PL 102-575, Title XVI and Amended by P.L. 104-266 (Lower Colorado Region)** - ALL PROGRAMS								
1001	Southern California Comprehensive Water Reclamation and Reuse	USBR	3,492,000	3,291,999	200,000	200,000	Support	0	0
		NonFed	3,492,000	1,604,273					
		Total	6,984,000	4,896,272					
1004	Calleguas Municipal Water District Recycling Project	USBR	20,000,000	0	0	Support	Support	1,500,000	1,500,000
		NonFed	53,600,000						
		Total	73,600,000						
1006	Pasadena Reclaimed Water	USBR	5,750,000	0	0	Support	Support	0	0
		NonFed	17,250,000						
		Total	23,000,000						
1007	L.A. Area Water Reclamation and Reuse (Includes West Basin, East Valley and Terminal Island)	USBR	69,970,000	51,730,000	10,000,000	10,000,000	Support	7,500,000	7,500,000
		NonFed	232,055,000	183,919,487					
		Total	302,025,000	235,649,487					
1008	Long Beach Desalination Research and Development Project	USBR	15,100,000	0	0	Support	Support	0	0
		NonFed	15,100,000						
		Total	30,200,000						
1009	Hi Desert Water District, Yucca Valley	USBR	2,740,000	0	0	Support	Support	0	0
		NonFed	8,220,000						
		Total	10,960,000						
1010	Orange County Regional Water Reclamation Project - Phase I	USBR	20,000,000	0	0	1,000,000	Support	1,500,000	1,500,000
		NonFed	201,000,000						
		Total	221,000,000						
1011	San Juan Basin Groundwater Management Program (Orange)	USBR	3,750,000	0	0	Support	Support	0	0
		NonFed	11,250,000						
		Total	15,000,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Prelim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
1012	San Gabriel Basin Project (Includes	USBR	38,090,000	22,791,999	2,500,000	2,500,000	Support	2,000,000	2,000,000
	San Gabriel Basin, Demo, Rio	NonFed	118,290,000	30,577,250					
	Hondo & San Gab Valley Wtr Recl.)	Total	156,380,000	53,369,249					
1013	San Diego(North)County Area	USBR	17,707,000	0	0	Support	Support	1,500,000	1,500,000
	Recycling Project-Encina Basin,	NonFed	53,121,000						
	San Elijo, and Olivenhain)	Total	70,828,000						
1014	San Diego Area Reclamation	USBR	172,590,000	28,788,000	13,000,000	13,000,000	Support	10,600,000	10,600,000
	(Includes San Diego, Escondido,	NonFed	517,770,000	116,595,468					
	Poway, Padre Dam MWD, Otay WD	Total	690,360,000	145,383,468					
	and San Diego County Water Auth,								
	Sweetwater Auth, Tia JuanaVWD)								
1015	Mission Basin(Oceanside)Brackish	USBR	1,500,000	0	0	1,500,000	Support	0	0
	Groundwater Desalting Research	NonFed	4,500,000						
	& Development Project(San Diego)	Total	6,000,000						
1016	Long Beach Area Recycling Project	USBR	14,970,000	0	0	3,750,000	Support	1,500,000	1,500,000
	Water Distribution Expansion	NonFed	41,910,000						
	(includes Long Beach &	Total	56,880,000						
	Alamitos Barrier)								
Lower Colorado River Water Management and Technical Assistance Program									
1020	Imperial Valley Water Reclamation	USBR	500,000	350,000	150,000	150,000	Support	0	0
	and Reuse Study	NonFed	500,000	15,737					
		Total	1,000,000	365,737					
Southern California Water management and Technical Assistance Program									
1031	Southern California Coastal	USBR	750,000	624,999	100,000	100,000	Support	25,000	25,000
	Water Supply Study	NonFed	750,000	606,910					
		Total	1,500,000	1,231,909					
1032	Mammoth Lakes Water	USBR	350,000	0	120,000	100,000	Support	150,000	150,000
	Optimization Study	NonFed	350,000						
		Total	700,000						
1033	Mystic Lake Watershed Mgmt Study	USBR	550,000	0	0	50,000	Support	200,000	200,000
		NonFed	550,000						
		Total	1,100,000						
1034	Southern California Water Recycling	USBR	800,000	0	0	150,000	Support	200,000	200,000
	Project Initiative	NonFed	800,000						
		Total	1,600,000						
1100 Other Water and Related Resource Programs									
1101	Colorado River Water Quality	USBR	Continuing		75,000	75,000	Support	75,000	75,000
	Improvement Program								
1103	General Planning	USBR	Continuing	877,983	397,000	525,000	Support	425,000	425,000
1108	Salton Sea Research Project	USBR	10,000,000			400,000	Support	1,000,000	1,000,000
		NonFed	10,000,000						
		Total	20,000,000						
1200 Loan Projects (Lower Colorado Region)									
1201	Small Reclamation				170,000		Support	170,000	170,000
	Projects Administration								
1202	Eastern Municipal Water District	USBR	13,712,011		0	0	Support	0	0
	Water Facilities Plan	Treas.	17,387,989						
	(Riverside) Total	Fed.	31,100,000	(-Still making disbursements)					
		NonFed	13,621,400						
		Total	44,721,400						
1203	Chino Basin Desalination	USBR	10,300,000		2,114,000	2,114,000		117,000	117,000
	(Santa Ana Watershed	Treas.	21,731,000		6,636,000	6,636,000		768,000	768,000
	Project Authority) Total	Fed.	32,031,000				Support		
		NonFed	15,623,000						
		Total	47,654,000						
1204	San Sevaine Creek Water Project	USBR	28,100,000		781,000	781,000		6,408,000	6,408,000
	(San Bernardino, Riverside)	Treas.	18,900,000		396,000	396,000		3,772,000	3,772,000
	(Funding to commence Total	Fed.	47,000,000				Support		
	in FY 98)	NonFed	33,721,000						
		Total	80,721,000						
1205	Temescal Valley Project	USBR	6,541,000		801,000	801,000		1,175,000	1,175,000
	(Elsinore Valley MWD)	Treas.	15,715,000		1,969,000	1,969,000		8,560,000	8,560,000
	(Riverside) Total	Fed.	22,256,000				Support		
		NonFed	10,659,000						
		Total	32,915,000						
1300 Colorado River Salinity Control Program									
1302	Title I Division (Lower Colorado)	USBR	448,076,000			2,407,000	Support	13,092,000	13,092,000
1304	Basinwide Program	USBR	to be determined			17,500,000	Support	12,300,000	17,500,000
USDA Environmental Quality Incentive Program							Support		
1305	Colorado River Salinity Control Program					12,000,000	Support		12,000,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/98	Allocation for FY 99	CWC Final Recomm. FY 99	CWC Preim Recomm. FY 2000	President's Budget FY 2000	CWC Final FY 2000 Recomm.
BLM Mgmt. of Land & Resources							Support		
Soil, Water and Air Mgmt.									
1310	Colorado Rvr. Salinity Control Program					5,200,000	Support		5,200,000
1400 Colorado River Endangered Species Conservation and Recovery Projects (Lower Colorado only)									
1401	Endangered Species Conservation and Recovery Projects (LC only)	USBR	19,299,000		1,990,000	1,990,000	Support	1,958,000	1,958,000
1450 Lower Colorado River Operation Program									
1451	Fish & Wildlife Management Development							8,824,000	8,824,000
1500 U.S. fish and Wildlife Service (Interior Appropriations Subcommittee)									
1500	Bay-Delta Ecosystem Restoration (CALFED)(Also see CWC 90 & 500)	USFWS				1,500,000	Support	1,300,000	1,300,000
1600 U.S. Coast Guard (Transportation Appropriations Subcommittee)									
1600	Ballast Water Control Programs					Support	Support		Support
U.S. Environmental Protection Agency (VA-HUD and Independent Agencies Appropriations Subcommittee)									
	Sonoma County Water Agency					Support	Support		
New Projects									
	U.S. Department of Commerce-Pacific Salmon Recovery Project for 4 States							100,000,000	100,000,000

PREPARED STATEMENT OF BARBARA LEVAKE, PRESIDENT, AND PETER D. RABBON, GENERAL MANAGER, THE RESOURCES AGENCY AND THE RECLAMATION BOARD, STATE OF CALIFORNIA

THE RECLAMATION BOARD FINAL RECOMMENDATIONS FOR FEDERAL FLOOD CONTROL PROJECTS—FISCAL YEAR 2000 SUMMARY

[Dollars in thousands]

Corps of Engineers' projects	Page	President's budget	Board recommends
I. GENERAL INVESTIGATIONS—SURVEYS			
Sacramento and San Joaquin River Basins Comprehensive Study	1	$2,000	$3,000
Northern California Streams.			
—Middle Creek	1	150	300
San Joaquin River Basin.			
—Stockton Metropolitan Area (Section 211)	1	200	380
—West Stanislaus County	2	250	400
Sutter Basin (Sutter)	1	60	100
PRECONSTRUCTION ENGINEERING AND DESIGN			
American River Watershed	4	5,000	5,000
Yuba River	4	150	700
South Sacramento County Streams	4	500	4,000
San Joaquin River Basin.			
—Tule River	4	150	800
Arroyo Pasajero	4	150	2,685
Kaweah River (Tulare)	4	582	582
III. CONSTRUCTION—GENERAL			
Sacramento River Bank Protection	5	7,000	7,000
Mid-Valley Area Levee Reconstruction	5	4,000	4,000
Marysville/Yuba City Levee Reconstruction	5	300	300
West Sacramento Project	5	7,700	7,700
American River Watershed (Common Elements)	5	17,000	17,000
Kaweah River (Tulare)	5	.....	2,500
Lower Sacramento Area Levee Reconstruction	5	2,317	2,317

THE RECLAMATION BOARD FINAL RECOMMENDATIONS FOR FEDERAL FLOOD CONTROL PROJECTS—FISCAL YEAR 2000 SUMMARY—Continued

[Dollars in thousands]

Corps of Engineers' projects	Page	President's budget	Board recommends
Upper Sacramento Area Levee Reconstruction	5	3,055	3,055
American River Watershed (Natomas)	5	4,000	7,900
Merced County Streams	5	500	500

THE RECLAMATION BOARD'S RECOMMENDATIONS

The Reclamation Board, as the State agency which furnishes required local assurances for a majority of the federal flood control projects in California's Central Valley, respectfully submits this statement of support for U.S Army Corps of Engineers flood control projects.

The Board in general supports the President's budget for federal flood control projects in the California Central Valley. The projects described below are of particular importance to the health, safety, and well-being of Central Valley residents and are especially important to The Reclamation Board that they are started and/or kept on schedule.

GENERAL INVESTIGATIONS—SURVEYS

Sacramento and San Joaquin River Basins Comprehensive Study

The study area includes the entire Sacramento River Basin and San Joaquin River Basin in Northern and Central California, respectively. Local, State and federal water resources agencies support a coordinated multiobjective investigation to balance flood damage reduction, environmental restoration, and other water resources proposed along the Rivers. The Feasibility Cost-Sharing Agreement was executed in February 1998. An interim status report will be released in April 1999. The Board recommends funding to continue this study.

Northern California Streams

This survey, authorized in 1962, is a study of the Sacramento River and its tributaries in regard to flood control measures. The following is an interim study proposal.

Middle Creek.— A reconnaissance study which evaluated several alternatives near Middle Creek's confluence with Clear Lake in Lake County was completed in 1997. Existing levees which do not provide adequate flood protection need to be repaired and upgraded. The Board supports funding to continue the feasibility study.

San Joaquin River Basin

This survey, authorized in 1964, is a study of the San Joaquin River and its tributaries in regard to flood control measures. The following are interimstudy proposals.

Stockton Metropolitan Area (Section 211).—Construction to protect the urban areas of Stockton has been completed. This feasibility study will evaluate alternatives for protecting the rural areas. The Board recommends funding to complete this study.

West Stanislaus County.—A feasibility study is ongoing to evaluate flood control alternatives for the westside communities in Stanislaus County. The Board recommends funding to complete the feasibility study.

Sutter Basin (Sutter)

A reconnaissance study is being conducted to evaluate increased flood protection for Sutter County which has repeatedly sustained flood damage. The Board recommends funding to initiate the feasibility study.

PRECONSTRUCTION ENGINEERING AND DESIGN

American River Watershed

The Sacramento urban area has only a 77-year level of protection from flooding by the American River. Although incremental actions have occurred, a long-term plan for high levels of protection must be developed and implemented. The Board recommends funding to continue long-term planning and preconstruction engineering and design.

Yuba River

The Marysville and Yuba City areas have experienced seven major floods. A feasibility study was completed in April 1998. The Board recommends funding to continue preconstruction engineering and design.

South Sacramento County Streams

The completed feasibility report recommends levee and channel improvements to protect the urbanized area of south Sacramento. The Board recommends funding for continued PED.

San Joaquin River Basin

Tule River.—The proposed enlargement of Success Dam on the Tule River will improve flood protection for the City of Porterville and surrounding community. The Board recommends funding to continue PED.

Arroyo Pasajero

Flood protection is inadequate for the California Aqueduct (a major water transfer facility) and two communities located 50 miles southwest of the City of Fresno. The Board recommends funding to continue PED.

Kaweah River (Tulare)

This project would provide flood protection to the communities of Visalia, Farmersville, Tulare, Ivanhoe, and Goshen. The project was authorized in the Water Resources Development Act of 1996. The Board recommends funding to continue PED.

CONSTRUCTION—GENERAL

Sacramento River Bank Protection

The project, authorized in 1960, is a long-range federal/State effort to preserve the existing project levee system along 192 miles of the Sacramento River. The Sacramento River Bank Protection Project work consists of providing some form of bank stabilization at those points which are identified each year as the most critical. The Board recommends funding to continue construction.

Mid-Valley Area Levee Reconstruction

An evaluation of about 240 miles of the Sacramento River Flood Control Project levees in the Sacramento Mid-Valley area identified about 20 miles of levees that are structurally deficient and require reconstruction. The Board recommends funding to continue construction.

Marysville/Yuba City Levee Reconstruction

This program will reconstruct 44 miles of the 134 miles of federally authorized levees which protect the Marysville/Yuba City area. The first of three construction contracts was awarded in July 1995. Flooding in 1997 demonstrated the need to extend the work sites, modify the design, and investigate new sites in the project area. The Board recommends funding to continue construction.

West Sacramento Project

The Board is the nonfederal sponsor for the West Sacramento Flood Control Project which was authorized for construction by WRDA 1992. The Board supports funding to continue construction.

American River Watershed (Common Elements)

The Common Elements Project was authorized in WRDA 1996. This Project consists of features that would be common to any long-term project selected for the American River. The Board recommends funding to continue construction.

Kaweah River—discussed in PED

The Board recommends funding to initiate construction.

Lower Sacramento Area Levee Reconstruction

An evaluation of about 295 miles of the Sacramento River Flood Control Project levees in the lower Sacramento Valley area identified about 47 miles of levees that are structurally deficient. The project includes reconstructing about 2 miles of these levees. The Board recommends funding for construction.

Upper Sacramento Area Levee Reconstruction

Federally authorized flood control levees in the upper Sacramento Area were evaluated and 12 miles were determined to be deficient and requiring reconstruction. The Board recommends funding for construction.

American River Watershed (Natomas)

The project was authorized but not funded in 1992. The local flood control agency proceeded with the work. The Board recommends funding to reimburse the federal cost-sharing portion to the nonfederal sponsor.

Merced County Streams

This project provides increased levels of flood protection to the Cities of Merced and Atwater and associated urban areas. First phase of construction has been completed. The Board recommends funding to continue construction.

PREPARED STATEMENT OF GAYE LOPEZ, MANAGER, COLUSA BASIN DRAINAGE DISTRICT

USBR Fiscal Year 2000 Request: $1,000,000

The Colusa Basin Drainage District requests the Committee's support for $1,000,000 for fiscal year 2000. This amount will allow the District to begin the final design and preparation of plans and specifications for Phase I reservoir projects, the acquisition of rights of way, the installation of a water stage and quality monitoring system, the clearing of the Colusa Basin Drain, studies of feasibility of catchment basins and other innovative facilities and the planning/implementation of nonstructural flood control and water quality/environmental measures.

The Colusa Basin Drainage District appreciates your past support for our Integrated Resources Management Plan for water management that addresses flooding and that provides opportunities for future conjunctive use of water resources to meet the diverse needs of agricultural, urban and wildlife interests in the Colusa Basin.

Each of the three phases of the District's Plan consists of three components: structural facilities, improved O&M of existing facilities, and new nonstructural and environmental enhancements. Phase I of the Program includes 3,000 acres of wetland and streambank restoration.

Background

The 650,000 acre Colusa Basin Drainage District, located on the west side of the Sacramento River, serves a large watershed exceeding one million acres. It covers all or part of Glenn, Colusa and northern Yolo Counties. It not only is a rich agricultural area, but a rich wildlife area as well, including three national wildlife refuges.

Over the decades, devastating floods have repeatedly struck the Colusa Basin resulting in costly damages to public and private property and loss of life. In 1995, these three counties suffered an estimated $100,000,000 in damages and 1 death due to flooding; in 1998, these three counties suffered an estimated $40,000,000 in damages due to flooding. In November 1995, a majority of landowners voted to implement the District's Integrated Resources Management Plan to address flood damage while obtaining the other benefits of increasing groundwater supplies, surface water storage, and improved environmental and wildlife uses in the watershed.

Through a stakeholder/local, state and federal agency collaborative process, four projects have been initially selected to be developed to serve as a demonstration of the integrated resources management approach to resolving the Basin's flooding problems. Hydraulic studies on proposed facilities were completed in 1998. The preparation of Basin-wide programmatic environmental documentation commenced during 1998 and is scheduled for completion in fiscal year 1999. Project specific environmental documentation will begin later this year.

This request is for an appropriation of $1,000,000 in fiscal year 2000; however, the District has the capability and need for $2,000,000 to put this project more on the schedule earlier submitted to your Committee. The $2,000,000 would not be used for construction, but we believe would be sufficient to complete all necessary pre-construction tasks for one or more reservoir projects.

We believe our Integrated Resource Management approach to solving a number of problems across a large area with the same dollar is a wise expenditure of public funds.

Thank you for your continued support.

US Army Corps of Engineers Fiscal Year 2000 Request: $500,000

The Colusa Basin Drainage District is requesting $500,000 in funding for fiscal year 2000 for use by the U.S. Army Corps of Engineers to begin the design, planning, and environmental review associated with a 3,000 acre wetlands project. The project will be located in the southern portion of the Sacramento Valley, California.

The District—in conjunction with the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, the Corps of Engineers and a number of state and local agencies—is using the technique of integrated resource management in order to provide flood protection and environmental restoration to the Colusa Basin, which is located on the west side of the Sacramento Valley. The Colusa Basin Watershed Program includes structural flood protection measures (small off stream detention basins on ephemeral streams that lack anadromous fisheries), improved operation and maintenance of existing flood control facilities, and nonstructural flood protection measures (creation of wetlands, riparian and upland habitats and the introduction of best management practices to control erosion and sedimentation). One of the goals of the Program is to create 10,000 acres of habitat in the Colusa Basin over the next 20 to 30 years. The Program is fully compatible with the ecosystem restoration projects being proposed and implemented by the CALFED Bay-Delta Program.

The site of the proposed wetlands will be northern Yolo County and southern Colusa County, in the midst of the Pacific Flyway. These lands are located adjacent to the Colusa Basin Drain and have regularly been flooded in past years. The project would involve constructing one or more detention basin(s) that would store floodwaters and so create seasonal wetlands. The proposed site of the project also contains groundwater wells, which may permit the creation of permanent wetlands or other habitat. In order to reduce the costs of operation and maintenance, agricultural activities that are consistent with the use of the property as habitat may be permitted during the summer months on portions of the property.

PREPARED STATEMENT OF JOSEPH L. CAMPBELL, PRESIDENT, BOARD OF DIRECTORS, CONTRA COSTA WATER DISTRICT

Subject: Contra Costa Canal Fish Screen fiscal year 2000 Appropriation

The Contra Costa Canal (Rock Slough) intake of the Central Valley Project (CVP) is the largest urban water intake in California's Sacramento-San Joaquin Delta. The intake is the primary source of water for 400,000 people in Central and Eastern Contra Costa County.

Because this 60-year-old intake is not screened, its impact on the aquatic life of the Delta has been a subject of concern for many years as local, state and federal interests work together to restore the health of Bay-Delta estuary. Under provisions of the Central Valley Project Improvement Act [PL 102–575, Sec. 3406 (b) (5)], the Secretary of Interior is required to screen the Contra Costa Canal intake, which is owned by the US Bureau of Reclamation (USBR).

Over the past five years, the relevant federal, state and local agencies have worked together to develop a plan to screen the intake, have completed the permitting, and have completed the design for the fish screen that will protect threatened and endangered species in the vicinity of the Contra Costa Canal intake. The project went to bid in February.

Appropriations have been requested for the fish screen in each of the past four years. In response, the Congress has appropriated $4,330,000 to the Department of Interior for the fish screen. A final appropriation of $5,000,000 is critical, because construction is scheduled to begin this summer. If additional funds are provided by the State of California, the level of Congressional appropriation could be reduced.

Completion on the current schedule is critical to the Contra Costa Water District's continued ability to draw water for its 400,000 customers. The US Fish and Wildlife Service (USFWS), requires that the Rock Slough screen be completed and provided authority for USFWS to shut down all pumping if the screen is not completed in a timely manner. Thus, it is essential that the remaining construction funds be provided in the fiscal year 2000 appropriation.

The fish screen is one element of a larger program to mitigate fishery impacts in the Delta. The progress to date on the Contra Costa Canal Fish Screen is a success story both for this facility and in the broader context of the multi-party effort to restore the deteriorated Bay-Delta estuary, the largest estuary on the West Coast.

Your active support for this essential appropriation is appreciated. It will complete a congressionally mandated facility, protect Delta fisheries, and insure that water supplies for 400,000 people served by the Contra Costa Water District are not jeopardized.

PREPARED STATEMENT OF CARL W. MOSHER, DIRECTOR, ENVIRONMENTAL SERVICES DEPARTMENT, CITY OF SAN JOSE, CALIFORNIA

My name is Carl W. Mosher, and I am Director of Environmental Services for the City of San Jose, California. I am testifying on behalf of the San Jose Water Reclamation and Reuse Program, now known as South Bay Water Recycling. San Jose is the lead agency of a joint powers authority which owns and operates the San Jose/Santa Clara Water Pollution Control Plant, a regional wastewater treatment facility serving more than 1,200,000 residents, businesses and industries in Silicon Valley. South Bay Water Recycling, which recycles effluent from the treatment plant, is the largest urban water recycling project in northern California.

We are requesting your assistance in increasing the Bureau of Reclamation (BOR) funding for South Bay Water Recycling from the $3,000,000 in the President's budget to $10,000,000. The first phase of the program, completed in 1998, will deliver up to 15,000,000 gallons of water per day. It was financed by the cities of San Jose, Santa Clara and Milpitas and five other agencies, in cooperation with the Santa Clara Valley Water District. The City is now planning a second phase to double recycled water use at a cost of an additional $100,000,000.

As you know, Title XVI of the CVPIA (Public Law 92–575) authorizes the Bureau of Reclamation to contribute up to 25 percent of eligible project costs. However, due to competing demands, BOR's Mid-Pacific Region has budgeted less than half of the $35,000,000 authorized by Congress. The Bureau has indicated that they will be unable to participate in future planning or construction until Congress appropriates sufficient funds to meet their existing obligations. The President's fiscal year 1999/00 Budget includes a request for SBWR for $3,000,000. At the current rate of funding, that will not occur until 2007.

Through the efforts of San Jose, the Santa Clara Valley Water District and other Silicon Valley cities and agencies, our region is becoming a leader in sustainable water use, integrating water supply and wastewater discharge through innovations in water recycling and conservation. Long-term local plans anticipate up to 100,000,000 gallons of reuse per day by 2020, through projects coordinated with our regional effort, the Bay Area Regional Water Recycling Program.

If sufficient federal funds are not available to leverage local funding, Silicon Valley and other California communities will not soon achieve sustainable water use. Given the need for water in the environment, competing demands of agriculture and cities, and the constant threat of drought, water recycling just makes sense. The California Department of Water Resources projects a deficit of six million acre-feet of water during a critical dry year. During the 1970's and early 80's, the federal government spent tens of billions of dollars to fund facilities so we could stop treating our rivers and lakes as sewers and cesspools. Certainly this smaller investment is justified to use water more wisely and more often, and restore our environment.

In order to obtain funding authorized by Congress and allow Bureau participation in future phases, the City is seeking a write-in appropriation for SBWR for $10,000,000 next fiscal year. We appreciate your support for this level of funding during upcoming committee hearings.

PREPARED STATEMENT OF DONALD BRANSFORD, PRESIDENT, GLENN-COLUSA IRRIGATION DISTRICT

Mr. Chairman, Members of the Subcommittee, my name is Don Bransford. I am a rice farmer from Colusa County, California, and I am President of the Board of Directors of the GlennColusa Irrigation District (GCID or District).

I appreciate the opportunity to provide you this statement regarding the federal funding priorities for GCID. I also appreciate the Subcommittee's past efforts to address our concerns.

GCID is the largest and one of the oldest diverters of water from the Sacramento River. The District delivers water to approximately 1,200 families who have about 141,000 acres of land in cultivation in Glenn and Colusa Counties. More than $270,000,000 in agricultural products are produced annually on GCID farms, helping to sustain an estimated 12,000 jobs in the region.

The District is also the sole source of surface water for three wildlife refuges—the Sacramento, Delevan and Colusa National Wildlife Refuges—that cover some 20,000 acres in the heart of the Sacramento Valley. The District and the United States Bureau of Reclamation have negotiated an agreement that provides for long-term conveyance of water to these refuges as well as cost sharing. Winter water supplied by GCID to thousands of acres of rice land also provides a rich oasis for migrating waterfowl.

The District is firmly committed to obtaining lasting protection of the winterrun salmon and other fishery resources at the Hamilton City Pump Station. Over the last several years, the District has invested over $3,000,000 in the construction of an interim flatplate fish screen and other improvements to provide immediate protection to the endangered winterrun chinook salmon and other fish species, and on biological monitoring. In addition, GCID has deposited $5,500,000 into an account to be used solely for the purpose of design and construction of the new fish screen extension and gradient facility, known as the "long term solution" for the fish passage problems at the Hamilton City Pump Station. Finally, GCID has spent an additional $5,500,000 on environmental review, land acquisition, environmental mitigation and downstream channel improvements, design and construction of the long term fish passage solution.

While the interim flatplate screen, installed in late 1993, has been very effective, it is only an interim solution. In order to provide this permanent protection of the fisheries resources, the permanent fish screen has been under construction since the spring of 1998, and completion is anticipated in late 1999. Construction of the gradient facility portion of the project is scheduled to begin in 2000 and be completed in 2001. Until completion of the fish screen extension, the gradient facility, and testing of the performance of the structures, the District will continue to face restrictions which result in pumping only 75 percent of the District's full water entitlement.

Unlike some other projects, the availability of nonfederal costsharing is not in doubt at GCID. The District has, in addition to the funds already invested in the fish screen project, set aside $5,500,000 to date to help pay for the nonfederal, 25 percent costshare of a new permanent fish screen. California voters have approved almost a billion dollars for projects like the GCID fish screen to help restore fisheries throughout the Central Valley. We are ready and able to costshare any federal funds provided by this Committee.

On behalf of GCID, the fishery and all of those whose economic fate is tied to the recovery of the winterrun salmon, I respectfully request that you provide $3,750,000 for the Bureau of Reclamation in fiscal year 2000 to continue work on a permanent new fish screen at the Hamilton City Pump Station. The President's Budget includes $2,252,000 for the fish screen extension portion of the project. GCID urges an increase because construction of the fish screen extension is approximately one year ahead of schedule, resulting in an accelerated schedule of biological and hydrological testing that must occur after completion of construction to verify that the structure meets the resource agencies' fish screening criteria. Specifically, an allocation of $3,750,000 is needed to allow completion of construction and initiation of testing of the facility in 2000.

Without such a commitment of funds, construction may be delayed, and testing of the facility will be delayed. That will mean less water for the farmers and a less speedy recovery of the fishery. Failure to provide the funds necessary to complete the project represents a lose-lose proposition. It is bad for the farmers and it is bad for the fishery resource. Again, I urge you to provide an allocation of $3,750,000 to keep the project moving forward on an optimum schedule.

For the U.S. Army Corps of Engineers, GCID requests the Committee's support of an appropriation of $6,000,000 to the Corps of Engineers to continue work on the Sacramento River gradient or riffle restoration project. Construction of the gradient restoration project will stabilize the river elevation and improve the effectiveness of the new fish screen built at the District's pumping plant. In addition, the gradient facility is critical to ensuring the long-term viability of the new fish screen structure under changing river conditions. The President's Budget includes $3,000,000 for the gradient facility. GCID urges the increase to $6,000,000 because preliminary estimates from the Corps indicate that $3,000,000 is far short of what is needed. The Corps currently anticipates that the construction of this element of the project could begin in 2000 and be completed in 2001. Thus, GCID is concerned that the amount presently in the President's Budget will not be adequate to allow the Corps to award a construction contract for the gradient facility in the fall of 1999, as this low level of funding will not allow for completion of the construction in the one year timeframe.

In addition to the budget impacts of the short construction schedule, GCID is currently requesting that Congress increase the cost ceiling for the gradient facility from $20,700,000 to $26,000,000. The original cost estimates were based upon a 30 percent basis of design. Further design work and other factors indicate that the total cost of the gradient facility will exceed the $20,700,000 ceiling. GCID is also seeking a post-authorization change to the gradient facility to expand the scope of work to include bank stabilization work at approximately River Mile 208, north of the fish screen project. Geomorphological studies indicate that flood damage at

River Mile 208 potentially puts the entire project at risk. These post-authorization changes also indicate an increase of the fiscal year 2000 budget for this element of the project.

Finally, Mr. Chairman, GCID requests that the Subcommittee earmark, from within the funds made available for refuge water supply, $2,400,000 for fiscal year 2000 to continue work on the upgrade of GCID canal facilities necessary to make refuge deliveries. The President's Budget request includes $4,500,000 for all central valley refuge conveyance projects, and GCID requests that $2,400,000 be earmarked for the District's project designed to expand water service to the Sacramento Refuge complex. In addition, GCID requests that the budget for all Central Valley refuge supply projects be increased to $6,900,000 to assure that the necessary funds will be available for completion of the GCID Refuge Conveyance Project. Preliminary estimates by Reclamation indicate that the proposed budget of $4,500,000 for refuge supply projects is far short of the total amount actually needed for completion of the GCID Refuge Conveyance Project and the initiation of work on the other supply projects in the Central Valley. A shortfall in the refuge supply budget could adversely impact the GCID Refuge Conveyance Project by interfering with the completion of construction in progress. Thus, GCID urges an increase in the overall budget for refuge supply projects, which would assure that the funds earmarked for the GCID Refuge Conveyance Project will be available, and may alleviate funding problems associated with other Central Valley refuge supply projects which are also essential.

GCID's Refuge Conveyance Project will enable the District to make year-around water deliveries to the three National Wildlife Refuges in the GCID service territory (the Sacramento, Delevan and Colusa National Wildlife Refuges) as well as make Stony Creek available for possible fish restoration activities. It will also allow water deliveries during the winter for crop diversification and to expand the acreage flooded for rice straw decomposition and wildlife habitat. This project is the most efficient and least costly way to provide expanded water service to the Sacramento Refuge complex, as required by the Central Valley Project Improvement Act.

Mr. Chairman, Members of the Subcommittee, on behalf of GCID, I would like to express my appreciation for your past support of our efforts to address the fish bypass problem at the Hamilton City Pump Station and our refuge water supply project, and I respectfully request your support once again in the fiscal year 2000 Energy and Water Development Appropriations Act.

Thank you for your consideration.

PREPARED STATEMENT OF THE COACHELLA VALLEY WATER DISTRICT

WHITEWATER RIVER BASIN

The U.S. Army Corps of Engineers, with the Coachella Valley Water District as local sponsor, is nearing completion of the feasibility study for the Whitewater River Basin flood control project. This statement provides a brief status report on this important project.

The Whitewater River Basin feasibility study is defining a flood control project in the northern portion of the Coachella Valley in the low desert area of Southern California. This area is subject to alluvial fan type flooding originating from sources as far north as Joshua Tree National Park. This area has existing businesses and residences and is forecast to be a potential growth area.

The feasibility study is formulating a plan which will have a favorable benefit cost ratio for the flood control project. The feasibility study is also identifying a major environmental restoration component. The study will identify nonstructural flood control components which will enhance the Coachella Valley Fringe-Toed Lizard Preserve, protecting the endangered Coachella Valley fringe-toed lizard as well as providing a multispecies habitat area protected from development. Without this flood control project, protecting the sand source for the dune environment of the preserve could be very difficult to achieve.

The local community supports the flood protection goals of this project and the local environmental community supports the project as well.

Thank you for the continued funding of the feasibility study. The project proposed in the feasibility study will be put forward for your consideration for the Water Resources Development Act of 2000, if possible. Your careful consideration of this important flood control/environmental enhancement project will be appreciated.

PREPARED STATEMENT OF ROSS ROGERS, GENERAL MANAGER, MERCED IRRIGATION DISTRICT

Mr. Chairman and Members of the Committee: My name is Ross Rogers, General Manager of the Merced Irrigation District. I am respectfully submitting this statement on behalf of the County of Merced, the City of Merced, and the Merced Irrigation District, which jointly form an informal coalition commonly known as the Merced County Streams Group for the purpose of performing maintenance functions along portions of the Merced County Streams Project. The County of Merced, together with the State of California, is the sponsor of the Merced County Streams Project. The El Nido Irrigation District and the Le Grand Athlone Water District are also concerned in this matter.

Federal authorization for the project construction was granted as part of the Supplemental Appropriations Act of 1985. Authorized facilities include constructing dry dams on Canal (Castle Dam) and Black Rascal Creeks (Haystack Mountain Dam), enlargement of the existing Bear Creek Dam, and modifications of levees and channels along more than 25 miles of Fahrens, Black Rascal, Cottonwood, and Bear Creeks. The completed project will provide flood protection worth more than $10,000,000 per year to 263,000 acres of urban and agricultural lands. Total project cost is currently estimated to be $133,000,000 of which $40,000,000 or roughly 31 percent will be paid during construction by the local beneficiaries.

When completed, more than 240,000 residents occupying 55,000 housing units within the greater metropolitan Merced area will live with assurance of 125-year flood protection, while the lower rural area will receive 25-year protection.

The first component of the project, Castle Dam, was completed in 1992. This component was constructed under budget, ahead of schedule, and without a lost-time accident. Without Castle Dam during the intense storms of January, February, March 1995, January 1997 and January, February, March, 1998, the city of Merced would have been partially inundated.

As a result of a request by the County of Merced, the Corps of Engineers has reevaluated project components and will extend the boundaries of the levee and channel portion of the project to better match growth that has taken place in the city of Merced. This willingness to remain flexible throughout the lengthy planning and design process is also a credit to the Corps and its staff.

The Merced County Streams Project is a modification and expansion of an earlier flood project constructed between 1948 and 1957. It has undergone considerable review and modification since first authorized as part of the Flood Control Act of 1970. Approximately $18,000,000 has been spent to date on the Merced County Streams Project. This has been matched with local contributions of approximately $3,000,000. As partners in the construction of this project, the local agency sponsors have worked closely with the Corps to establish an economic balance between costs and benefits. As a result of this combined effort, nonessential project components were first scaled back and eventually eliminated. This scaling to fit the economic reality resulted in substantial federal and local savings.

On January 15, February 3 and March 25, 1998, due to El Nino-driven storms, Bear Creek overtopped its banks in several locations within and downstream of the city of Merced, flooding 33 homes, county, city and Merced Irrigation District infrastructure, and thousands of acres of prime agricultural land, with total damages in the millions of dollars. The U. S. Army Corps of Engineers, with input from the National Weather Service, estimates that the January 15th and March 25th events were both one-in–100 year events, unprecedented for the area. The greatest storm intensity in both storms centered in northeastern Merced County in and around the watershed of Black Rascal Creek, tributary to Bear Creek, upstream of the Merced County Streams Project's proposed Haystack Mountain Dam site. According to Corps of Engineer's rating tables for the Black Rascal Creek Bypass gaging station, January flows reached 4,300 cubic feet per second (cfs) in a channel with a rated maximum capacity of 3,000 cfs, 143 percent of channel capacity. March flows exceeded 4,700 cfs, or 157 percent of channel capacity. Had the Merced County Streams Project's Haystack Mountain Dam been in place, no flooding would have occurred along Bear Creek during the January, February or March events.

Due primarily to the New Years, 1997 devastating California flood, the U. S. Congress and the California legislature authorized a four year study, identified as: "Sacramento and San Joaquin River Basins Comprehensive Study." The study was authorized under the Flood Control Act of 1962 (Sacramento River) and the 1964 Congressional Resolution (San Joaquin River). According to a brochure distributed by The Reclamation Board of the State of California and the U. S. Army Corps of Engineers, Sacramento District, the study:

> ". . . will initially identify problems, opportunities, planning objectives, constraints, and measures to address flooding and ecosystem problems in the study area. It will ultimately develop a strategy for flood damage reduction and integrated ecosystem restoration along with identification of projects for early implementation. Solutions will include consideration of both structural and non-structural measures . . ."

According to the study timeline, in April, 1999, an interim report will be presented to Congress. In 2001, a Draft Strategy for Flood Management and Related Environmental Restoration will be completed. By the Spring of 2002, the final Strategy and EIS/EIR, including an implementation plan will be completed.

There is great concern on the part of the City of Merced, County of Merced and the Merced Irrigation District officials that the Merced County Streams Project will be "swallowed up" by the Comprehensive Study, becoming one of many new flood control projects that have not yet received Congressional authorization. The Merced County Streams Project has been authorized by Congress. This important and urgent Project must not lose its priority for Congressional funding or be further delayed while the Comprehensive Study is undertaken.

The project has the support of state and local authorities and funding of the non-federal portion has been addressed.

We request the Committee's support for the inclusion of $500,000 in the 1998/99 budget, as recommended by the California Water Commission and the Corps of Engineers, for the orderly progress of the Merced County Streams Project, which is so vital to the community, state, and the nation.

PREPARED STATEMENT OF MILTON LOSOYA, MAYOR, CITY OF WOODLAND

The City of Woodland requests Congressional support for adding $750,000 to the fiscal year 2000 federal budget, to enable the Corps of Engineers to begin the Cache Creek Flood Protection Feasibility Study in fiscal year 2000. The study, estimated to cost $2,500,000 million over a 2–3 year period, will be 50 percent federally funded, 50 percent state and local funded. The City Council has approved the City funding for the local share.

FEMA has recently completed a new Flood Insurance Study for the Woodland area, showing approximately a 600 percent increase in the area of the city in the 100 year flood plain. This creates a significant impact to existing residences and businesses, and a virtual building moratorium on new industrial development, which is now predominately in an unnumbered A zone. This will have major economic impact on the City of Woodland if not addressed in an expeditious and proactive manner.

The Corps of Engineers has completed two Reconnaissance Studies (Reconnaissance Report, Westside Tributaries to Yolo Bypass, CA June 1994, and Northern California Streams Reconnaissance Report, Cache Creek Environmental Restoration, California, December 1995) which address structural solutions to this problem. The Corps studies show a benefit cost ratios of between 1.3 and 1.8 depending on the solution selected. Analysis indicates that the flood threat has been intensified by the construction of Interstate Highway I–5, which diagonally bisects the community. Considering projected damage estimates for the 100 year flood, the project shows a 1.8 benefit cost ratio. The annualized cost for flood protection is about half the annualized cost of damages from a 100 year flood. With the receipt of the proposed revisions to FEMA's Flood Insurance Rate Maps, there is clear community support to proceed with a structural fix to the flood protection system.

The next step is completion of a Corps feasibility study to determine the optimum solution for the community, so that design can begin. Given the impacts to the community, a two year schedule for the study is desired so that we may proceed as soon as possible with a structural fix (costs of which are estimated by the Corps to range from $42,000,000 to $84,000,000).

PREPARED STATEMENT OF THE HONORABLE GEORGE PETTYGROVE, MAYOR, CITY OF FAIRFIELD, CALIFORNIA

Mr. Chairman, Members of the Subcommittee, my name is George Pettygrove. I am the Mayor of the City of Fairfield, California. The City of Fairfield requests $400,000 in the fiscal year 2000 Energy and Water Appropriations bill to continue funding for the Ledgewood Creek Section 205 Small Flood Control Project.

In fiscal year 1999, Congress provided $300,000 to begin study of flooding on Ledgewood Creek. The requested appropriation in fiscal year 2000 will complete the

feasibility study necessary to determine appropriate flood control measures for this area of the City.

When the Corps of Engineers studied Ledgewood Creek in preparation for the design of the Fairfield Vicinity Streams Project improvements, the Corps predicted that Ledgewood Creek, within the unincorporated area of Solano County, could bifurcate and flood Interstate Highway 80 (I–80). On Tuesday, February 3, 1998, the prediction came true. Runoff from the Ledgewood Creek drainage basin could not be contained within the unimproved creek channel and the creek overflowed. At 7:44 a.m. all four westbound lanes of I–80 and three of the four eastbound lanes were closed. Within an hour after the closure, the freeway became a giant parking lot, spanning nearly 15 miles east to Interstate 505. At its worst, 18 inches of water covered four westbound lanes for roughly 600 feet. Caltrans reopened the freeway at 12:38 p.m., the result of naturally receding water, lighter showers, and Caltrans' crews pumping water back into the creek. The five hour closure of I–80 caused some commuters to be three hours late to work, as well as trucking delays in delivery of goods.

Due to a combination of the construction of the Fairfield Vicinity Streams Project and the construction of developer improvements, a portion of Ledgewood Creek has been improved to carry a 100-year storm water event from the Fairfield City limits to the Suisun Marsh. The solution to the flooding problem on I–80 is to extend the 100-year improvements to the north to include an upper reach of Ledgewood Creek from the Fairfield City limits to Abernathy Lane. If the Abernathy Lane crossing and the downstream channel of Ledgewood Creek are improved, bifurcation will be eliminated and so will the flooding of I–80. Also, the Corps of Engineers could submit their design with calculations to FEMA and obtain a letter of map revision to remove all of the properties below I–80 that are within the AO flood zone. The benefit to the community is not only the prevention of the I–80 flooding, but the removal of approximately 300 acres of residential, commercial, and industrial property from the FEMA flood zone, thereby eliminating the need to buy flood insurance.

Again, I appreciate the opportunity to testify on behalf of the City of Fairfield, and I urge your support for this priority project for our region.

PREPARED STATEMENT JON D. MIKELS, CHAIRMAN, SUPERVISOR, SECOND DISTRICT, COUNTY OF SAN BERNARDINO

The Board of Supervisors of San Bernardino County, State of California, appreciates the opportunity to bring the following flood control and water conservation projects to your attention for consideration in the fiscal year 1999–2000 Federal Budget.

Corps of Engineers:	
Santa Ana River Mainstem—Construction of Seven Oaks Dam, San Timoteo Creek Reach 3B and Lower Santa Ana River Reaches 8 & 9. New construction start for Prado Dam.	$28,000,000
Upper Santa Ana River Watershed—Reconnaissance Study	100,000
Orange County, Santa Ana River Basin—Feasibility Study	100,000
Mojave River Forks Dam—Feasibility Study	300,000
San Bernardino County Feasibility Studies—a. Lytle Creek, b. Wilson, Potato and Wildwood Creeks	100,000
Mission Zanja Creek—Feasibility Study	([1])
Bureau of Reclamation: San Sevaine Creek Water Project—Public Law 84–984 Small Reclamation Projects Act Loan Program	10,180,000

[1] Support.

The Board, once again, wishes to express its deep appreciation for your past and present support of these priority programs in San Bernardino County.

SANTA ANA RIVER MAINSTEM PROJECT

Project Description

The Santa Ana River Mainstem Project includes seven interdependent features: Mill Creek Levee, Oak Street Drain, San Timoteo Creek, Lower Santa Ana River, Seven Oaks Dam, Prado Dam and Santiago Creek. Mill Creek Levee, Oak Street Drain, San Timoteo Creek Reaches 1, 2 and 3A and the Lower Santa Ana River Reaches 1, 2, 3, 4, 5, 6, 7 and 10 are complete. Completion of all of the features will provide (a) the necessary flood protection within Orange, Riverside and San Bernardino Counties; (b) enhancement and preservation of marshlands and wetlands for endangered waterfowl, fish and wildlife species; (c) recreation amenities;

and (d) floodplain management of the 30 miles of Santa Ana River between Seven Oaks Dam and Prado Dam.

San Bernardino County Features Status

Seven Oaks Dam: Intake structure excavation, abutment stripping and outlet works/diversion tunnel contract is complete. Embankment and spillway construction contract was awarded in March 1994. Construction is progressing satisfactorily and is 91 percent complete as of January 1999. Construction can be completed in fiscal year 1999/2000.

San Timoteo Creek: San Timoteo Creek/Reach 1 construction was completed in September 1996. Construction on Reaches 2 & 3A was completed in April 1998. Overall, construction is approximately 60 percent complete.

Funding Required

The funding amount required exceeds the President's proposed budget by $3,000,000 due to necessary studies and mitigation for endangered species. In addition, $5,000,000 is requested for Design and Construction start for Prado Dam. To continue construction of the Mainstem Project on schedule in fiscal year 1999/2000, federal funding in the amount of $28,000,000 would be required as follows:

Seven Oaks Dam: Construction and Mitigation	$3,000,000
Lower Santa Ana River:	
Construct Reaches 8 & 9	13,000,000
Landscaping and Sediment Removal	5,000,000
Engineering Design	2,000,000
Prado Dam: Design and Construction start	5,000,000

PROJECT AUTHORIZED: Public Law 94–587, Section 109, Approved October 22, 1976, Public Law 99–662, Water Resources Development Act of 1986

TOTAL PROJECT COST: $1,400,000,000—Includes $473,000,000 local share

PRESIDENT'S BUDGET FISCAL YEAR 1999/2000	$20,000,000
FUNDING SHORTFALL FISCAL YEAR 1999/2000	8,000,000
REQUIRED FUNDING FISCAL YEAR 1999/2000	28,000,000

REQUESTED ACTION: Approval of $28,000,000 for Santa Ana River Mainstem, F.Y. 1999/2000.

SAN TIMOTEO CREEK

Project Description

The San Timoteo Creek is a major tributary to the Santa Ana River in the east San Bernardino Valley. A large watershed of approximately 126 square miles drains into the creek which flows through the cities of Redlands, Loma Linda and San Bernardino before discharging into the Santa Ana River. The existing creek, in all three cities, has an earthen bottom and partially improved embankments reinforced with rail and wire revetments.

Major storm flows along the creek in 1938, 1961, 1965, 1969 and 1978 caused considerable damage to the creek itself as well as overtopping the banks and causing loss of life and severe property damage.

The Energy and Water Development Appropriations Act of 1988 authorized improvement of San Timoteo Creek as part of the Santa Ana River Mainstem Project. The improvements include the construction of approximately 5.5 miles of concrete-lined channel from the Santa Ana River upstream through the cities of San Bernardino, Loma Linda and Redlands plus the construction of debris retention facilities at the upstream end of the project in the form of in-channel sediment storage basins.

Project Status

Overall project construction is 60 percent complete. An alternative has been developed for Reach 3B that will include the construction of approximately 1300 feet of improved channel and 18 in-channel sedimentation basins. Plans for the final phase will be developed during the remaining 1998/1999 fiscal year with completion anticipated during the mid 1999/2000 fiscal year.

Completed Phases

Reach 1: 0.7 Mile of Channel, COMPLETED, September 1996; Waterman Avenue Bridge, COMPLETED, September 1996.

Reach 2: 1.9 Miles of Channel, COMPLETED, December 1997; Redlands Boulevard Bridge, COMPLETED, March 1998.

Reach 3A: 0.8 Mile of Channel, COMPLETED, May 1998.

Remaining Construction and Schedule

Reach 3B: 0.2 Mile of Channel and 18 Sedimentation Basins along 2.2 Miles of channel. Plans and Specifications: June 1998–December 1999; Right-of-Way Acquisition: April 1999–December 1999; Construction Start: April 2000; and Construction Completion: September 2001.

Estimated Project Cost

The total estimated project cost is approximately $67,000,000 with the federal participating cost at 75 percent or $50,250,000 and the local participating cost at 25 percent or $16,750,000. The cost of the remainder of the project is estimated to be $35,000,000, with the Federal share at $26,250,000 and the local share at $8,750,000

REQUESTED ACTION: Approval of continued funding for the San Timoteo Creek Project.

UPPER SANTA ANA RIVER WATERSHED RECONNAISSANCE STUDY

The area will focus on the watershed of the Santa Ana River and tributaries located above Prado Dam and primarily in San Bernardino County. The study is to describe all watershed characteristics and uses to define problem areas under present and future conditions and assist county and local interests in developing a long term master plan for watershed management in the interest of improving specific water resource uses including environmental preservation and restoration, urbanization water supply and conservation and water-related recreation activities.

The San Bernardino County Flood Control District supports the reconnaissance study for management of the upper Santa Ana River Watershed.

REQUESTED ACTION: Approval of $100,000 for upper Santa Ana River Watershed, F.Y. 1999/2000.

ORANGE COUNTY, SANTA ANA RIVER BASIN FEASIBILITY STUDY (CHINO AGRICULTURE PRESERVE AREA)

The Chino Dairies are located in a 30 square mile area immediately north of Prado Dam reservoir, in the unincorporated portion of San Bernardino County, California. The study provides information on the following elements: operations of Chino Dairies, water conservation in Chino Groundwater Basin, flood control facilities to relieve runoff from upstream development in the City of Ontario, water quality concerns of Orange County residents and the regulatory enforcement of the Chino Dairies. The Chino Dairies provide 25 percent of all the milk consumed in California and it is a one billion dollar industry.

The San Bernardino County Flood Control District supports the feasibility study to help with flood control facilities, water conservation and keep the dairies maintain their viability.

REQUESTED ACTION: Approval of $100,000 for Orange County, Santa Ana River Basin, F.Y. 1999/2000.

MOJAVE RIVER FORKS DAM FEASIBILITY STUDY

The Mojave River flows north out of the San Bernardino Mountains into the desert communities of Victorville and Barstow. The Mojave River Forks Dam (Dam) is an ungated facility designed and constructed by the U.S. Army Corps of Engineers to alleviate flooding. Since that time, environmental regulations such as the Endangered Species and Clean Water Acts and the recent water rights adjudication have changed the River's uses. The study will consider factors such as the current water rights adjudication while facilitating balance among the River's competing uses and diverse interest. Alternatives include modification of the Dam's operation and outlet works, construction of a release tower and operable gates and construction of one or more off-line detention basins.

The San Bernardino County Flood Control District supports this feasibility phase study to evaluate viable water conservation alternatives while optimizing the balance between environmental, flood control and water supply needs.

REQUESTED ACTION: Approval of $300,000 for Mojave River Forks Dam, F.Y. 1999/2000.

SAN BERNARDINO COUNTY FEASIBILITY STUDIES (LYTLE CREEK AND WILSON, POTATO & WILDWOOD CREEKS)

The Lytle Creek drainage basin comprises 173 square miles in the north-central part of the Santa Ana River Basin, San Bernardino County, California. The purpose of the study is to conduct an investigation of the Lytle Creek watershed to deter-

mine opportunities for water quality/flood control enhancement, sediment/erosion control and environmental restoration. Sand and gravel operations along the Creek have resulted in damages to the drainage patterns, sediment movement and the riparian habitat. In addition, a high rate of urbanization in the "Inland Empire" region has led to increased runoff. These factors pose an increase flood risk in the basin.

Wilson, Potato and Wildwood Creeks originate in the San Bernardino Mountains and flow in a south and southwesterly direction through the city of Yucaipa, San Bernardino County. The study would investigate methods to control erosion and reduce the impacts to the downstream open space areas, residences and commercial areas within the watershed. The runoff creates a large volume of debris and sediment within the City of Yucaipa. Flooding along these creeks is threatening to damage residential and commercial development and infrastructure facilities.

The San Bernardino County Flood Control District is requesting these feasibility studies to evaluate the systems and determine appropriate methods of protection through new facilities and management of the existing floodplain.

REQUESTED ACTION: Approval of $100,000 for San Bernardino County, F.Y. 1999/2000.

MISSION ZANJA CREEK FEASIBILITY STUDY

The area is located in the City of Redlands, San Bernardino County. The Mission Zanja Creek (Creek) project begins at about 2,000 feet east of Interstate 10 to the Reservoir Canyon Drain, just west of 8th Street. Floods of 1965, 1976 and 1980 caused about $4,300,000 million (1988 price level) in damages. Frequent flooding along the Creek is caused by inadequate capacity of the existing inlet to the covered channel near 9th Street. The U.S. Army Corps of Engineers study indicates that expansion of inlet on the Creek will result in a small increase in the level of protection, but will increase flooding the areas surrounding Reservoir Canyon Drain. Even though, this project will cause flooding at the downstream area, but it will be much smaller.

The San Bernardino County Flood Control District supports the feasibility study to improve the inlet of Mission Zanja Creek to reduce flooding area.

REQUESTED ACTION: Support of Mission Zanja Creek, F.Y. 1999/2000.

SAN SEVAINE CREEK WATER PROJECT

Project Description

The San Sevaine Creek Water Project includes ten recharge facilities, two miles of levees; construction of seven miles of drainage ways to convey runoff to the recharge facilities; six miles of linear parkways; and the preservation of 137 acres of sensitive wildlife habitat. This project will provide water conservation and flood protection to a drainage area of approximately 51 square miles within the cities of Fontana, Rancho Cucamonga and Ontario as well as San Bernardino and Riverside Counties. There will be an average of approximately 25,000 acre-feet per year of groundwater recharge from the San Sevaine and Etiwanda Creeks' tributaries in the project area.

Project Status

The Loan Application was signed by the Bureau of Reclamation Commissioner Eluid Martinez on April 11, 1996, approved by the Secretary of Interior Bruce Babbitt on May 9, 1996. As of July 15, 1996, the San Sevaine Creek Water Project completed 60-day congressional approval process. On December 17, 1996, the project Repayment Agreement was approved by the Board of Supervisors of San Bernardino County and approved on January 8, 1997 by Robert Johnson, Regional Director of the Bureau of Reclamation. The Bureau has indicated an eight-year construction schedule with project completion by the Year 2006.

Although considerable levee, channel and interim basin work has already been completed at various locations of this major water project, continued federal assistance from this Small Reclamation Project Act loan and grant are required to complete the project's construction. Without these funds it will be decades before local interests can accrue sufficient funds to construct this vital water project. To date, the Bureau of Reclamation has provided approximately $10,500,000 million towards construction of the project.

The California Water Commission has consistently, since the late 1980's, supported the construction of this project.

Federal Authority	*Public Law 84–984, as amended in 1956*
Bureau of Reclamation grant contribution approximately	$27,400,000

Federal Authority	*Public Law 84–984, as amended in 1956*
Bureau of Reclamation loan contribution approximately	19,200,000
Total B of R project (not additive) Approximately	52,900,000
Total Local Contribution Approximately	33,700,000
1997/98 fiscal year Federal Budget (New Project Start)	1,333,000
1998/99 fiscal year Federal Budget	1,177,000
President's Budget fiscal year 1999/2000	10,180,000

The District and County have coordinated with the Bureau of Reclamation and the National Water Resources Agency in a cooperative effort to obtain the continued funding for this project. The District and County appreciate the continuing support provided by the Bureau of Reclamation towards this project.

REQUESTED ACTION: Support President's proposed F.Y. 1999/2000 budget in the amount of $10.18 Million.

PREPARED STATEMENT OF KEITH E. BEIER, MAYOR PRO TEM, CITY OF ESCONDIDO, CALIFORNIA, AND MARIE WALDRON, COUNCIL MEMBER, CITY OF ESCONDIDO, CALIFORNIA

SAN DIEGO AREA WATER RECLAMATION PROGRAM

Mr. Chairman and members of the subcommittee, for the seventh straight year, we are pleased to have the opportunity submit this testimony in support of continued funding for the San Diego Area Water Reclamation Program, including the Escondido portion. Let us say again how much we appreciate what you have done for the people of Escondido.

Last year, the Congress provided $13,000,000 for this project, as requested by the Administration. And, as we reported to you last year, with the support we had received through fiscal year 1999 from Congress and the Administration, we were able to move the project forward in full compliance with our agreement with the Bureau of Reclamation. We hope you will be able to provide $10,600,000 for the total project, fully funding the President's fiscal year 2000 Budget Request. We know that the budget caps and the other priorities in the President's budget request place you under enormous fiscal pressure, but we feel confident in asking for full funding because the people of Escondido still need usable water and it is still a fact that our surrounding area is a desert with increasing dependence on reusable water. Let us again point out that we will reclaim and reuse a large amount of the wastewater that we now pump into the Pacific Ocean at a rate of 14,500,000 gallons per day.

THE ESCONDIDO WATER RECLAMATION PROGRAM

As we must continue to report to you, San Diego County, especially the North County where Escondido is located, continues to experience a tremendous population influx that has gone on since the early 1960s. With the population growth that Escondido continues to experience, has come dramatic new economic development, both in the number of new businesses and our existing, historical agriculture industry. All place new demands on our infrastructure and our water supply—both potable and nonpotable. Through local planning and leadership, Escondido continues to attempt to meet the challenge of maintaining a high quality of life for its people, and, with this subcommittee's continued support, can make it a reality.

While our specific program is important to the citizens of Escondido, we remain a key part of the overall water planning effort of San Diego County. As part of the San Diego Area Water Reclamation Program, we are pleased with the increased amount of water that will be made available to the county as a result of this program.

COST AND FUNDING DATA

With respect to the Escondido portion of the project, we are please to report that, through fiscal year 1999, Escondido has spent more than $14,000,000 on design, preliminary studies, environmental documents, right of way purchases and construction of improvements at the Hale Avenue Resource Recovery Facility (HARRF) and reclaimed water pipelines. With your approval, since fiscal year 1994, Bureau of Reclamation funding has reached $3,485,649. Phase I improvements to the HARRF construction is well under way, and Phase II, which includes completion of the im-

provements at the HARRF and construction of the reclaimed water pipelines, pump stations and reservoir, will commence construction in early fiscal year 2000.

We would be remiss in our stewardship of your support if we did not report to you that the cost of the Escondido Regional Water Reclamation Program in 1999 dollars has increased to $76,575,000. This is a sharp increase in the project costs and is a reflection of a robust construction economy in southern California. Region wide construction costs have increased by a magnitude of 20 percent in the last two years.

We are pleased that the California Water Commission again has supported our program as a recommended program, and continue to be thankful for the support of our sister agencies that comprise the San Diego Area Water Reclamation Program. This program has been favorably reviewed by this subcommittee and your counterpart in the other body, the Bureau of Reclamation, the California Water Commission, and regional officials back home in San Diego County.

In closing, we are at the point of making large financial commitments to our water reclamation and redistribution program and would not be able to do so without the past and present support of the Senate and House Appropriations Subcommittees on Energy and Water. And, as our fiscal commitments increase, our dependence upon support from Congress and the Bureau of Reclamation funding increases. Let us again express our thanks and our appreciation for the support you have provided. We respectfully request your continued support, and would be delighted to respond to any questions the Subcommittee may have.

PREPARED STATEMENT OF THE COUNTY OF SAN JOAQUIN AND THE SAN JOAQUIN COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, CALIFORNIA

San Joaquin County, located in the heart of California's central valley, has both a vibrant agricultural economic base and a burgeoning metropolitan growth. Both of these vital elements are vulnerable to the forces of nature. The 1997 flood inundated thousands of acres and threatened our major urban areas. The actual economic loss to the County in 1997 was staggering ($100+ million) and the potential loss due to flooding is enormous. The San Joaquin Area Flood Control Agency (SJAFCA) has been formed and construction is nearly complete (a $70,000,000 investment) to restore the Stockton Metropolitan Area to a 100-year level of flood protection. We have aggressively moved ahead with this work to protect our people in anticipation that a credit for our work would be forthcoming against a Corps-developed project. We are anxiously waiting for the Corps' completion of the Section 211 reimbursement study.

At the other extreme of the weather spectrum, San Joaquin County is very vulnerable to drought-induced water shortages. Due to the export of our water by East Bay Municipal Utility District to the Oakland area and by the Bureau of Reclamation to the CVP, San Joaquin County is deficient of an adequate water supply in quantity and quality. Our groundwater levels dramatically drop during a less-than-average water year. During these drops, the threat of salt water intrusion in our groundwater basin from the Delta is a major concern. Our local water district (Stockton-East Water District) has invested $65,000,000 to allow transfer of Stanislaus River flows to supplement our water supplies, but this project is dependent on the coordinated operation of New Melones Reservoir and local storage capability during wet years. We need to have the Corps complete the feasibility study of the Farmington Dam recharge project in order to increase the yield of the severely limited Stanislaus River supply.

As you can see, we are willing to invest in our future and we will continue to do so. The timely funding of these important studies is crucial to the economic well-being of San Joaquin County. These projects represent studies that need to be conducted in order to resolve problems on flood control, water supply, water quality, groundwater and the environment in San Joaquin County. We need Federal help in several of these projects and we request Federal appropriations during fiscal year 2000 for the following Corps of Engineers and Bureau of Reclamation projects:

U. S. Army Corps of Engineers—General Investigations-Surveys:	
Sacramento and San Joaquin Rivers Comprehensive Study	$3,000,000
Sacramento and San Joaquin Delta Investigations	200,000
San Joaquin River Basin Stockton Metropolitan Area (Section 211) Requesting an Additional $180,000	380,000
San Joaquin River Basin Stockton Metropolitan Area (Farmington Dam)	150,000
San Joaquin River Basin Cosumnes and Mokelumne Rivers	50,000
Port of Stockton and San Joaquin River Channel Deepening	150,000

Bureau of Reclamation:
South Delta Barriers 20,000
Bay-Delta Ecosystem Restoration—CALFED 95,000,000

DETAILED COMMENTS

U.S. Army Corps of Engineers

Sacramento and San Joaquin Rivers Comprehensive Study $3,000,000

The San Joaquin Rivers Comprehensive Study is an ongoing $9,000,000 study of the water resources needs of the San Joaquin and Sacramento Rivers. Flood control and environmental needs will receive equal consideration. We expect setback levees, dredging and re-operation of existing reservoirs will receive a careful review in this study. A status report to Congress is expected to be released this April, which will outline $16,000,000 to $20,000,000 of studies to be performed in future years. The President approved $3,500,000 for fiscal year 1999 and $2,000,000 for fiscal year 2000 for the collective San Joaquin and Sacramento River Basin Studies. At this time, we do not know the exact allocation between each of the basins, although 50–50 seems likely. The State is the cost-sharing partner in these studies.

Sacramento-San Joaquin Delta Investigation $200,000

This is a special study and a regional planning report which addresses multiple resource needs, including flood control, recreation, environmental restoration, navigation, water supply, etc. The California Department of Water Resources is the cost-sharing partner with the CALFED process. To date, field test levee-strengthening methods have been pursued and the study provides input to the CALFED process. The President's budget for this investigation for fiscal year 2000 is $200,000.

San Joaquin River Basin Stockton Metropolitan Area $380,000

Before Federal dollars can be appropriated to reimburse the local agency (up to 75 percent reimbursement), a Section 211 Report must be approved by the Secretary of the Army. The 211 Report should be completed later this year or early next year. The President's fiscal year 2000 budget of $200,000 is adequate to complete the required 211 Report, but an additional $180,000 is required to adequately proceed with the Feasibility Report addressing rural flood control improvements. The Corps' Draft Feasibility Report is due in August 1999 and the Final Feasibility Report is due in March 2000.

San Joaquin River Basin Stockton Metropolitan Area Farmington Dam $150,000

The study costs for this investigation will determine if a Federal interest may exist for a groundwater recharge project and environmental enhancements. The President has included $150,000 in his fiscal year 2000 budget. The current fiscal year 1999 budget includes $400,000. Since this is a feasibility study, all Federal funds must be matched by local funds. The local cost-sharing sponsor for this study will be the Stockton East Water District.

San Joaquin River Basin Cosumnes and Mokelumne Rivers $50,000

A Reconnaissance Study of ecological restoration and non-structural flood control improvements is being performed on the Mokelumne and Cosumnes Rivers. The current fiscal year 1999 funding is $18,000 and the President's fiscal year 2000 budget is $50,000. Separate studies and reports are being prepared by April 1999 for the Cosumnes River (between the Delta and Michigan Bar) and the Mokelumne River (between the Delta and Camanche Reservoir).

Port of Stockton and San Joaquin River Channel Deepening $150,000

This is an ongoing feasibility study which is being performed for dredging and deepening the San Joaquin River channel through the Delta to the port of Stockton to depths of 40 feet. Greater depths will enhance navigation through the Delta to and from the Port. A fiscal year 2000 budget of $150,000 has been proposed to perform the surveys. Please note that this project is not included on the California Water Commission's project listing because it is included in the California Marine Affairs and Navigation Conference (CMANC) listing of projects.

Bureau of Reclamation

South Delta Barriers $20,000

The project provides temporary barriers in the south Delta to improve water quality. The fiscal year 1999 Budget includes funding for $200,000 and the President's

fiscal year 2000 Budget includes funding for $20,000. In order to maintain the temporary program, $20,000 is needed and the California Water Commission may be requested to recommend an increase in funding.

Bay-Delta Ecosystem Restoration $95,000,000

Current year funding is for $143,300,000 and the President's fiscal year 2000 Budget has included $95,000,000. Funds for this program have been used primarily for acquisition of lands, development of habitat, and fishery enhancement/protection improvements. Although we support CALFED's assistance with Woodbridge Irrigation District's efforts of enhancing the Mokelumne River, we are concerned that the overall CALFED program is overlooking the need of surface and groundwater supply requirements within the County of San Joaquin. The CALFED program does not recognize county area of origin protections; and there are no water quality improvement objectives to improve the water quality of San Joaquin County water supplies. There is no documentation of the benefits that will be derived from the expenditure of funds, particularly to displace agricultural lands.

PREPARED STATEMENT OF THE SANTA CLARA VALLEY WATER DISTRICT, SAN JOSE, CALIFORNIA

CALFED BAY-DELTA PROGRAM

Background.—In an average year, half of Santa Clara County's water supply is imported from the San Francisco Bay/Sacramento-San Joaquin Delta estuary (Bay-Delta) watersheds through three water projects: The State Water Project, the federal Central Valley Project, and San Francisco's Hetch Hetchy Project. In conjunction with locally-developed water, this water supply supports nearly 1,700,000 residents in the Santa Clara County, the most important high-tech center in the world. In average to wet years, there is enough water to meet the county's long-term needs. In dry years, however, the county could face a water supply shortage of as much as 100,000 acre-feet per year, or roughly 20 percent of the expected demand. In addition to shortages due to hydrologic variations, the county's imported supplies have been reduced due to regulatory restrictions placed on the operation of the state and federal water projects.

There are also water quality problems associated with using Bay-Delta water as a drinking water supply. Organic materials and pollutants discharged into the Delta, together with salt water mixing in from San Francisco Bay, have the potential to create disinfection-by-products that are carcinogenic.

Santa Clara County's imported supplies are also vulnerable to extended outages due to catastrophic failures such as major earthquakes and flooding. And as demonstrated by the recent flooding in Central Valley, the levee systems can fail and the water quality at the water project intakes in the Delta can be degraded to such an extent that the projects cannot pump from the Delta.

Project Synopsis.—The CALFED Bay-Delta Program is an unprecedented, cooperative effort among federal, state, and local agencies to restore the Bay-Delta. With input from urban, agricultural, environmental, fishing, and business interests, and the general public, CALFED is developing a comprehensive, long-term plan to address ecosystem and water management issues in the Bay-Delta.

Restoring the Bay-Delta ecosystem is important not only because of its significance as an environmental resource, but also because failing to do so will stall efforts to improve water supply reliability for millions of Californians and the state's $700,000,000,000 economy and job base.

Although the CALFED Bay-Delta Program is a long-range planning process, ecosystem restoration is an immediate priority because of the substantial lead time needed to produce ecological benefits. Species in the Bay-Delta continue to be proposed for listing under the Endangered Species Act. Recovery efforts cannot begin until adequate funding becomes available to implement the array of critical ecosystem restoration and water quality projects.

Fiscal Year 1999 Funding.—$75,000,000 was authorized in fiscal year 1999 for CALFED Bay-Delta ecosystem restoration.

Fiscal Year 2000 Funding Recommendation.—It is requested that the Congressional Committee support $95,000,000 in the Administration's fiscal year 2000 Budget to finance early implementation of ecosystem restoration in the Bay-Delta, provide critical improvement in water supply and water quality, and the continuance of final programmatic EIS/EIR.

GUADALUPE RIVER PROJECT

Background.—The Guadalupe River is a major waterway flowing through a highly developed area of San Jose, California. Historically, the river has flooded downtown San Jose and Alviso beyond local prevention capabilities. According to the 1991 General Design Memorandum, estimated damages from a 1 percent flood in the urban center of San Jose are over $526,000,000. The Guadalupe River overflowed in February 1986, January 1995, and March 1995, damaging homes and businesses in the St. John and Pleasant Street areas of downtown San Jose. In March 1995, heavy rains resulted in four separate breakouts along the river, inundating close to 300 homes and business.

Project Synopsis.—In 1971, the local community requested that the U.S. Army Corps of Engineers (Corps) reactivate its earlier study. Since 1972, substantial technical and financial assistance has been provided by the local community through the Santa Clara Valley Water District in an effort to accelerate the project's completion. To date, more than $70,500,000 in local funds have been spent on planning, design, land purchases, and construction, and projects in the Corps' project reach, as well as in reaches downstream of the Corps' limits, have been completed through the local community's efforts.

The Guadalupe River Project received authorization for construction under the Water Resources Development Act of 1986; the final General Design Memorandum was completed in 1992; the local cooperative agreement was executed in March 1992; construction of the first phase of the project was completed in August 1994; construction of the second phase was completed in August 1996. Completion of the last phase in 2002 is dependent on federal funds and mitigation issue resolution.

To achieve a successful, long-term resolution to the issues of flood protection, environmental mitigation, avoidance of environmental impacts, and project maintenance cost, a multi-agency "Guadalupe Flood Control Project Collaborative" was created in 1997. A key outcome of the collaborative process was the signing of the Dispute Resolution memorandum in 1998, which resolved major mitigation issues and allows the project to proceed.

Fiscal Year 1999 Funding.—$7,000,000 was authorized in fiscal year 1999 to continue Guadalupe River Project construction.

Fiscal Year 2000 Funding Recommendation.—Based upon the need to continue construction to provide critical flood protection for downtown San Jose and the community of Alviso, it is requested that the Congressional Committee support $5,000,000 in the Administration's fiscal year 2000 budget for the continuance of construction and mitigation work on the Guadalupe River Flood Protection Project.

UPPER GUADALUPE RIVER PROJECT

Background.—The Guadalupe River is one of two major waterways flowing through a highly urbanized area of Santa Clara County, California. Historically, the river has flooded the central district of San Jose and southern areas beyond local prevention capabilities. According to U.S. Army Corps of Engineers (Corps) 1998 feasibility study, severe flooding in the Upper Guadalupe River's densely populated residential floodplain south of Interstate 280 could potentially cause $280,000,000 in damages.

The probability of a large flood occurring before implementation of flood prevention measures is high. The Upper Guadalupe River overflowed in March 1982, January 1983, February 1986, January 1995, March 1995, and February 1998, causing damage to several residences and businesses in the Alma Street and Willow Street areas. The 1995 floods in January and March, as well as in February 1998, closed Highway 87 and the parallel light-rail line, a major commute artery.

Project Synopsis.—In 1971, the Santa Clara Valley Water District requested the Corps to reactivate its earlier study. From 1971 to 1980, the Corps established the economic feasibility and federal interest in the Guadalupe River only between Interstate 880 and Interstate 280. In light of the 1982 and 1983 floods, the Santa Clara Valley Water District requested that the Corps reopen its study of the Upper Guadalupe River upstream of Interstate 280. The Corps completed a reconnaissance study in November 1989, which established an economically justifiable solution for flood prevention in this reach. The report recommended proceeding to the feasibility study phase, which began in 1990. In January 1997, the Corps determined that the National Economic Development Plan would be sized to only provide a 2 percent or 50-year level of flood protection rather than the 1 percent or 100-year level. The Santa Clara Valley Water District strongly emphasized overriding the development plan's determination, providing compelling reasons for the higher 1 percent or 100-year level of protection. In 1998, the Acting Secretary of the Army did not concur to extend the National Economic Development Plan's 50-year plan to 100 years, re-

sulting in a project that will provide less flood protection, and therefore, be unable to reduce flood insurance requirements and reimbursements, as well as eliminate recreational benefits and increase environmental impacts. The Santa Clara Valley Water District has requested that the costs of providing 50-year and 100-year flood protection be analyzed again during the preconstruction /engineering design phase and figured into the determination of the National Economic Plan.

Fiscal Year 1999 Funding.—$575,000 was authorized in fiscal year 1999 for the Upper Guadalupe River Project to proceed with preconstruction engineering and design.

Fiscal Year 2000 Funding Recommendation.—Based upon the high risk of flood damage from the Upper Guadalupe River and the need to continue preconstruction engineering and design, it is requested that the Congressional Committee support $300,000 in the Administration's fiscal year 2000 budget for the Upper Guadalupe River Flood Protection Project. Statement of

UPPER PENITENCIA CREEK PROJECT

Background.—The Upper penitencia Creek Watershed is located in northeast Santa Clara County, California, near the southern end of the San Francisco Bay. In the last two decades, the creek has flooded in 1980, 1982, 1983, 1986, 1995, and 1998. While the January 1995 flood damaged a commercial nursery, a condominium complex, and a business park, the February 1998 flood damaged many homes, businesses, and surface streets.

The proposed project on Upper Penitencia Creek, from the Coyote Creek confluence to Dorel Drive, will protect portions of the cities of San Jose and Milpitas. The watershed is completely urbanized; undeveloped land is limited to a few scattered agricultural parcels and a corridor along Upper Penitencia Creek. Based on the U.S. Army Corps of Engineers' (Corps) 1995 reconnaissance report, 4,300 buildings are located in the flood prone area, 1,900 of which will have water entering the first floor. The estimated damages from a 1 percent or 100-year flood exceed $121,000,000.

Study Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (Public Law 83–566), the National Resource Conservation Service (NRCS) completed an economic feasibility study (Watershed Plan) for constructing flood damage reduction facilities on Upper Penitencia Creek. Following the 1990 U.S. Department of Agriculture Farm Bill, the NRCS watershed plan stalled due to the very high ratio of urban development compared to agricultural development in the project area.

The Santa Clara Valley Water District requested that the Corps proceed with a reconnaissance study in April 1994 while the NRCS plan was on hold. Funds were appropriated by Congress for fiscal year 1995 and the Corps started the reconnaissance study in October 1994. The reconnaissance report was completed in July 1995, with the recommendation to proceed with the feasibility study phase. The feasibility study, initiated in February 1998, is scheduled for completion in 2001.

Fiscal Year 1999 Funding.—$250,000 was authorized in fiscal year 1999 for the Upper Penitencia Creek Flood Protection Project for project investigation.

Fiscal Year 2000 Funding Recommendation.—Funding Recommendation. Based upon the high risk of flood damage from the Upper Penitencia Creek and the need to proceed with the feasibility study, it is requested that the Congressional Committee support $250,000 in the Administration's fiscal year 2000 Budget for the Upper Penitencia Creek Flood Protection Project. Statement of

LLAGAS CREEK PROJECT

Background.—The Llagas Creek Watershed is located in southern Santa Clara County, California, serving the communities of Gilroy, Morgan Hill and San Martin. Historically, Llagas Creek has flooded in 1937, 1955, 1958, 1962, 1963, 1969, 1982, 1986, 1996, and 1997. The January 1997 flood damaged many homes, businesses, and a recreational vehicle park located in areas of Morgan Hill and San Martin areas where protection is proposed. Overall, the proposed project will protect the floodplain from a 1 percent flood affecting more than 1,100 residential buildings, 500 commercial buildings, and 1,300 acres of agricultural land.

Project Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (PL 83–566), the National Resource Conservation Service (NRCS) completed an economic feasibility study in 1982 for constructing flood damage reduction facilities on Llagas Creek. The NRCS completed construction of the last segment of the channel for Lower Llagas Creek in 1994, providing protection to the project area in Gilroy. The Santa Clara Valley Water District is currently updating the 1982 en-

vironmental assessment work and applying for a U.S. Army Corps of Engineers (Corps) 404 Permit for the project areas in Morgan Hill and San Martin.

Until recently, the Llagas Creek Project was funded through the traditional PL–566 federal project funding agreement with the NRCS paying for channel improvements and the Santa Clara Valley Water District paying local costs including utility relocation, bridge construction, and right of way acquisition. Due to a steady decrease since 1985 of annual PL–566 appropriations, the Llagas Creek Project has not received adequate funding from U.S. Department of Agriculture to complete the PL–566 project. To remedy this situation, the Santa Clara Valley Water District has been working with congressional representatives to legally transfer the construction authority from the Department of Agriculture to the Corps. In order for Congress to support this authorization transfer, the Corps must prepare a decision documents to accompany the request. Using available fiscal year 1999 general investigation funds, the Corps will initiate and complete a Limited Re-evaluation report, which will function as the decision document.

Fiscal Year 1999 Funding.—No federal appropriation received in fiscal year 1999.

Fiscal Year 2000 Funding Recommendation.—Based upon the high risk of flood damage from Llagas Creek, it is requested that the Congressional Committee support the addition of $880,000 in the Administration's budget to continue construction of the Llagas Creek Project.

SANTA CLARA BASIN WATERSHED MANAGEMENT INITIATIVE

Background.—The Santa Clara Basin Watershed Management Initiative was spearheaded in 1996 by the U.S. Environmental Protection Agency, the State Water Resources Control Board, and the San Francisco Bay Regional Water Quality Control Board for the purpose of establishing a practical management process to oversee the effort to balance natural systems with urban development in the Santa Clara Basin. Recognizing the importance of quality of life and diversity, the initiative's goal is to establish an on-going process of managing activities and natural processes to maximize benefits and minimize adverse environmental impacts for the benefit of the community as a whole. The Santa Clara Basin Watershed includes areas in northern Santa Clara County which drain into San Francisco Bay, and portions of Alameda and San Mateo counties.

The initiative will address the integration of activities within the watershed while focusing on water quality protection. Some of the specific issues being addressed include land use and development, water supply, flood management, environmental restoration, and the regulatory process.

The Santa Clara Valley Water District is one of many stakeholders who continue to demonstrate commitment to this multi-year effort by providing funds and actively participating with the initiative's Core Group and Working Group. Providing the initiative's direction, the Core Group includes representatives of the business community, local government, environmental groups, agriculture, resource and regulatory agencies, and other interested stakeholders.

The Initiation phase was completed in December 1996, and the 4-year planning phase has commenced with a watershed assessment report that provides a preliminary assessment of the watershed's condition based on available data. The assessment report is scheduled to be completed in March 2000. A state of the watershed report describing alternatives to managing the watershed is scheduled to be completed in December 2000. The final product of the planning phase will be a comprehensive watershed management plan, incorporating stakeholder input and extensive public outreach, intended to guide watershed activities into the next century as the Santa Clara Basin Watershed Management Initiative moves into its implementation phase.

Section 503 of the 1996 Water Resources Development Act, authorizes the U.S. Army Corps of Engineers (Corps) to provide technical and planning assistance in the development of a watershed plan for the Santa Clara Valley. The Watershed Management Initiative has progressed to the point where the Corps' participation is now necessary for continuing the watershed assessment and addressing pressing regulatory issues.

Fiscal Year 1999 Funding.—No federal appropriation was authorized in fiscal year 1999 for the Santa Clara Basin Watershed Management Initiative.

Fiscal Year 2000 Funding Recommendation.—In order to continue the initiative's progress to date, it is requested that the Congressional Committee support the addition of $300,000 in the Administration's fiscal year 2000 budget to cost-share Santa Clara Basin Watershed Management Initiative work, including conducting a watershed assessment, developing a data management system, identifying project alternatives, and directing stakeholder meetings.

CENTRAL VALLEY PROJECT

Background.—The San Luis Unit of the Central Valley Project is located near Los Banos on the west side of the San Joaquin Valley in Fresno, Kings, and Merced counties. The San Luis Unit is an integral part of the Central Valley Project, delivering water and power supplies from the American, Shasta and Trinity rivers to users located in the service area.

Specific facilities of the San Luis Unit are owned, operated, and maintained jointly with the state of California. These Joint Use Facilities consist of O'Neill Dam and Forebay, San Luis Dam and Reservoir, San Luis Pumping-Generating Plant, Dos Amigos Pumping Plant, Los Banos and Little Panoche reservoirs, and the San Luis Canal. These facilities are essential to the State Water Project's ability to serve numerous agricultural, municipal, and industrial water users in the San Joaquin Valley and Southern California. Funding for the Joint Use Facilities are divided to 55 percent state and 45 percent federal, under provisions of Federal-State Contract No. 14–06–200–9755, December 31, 1961.

Within the Central Valley Project, the Joint Use Facilities of the San Luis Unit are an important link to the San Felipe Division, which serves as the largest source of water imported into the Santa Clara Valley Water District and the San Benito County Water District. All of the Central Valley Project water delivered through the San Felipe Division must be pumped through O'Neill Dam and Forebay and San Luis Dam and Reservoir.

Project Synopsis.—Annual invoices from the state of California for the federal share of operation and maintenance costs average approximately $10,000,000. For several years, federal funding was inadequate to cover the pro-rated federal share of Joint Use Facility costs. The Santa Clara Valley Water District intervened by using the contributed Funds Act to direct a $20,000,000 advance payment of its Central Valley Project capital costs toward an operations and maintenance payment.

As a contractor of both the Central Valley Project and the State Water Project, the Santa Clara Valley Water District hopes to expediently resolve the issue of unreimbursed operations and maintenance expenses. These expenses are carried by the state without interest, seriously impairing the cash flow and financial management of the State Water Project.

In fiscal year 1998, an agreement was reached between the U.S. Bureau of Reclamation and project contractors to provide direct funding for project conveyance and pumping facilities, reducing annual appropriations from approximately $10,000,000 to $3,500,000.

Fiscal Year 1999 Funding.—$3,500,000 was authorized in fiscal year 1999 for operations and maintenance of the San Luis Joint Use Facilities.

Fiscal Year 2000 Funding Recommendation.—Based upon past expenditures, it is requested that the Congressional Committee support $4,525,000 in the Administration's fiscal year 2000 budget to continue operations and maintenance of the San Luis Unit Joint Use Facilities.

SAN JOSE AREA WATER RECLAMATION AND REUSE PROGRAM

Background.—The San Jose Area Water Reclamation and Reuse Program, also known as the South Bay Water Recycling Program, will allow the city of San Jose and its tributary agencies of the San Jose /Santa Clara Water Pollution Control Plant to protect endangered species habitat, meet receiving water quality standards, supplement Santa Clara County water supplies, and comply with a mandate from the U.S. Environmental Protection Agency and the California Water Resources Control Board to reduce wastewater discharges into San Francisco Bay.

The Santa Clara Valley Water District is participating with the city of San Jose in the development of the reclamation and reuse program. Toward this end, the Santa Clara Valley Water District is assisting the city of San Jose by providing financial support and technical assistance, and acting as a liaison for water retailers. The design, construction, construction administration, and inspection of the program's transmission pipeline and Milpitas 1A Pipeline was performed by the Santa Clara Valley Water District under contract to the city of San Jose.

The city of San Jose is the program sponsor for Phase 1, consisting of almost 60 miles of transmission and distribution pipelines, pump stations, and reservoirs. Completed at a cost of $140,000,000, Phase 1 is scheduled for full operation in May 1999 with expected deliveries of 5,000 acre-feet per year of recycled, nonpotable water.

Phase 2 planning is now underway. A study, to be completed in 1999 at a cost of approximately $3,500,000, will provide a master plan for the years 2005 and 2020. Phase 2's near-term objective is to increase deliveries by the year 2005 to 15,000 acre-feet per year.

In 1992, PL 102–575 authorized the Bureau of Reclamation to work with the city of San Jose and the Santa Clara Valley Water District to plan, design, and build demonstration and permanent facilities for reclaiming and reusing water in the San Jose metropolitan service area. The city of San Jose reached an agreement with the Bureau of Reclamation to cover 25 percent of Phase 1's costs, or approximately $35,000,000; however, federal appropriations have not reached the authorized amount.

Fiscal Year 1999 Funding.—$3,000,000 was authorized in fiscal year 1999 for project construction.

Fiscal Year 2000 Funding Recommendation.—It is requested that the Congressional Committee support an additional appropriation of $7,000,000 to the $3,000,000 included in the Administration's fiscal year 2000 budget, for a total of $10,000,000 to fund the Phase 2 study and cover congressionally authorized appropriations for Phase 1 work.

PREPARED STATEMENT OF THE SAN DIEGO, CALIFORNIA, WATER RECLAMATION PROGRAM

The City of San Diego provides water service as well as wastewater collection, treatment and disposal service to a growing metropolitan area of two million people. The City receives 90 percent of its water supply from Colorado River and northern California sources, hundreds of miles distant from the City. Located at the tail end of this extensive aqueduct supply system, San Diego is most vulnerable to outages or reductions in supplies from these sources. In conjunction with its wholesale water supplier, the San Diego County Water Authority, the City is engaged in a long-term effort to reduce regional reliance on imported water supplies. The San Diego Water Reclamation Program is critical to the success of this effort.

The City will have invested over $365,000,000 in water reclamation facilities through this fiscal year, and has programmed another $70,000,000 in fiscal year 2000 to continue these efforts. Upon completion of the water reclamation and recycling projects in the next 20 years, the City will have well over $1,000,000,000 of capital investment in this program. The City's projects include 4 new and one expanded water reclamation plants with a combined capacity of 70,000,000 gallons per day. The 30 mgd North City Water Reclamation Plant has been in operation and delivering reclaimed water to customers since September 1997, and the 7 mgd first phase of the South Bay Water Reclamation Plant is currently under construction. Also included are over 125 miles of reclaimed water distribution system pipelines, and a groundwater project providing for conjunctive use of reclaimed water and other sources of supply.

Section 1612 of Public Law 102–575, the Central Valley Project Improvement Act, authorizes the Secretary of the Department of Interior to provide financial support for water reclamation projects in the San Diego area. The U.S. Bureau of Reclamation is authorized to participate in the planning, design and construction of water reclamation projects serving the San Diego area at a federal cost-share of up to 25 percent. Based on the criteria established by the Bureau of Reclamation regarding funding eligibility, approximately $168,000,000 through this fiscal year, and $193,000,000 of the projected expenditures through fiscal year 2000 are eligible for federal funding. Nearly half of the $1,000,000,000 of projected expenditures over the next 20 years would be eligible for the 25 percent federal funding.

These costs represent a heavy financial burden for the City to bear alone. Federal participation will help make this innovative water supply program a reality. Therefore, the City of San Diego respectfully requests the Committee to recommend appropriating funds in the amount of at least $10,600,000 in fiscal year 2000 for the San Diego region through the Bureau of Reclamation program.

San Diego Area Water Reclamation Program

The San Diego Area Water Reclamation Program is an ambitious, long-term program designed to decrease regional reliance on imported water supplies. The Program is a cooperative effort by the cities of San Diego, Escondido, and Poway; the Otay Water District; the Padre Dam Municipal Water District; the Sweetwater Authority; the Tia Juana Valley County Water District; and San Diego County Water Authority. Together, these agencies have developed a system of interconnected water reclamation projects that will make the best use of existing and planned water reclamation facilities and result in a cost effective and efficient use of local water resources.

When completed, the San Diego Area Water Reclamation Program will serve an area of more than 700 square miles, from the agricultural valleys near the City of

Escondido in the north to the expanding business centers along the international border with Mexico in the south. Ultimately, over 27,000,000,000 gallons (83,000 acre-feet) will be added annually to the region's scarce local water supply, more than doubling the current average local water supply. Facilities to be constructed include up to ten new or expanded water reclamation plants, hundreds of miles of reclaimed water delivery pipeline, and a groundwater project providing for conjunctive use of reclaimed water and other sources of supply.

Implementation of the San Diego Area Water Reclamation Program will produce both economic and environmental benefits. The development of local reclaimed water supplies will provide opportunities for environmental enhancement projects within San Diego County and reduce the demand for imported water from the Sacramento-San Joaquin River Delta, an environmentally sensitive water body of national significance. The availability of a reliable local water supply is also critical to the region's long-term economic health and its ability to attract and retain employers. In the near-term, construction of the reclamation facilities will stimulate the local economy by creating jobs in construction-related industries. After the facilities are completed, many high-wage, high-skill jobs will be created in the operation and maintenance fields.

Construction is already under way or completed for a number of these reclamation facilities. The City of San Diego has completed the construction of its flagship reclamation facility, the 30 mgd North City Water Reclamation Plant. Reclaimed water has been delivered to numerous customers in the North City area and the City of Poway since September 1997. And construction of the City of San Diego's 7 mgd first phase of the South Bay Water Reclamation Plant is under way.

With an annual cost in the range of $900-$1,200 per acre-foot, the San Diego Area Reclamation Program is competitive with the development of new imported or other local water supplies. However, the level of capital investment makes it a heavy financial burden for the local agencies. The vast majority of the capital costs would have to be funded by local ratepayers. The financial feasibility of this ambitious water supply development project, if funded solely with local resources, is questionable. Federal participation would provide the means to ensure the project is constructed and the benefits realized.

City of San Diego Regional Water Reclamation Project

The City of San Diego is undertaking a regional water reclamation program which will ultimately provide over 19,600,000,000 gallons (60,200 acre-feet) of reclaimed water annually to users within the City of San Diego and surrounding communities. The proposed regional reclamation system will include four new and one expanded water reclamation plants: two in northern San Diego, one in central San Diego, and two in southern San Diego near the international border with Mexico. These water reclamation facilities will serve agricultural, commercial, industrial and residential customers through a network of over 125 miles of distribution pipeline, as well as a groundwater recharge and extraction project providing for conjunctive use of reclaimed water and other sources of supply.

Northern/Central Regional Water Reclamation System

The City of San Diego completed construction of its flagship reclamation facility, the 30-million-gallon-per-day (mgd) North City Water Reclamation Plant (North City WRP), in April 1997. The North City WRP could ultimately provide up to 9,800,000,000 gallons (30,000 acre-feet) of reclaimed water annually to meet commercial, industrial and landscape irrigation demands in northern and central San Diego and the southern portions of the neighboring City of Poway. Reclaimed water will be delivered to over 750 user sites via an extensive network of pump stations and pipelines. The City of Poway has completed a portion of its southern reclaimed water distribution system and has been taking deliveries from the North City WRP. Initial users in San Diego include the internationally known Torrey Pines Golf Course, Marine Corps Air Station Miramar, and CalTrans, as well as numerous schools, parks, nurseries and residential homeowner associations. The existing North City reclaimed water distribution system could be extended to the north and the south, and various alternatives are being investigated to replace the previously-planned Water Repurification Project, which has been discontinued by the City.

Construction of the North City WRP created badly needed jobs in San Diego's construction-related industries. The City estimates that this project alone generated 4,400 job-years of work for the local community. Construction of the northern/central distribution system is expected to generate an additional 4,200 job-years of work. Now that the plant is completed, many high-wage, high-skill jobs have also been created in the operation and maintenance fields. The development of a reliable

local water supply will improve the long-term health of the San Diego economy by enhancing the region's ability to attract and retain employers.

A future reclamation plant is planned for the commercial center of San Diego to supplement reclaimed water from the North City WRP. The proposed 8-mgd Mission Valley Water Reclamation Plant (Mission Valley WRP) could provide 1,300,000,000 gallons (4,000 acre-feet) of reclaimed water annually for the irrigation of schools, parks, commercial and tourist facilities, cemeteries, nurseries, golf courses, freeway embankments and street medians. This supplemental source of reclaimed water would allow the North City WRP to serve new customers in the developing communities in northern San Diego.

South Bay Regional Water Reclamation System

Construction of the North City WRP has been followed by the construction of the 7-mgd first phase South Bay Water Reclamation Plant (South Bay WRP) near the international border with Mexico. The Phase I South Bay WRP will provide almost 2,300,000,000 gallons (7,000 acre-feet) of reclaimed water annually to commercial, industrial, and agricultural users in Southern San Diego County. The South Bay WRP and southern distribution system, currently scheduled for completion by 2001, will complement reclamation projects proposed by Otay Water District, the Sweetwater Authority, and the Tia Juana Valley County Water District, as well as potentially providing reclaimed water to Mexico. A future 8 mgd Phase II of the South Bay WRP could provide an additional 2,600,000,000 gallons (8,000 acre-feet) of reclaimed water annually.

A future 12 mgd Otay Valley Water Reclamation Plant is also planned to provide additional reclaimed water supplies for the southern service area.

San Pasqual Regional Water Reclamation and Groundwater Project

The City of San Diego recently completed a comprehensive Water Resource Management Plan for the San Pasqual Valley. The San Pasqual Valley (Valley) is an agricultural preserve located within the incorporated limits of the City of San Diego. The majority of the land is owned by the City of San Diego and is located between the City of Escondido to the north and the community of Rancho Bernardo and City of Poway to the south. Based on recommendations resulting from the Management Plan, San Diego plans to upgrade the existing 1 mgd San Pasqual Reclamation Plant to 5 mgd. The reclaimed water from the treatment facility would provide a reliable and noninterruptible water supply for agricultural irrigation purposes within the Valley and residential and commercial markets within the surrounding community of Rancho Bernardo and the northern region of the City of Poway. The reclaimed water would also be recharged into the 50,000 acre-foot alluvial groundwater basin within the Valley. Groundwater would then be extracted and used as peaking water for the reclaimed system in the summer months, as well as for domestic potable water supply.

The expanded San Pasqual Water Reclamation Plant would include advanced water treatment in addition to tertiary treatment. Injection of the high quality water from the plant would reduce the salinity of the groundwater within the basin. This will enhance sensitive environmental habitats as well as help farmers reliant on groundwater supplies remain economically viable and maintain the San Pasqual Valley's agricultural identity. This groundwater/reuse regional project will add approximately 2,600,000,000 gallons (8,000 acre-feet) annually to local water supplies. Implementation of the project will be subject to funds being made available.

The estimated costs (in 1999 dollars) which are eligible for Bureau of Reclamation Title XVI funding for the City of San Diego Water Reclamation Program are as follows:

Northern/Central Regional Water Reclamation System:	
North City WRP	$52,379,000
North City WRP Demineralization Facilities	10,500,000
Mission Valley WRP	25,541,000
Northern/Central San Diego Distribution System	233,914,000
Subtotal Northern/Central Regional System	322,334,000
South Bay Regional Water Reclamation System:	
South Bay WRP	33,990,000
Southern San Diego Distribution System	25,768,000
Otay Valley WRP	14,880,000
Subtotal South Bay Regional System	74,638,000

San Pasqual Regional Water Reclamation/Groundwater Project	63,854,000
Total City of San Diego Water Reclamation Program	460,826,000

PREPARED STATEMENT OF TIB BELZA, CHAIRMAN, YUBA COUNTY WATER AGENCY

Request

Please appropriate $700,000 for fiscal year 2000 for the U.S. Army Corps of Engineers (USACE) for preconstruction engineering and design for the Yuba River Basin, California, levee flood protection improvements.

Issue

The USACE has completed the Draft Feasibility Report, Yuba River Basin Investigation, California, January 1998. The report identifies federal interest in approximately $26,000,000 of improvements to existing levees. To keep the effort to provide critically needed higher levels of flood protection for the area moving forward, the USACE has identified that they need $700,000 of federal funding in fiscal year 2000. The California State Reclamation Board is on record as supporting this levee improvement work, and the Yuba County Water Agency (YCWA) Board has committed money that is in hand for the local share of this critically needed flood protection work.

Identified Levee Improvements that are Needed

The USACE recommended plan involves constructing or deepening 6.7 miles of slurry walls, deepening 9 miles of interior toe drains and constructing or modifying 9.5 miles of berms along section of the Yuba and Feather Rivers and constructing about 5 miles of slurry walls and berms along the ring levee around the City of Marysville. The proposed work has an overall benefit-cost ratio of 2.6.

Flood Protection Need

The City of Marysville is located at the confluence of two major California Rivers, the Feather and the Yuba. Historically the area on the average has been subject to major floods about every 8.5 years. During the the past 50 years, the area has had five major river floods, resulting in a total of 43 deaths and an estimated total damage cost of $818,000,000 when brought to 1997 dollars. None of these floods have been from levee overtopping, all have been the result of levee failures. The most recent major Yuba County flood in January 1997, took 3 lives, destroyed in excess of 800 homes, flooded 16,000 acres and resulted in the largest evacuation in California history. An estimated 100,000 people were evacuated as a result of this flood. The environmental damage was enormous, including vast destruction of designated habitat for endangered species.

Yuba County has probably done more to provide flood protection for itself than any County in California. Unfortunately Yuba County is consistently in the bottom three counties for per capita income in California. Substantial efforts are continuously being undertaken to bring economic development to the area, but each time progress is being made, another flood occurs, scaring away potential investors.

Congressional Support Leading to Where We Are

In 1988 Congress appropriated $500,000 for a USACE Yuba River Basin Flood Control Reconnaissance Study. The Reconnaissance Study identified federal interest in levee improvements and recommended a Feasibility Study. In 1991 the USACE undertook a $2,100,000 Feasibility Study that ultimately cost $2,600,000. Half the cost of the Feasibility Study was non-federal. The Feasibility Study has identified federal interest in approximately $26,000,000 in levee improvements. The $700,000 being requested is part of the federal share of levee improvement work identified in the recently completed Feasibility Study that has been underway since 1991. Since 1988, $1,800,000 in federal funds and a total of $3,100,000 have been spent identifying the problem. It is now time to move forward with some fixes on the ground.

On behalf of the flood devastated people of Yuba County, I urge that you find a way to provide the USACE with the $700,000 they have identified is needed to keep urgently needed flood protection improvements for our County moving forward. We are grateful for the financial assistance Congress has provided in the past. Thank you.

PREPARED STATEMENT ON BEHALF OF THE NUISANCE FLOODING NEAR THE 3B'S PORTION OF THE BUTTE BASIN OVERFLOW, SACRAMENTO RIVER, BUTTE COUNTY, CALIFORNIA

Gentlemen: This project directly affects properties in Butte, Glenn and Colusa Counties, as well as the Butte Basin Overflow flood relief structure for the Sacramento River.

Nuisance flooding near the 3B's structure, on the Sacramento River north of Ord Ferry Road, has been reported for more than 15 years. Butte County has noted a multiplicity of flooding problems in the area, bounded by the Sacramento River Big Chico Creek, River Road, Little Chico Creek and Ord Ferry Road. Unfortunately, we do not have the resources to define the source of all of the problems or to provide solutions.

The most notable and destructive problem is nuisance flooding that crosses Ord Ferry and River Roads, when the Ord Ferry Gage on the Sacramento River reads between 110, and 114 feet. The Butte Basin flood relief facilities are designed to overflow when the Ord Ferry Gage exceeds 114 feet. This flooding interrupts interstate commerce closing and damaging roads, as well as damaging crops and prohibiting their planting/harvesting in all three counties. This also fills the Butte Basin Overflow facility, which reduces its flood holding capacity when the real flood hits.

Butte County is requesting a Section 205 Reconnaissance Investigation by the Reclamation Board and U.S. Army Corps of Engineers to define the problems and solutions.

If you have any additional questions please contact Stuart Edell, Butte County Public Works, 7 County Center Drive, Oroville, CA 95965, Telephone (530) 538–7266, FAX (530) 538–7683.

PREPARED STATEMENT ON BEHALF OF THE CHEROKEE CANAL, SEDIMENT REMOVAL AND STREAMBED ALTERATION PROJECT, BUTTE COUNTY

Gentlemen: This project affects properties in central Butte County, between Highway 70 at Pentz Road and Highway 162 at Butte Creek.

Changes in environmental policies in the last 10 years have severely attenuated the mining practices, which have abated the excess sediment transport, which is the source of the problem. The sediment is the remains of the hydraulic mining operations by the Cherokee Mine in the late 1800's. Winter storms transport this sediment from the foothills to the flat valley floor where it is deposited in the Cherokee Canal Flood Control Project. The excess sediment fills the flood control facilities, which reduces their capacity and endangers the lives and properties of the resident of Butte County.

The potential loss of prime agricultural land combined with the loss of the Agricultural Experimental Station (the primary source of rice seed in California), and the potential pollution from inundation fertilizers is too great of a hazard to ignore.

Re-institution of environmentally sound mining practices upstream, combined with a downstream excess sediment removal program, is a potential solution. It should reduce the maintenance costs and resolve the downstream problem of repeated disturbances to habitat for excess sediment removal.

Butte County's goal is to request a Reconnaissance Investigation by the Reclamation Board and U.S. Army Corps of Engineers, looking toward an 1135 study.

If you have any additional questions please contact Stuart Edell, Butte County Public Works, 7 County Center Drive, Oroville, CA 95965, Telephone (530) 538–7266, FAX (530) 538–7683.

PREPARED STATEMENT OF THE DEPARTMENT OF WATER AND POWER, CITY OF LOS ANGELES

The Department of Water and Power of the City of Los Angeles (Department) is the largest municipal utility in the United States serving a city of 3,700,000. The Department has traditionally relied heavily on imported sources of water to meet the City's needs. Imported water continues to be a primary supply. However, drought conditions, increased environmental concerns, and limitations on the development of additional supplies have led Los Angeles and other cities to utilize water conservation and water recycling as alternatives to importing more water. The Department's goal is to displace up to 10 percent of the city's water supply needs with recycled water by 2010.

In support of this goal the Department respectfully requests the subcommittee's approval and support of an appropriation of $7,500,000 for the Los Angeles Area

Water Reclamation Program as contained in the President's budget for fiscal year 1999–00. The budgeted amount for the city's East Valley Water Recycling Project (reference Grant Agreement No. 1425–5–FG–30–00070) and for the Terminal Island (Los Angeles Harbor) Water Recycling Project (reference Draft Cooperative Agreement No. 1425–8–FC–30–00031) is $6,580,000. These projects were authorized pursuant to Section 1613 of Public Law 102–575, the Reclamation Projects Authorization and Adjustment Act of 1992. Included within this budget is $920,000 for the West Basin Municipal Water District.

The East Valley project will utilize recycled water to recharge a local groundwater basin to supplement the city's drinking water supply. About 10 of the 13 miles of pipe and over 95 percent of the pump station have been constructed. Over $47,000,000 of the total estimated $55,000,000 have been spent. Construction is scheduled to be completed in April 1999. Project commissioning and testing will start at this time. This is the city's largest water recycling project and the cornerstone of the city's water recycling program.

The Terminal Island (Los Angeles Harbor) Water Recycling Project will provide advanced treatment of tertiary wastewater and a distribution system to deliver recycled water for groundwater recharge, and to industrial and irrigation customers. The treatment plant has been awarded and construction will begin in May 1999. Design of the distribution system is nearly complete. Pipeline construction is scheduled to start in March 1999. The total project cost is estimated to be $52,000,000. The project will begin supplying water to customers by February 2001.

Mr. Chairman, the Department appreciates the opportunity to submit this statement. Thank you for your longstanding support of water recycling projects in Southern California.

PREPARED STATEMENT OF R. L. SCHAFER, SECRETARY/WATERMASTER, TULE RIVER ASSOCIATION, PORTERVILLE, CALIFORNIA

Mr. Chairman and Members of the Committee: The Tule River Association hereby request your consideration of an appropriation of $800,000 in the fiscal year 2000 Federal budget for the United States Army Corps of Engineers for preconstruction engineering and design (PED) of the Tule River, Success Reservoir Enlargement Project. The President's budget for this line item contains $150,000 which is inadequate for an orderly continuation of design of the project.

The Draft Success Reservoir Enlargement Feasibility Study and EIS/EIR are complete, in reproduction and will be issued to the public later this month, March 1999. A public hearing has been scheduled in Porterville, California on April 22, 1999 and a Chief's report to the Congress is scheduled in September 1999. The Success Reservoir Enlargement Project is simplistic in design involving raising of the existing spillway 10 feet and widening the spillway 165 feet.

The enlargement project would provide 28,000 acre-feet of additional storage space in Success Reservoir and increase the flood protection from a 1 in 47 year event to a 1 in 100 year event for the City of Porterville and downstream agricultural lands.

The Corps intends to commence PED in June 1999 and the fiscal year 1999 appropriation bill contains $100,000 for PED. The estimated Corps cost for PED is $1,200,000 which is cost shared 75 percent Federal and 25 percent non-Federal, and results in a Federal cost of $900,000. The Corps has the capability, and as the project is readily designed, PED could be completed in fiscal year 2000 with adequate funding.

The Association urges the subcommittee to support an appropriation of $800,000 in fiscal year 2000 for Corps preconstruction engineering and design of the Success Reservoir Enlargement Project.

PREPARED STATEMENT OF R. L. SCHAFER, DISTRICT ENGINEER CAWELO WATER DISTRICT, BAKERSFIELD, CALIFORNIA

Mr. Chairman and Members of the Committee: The County of Tulare, Cawelo Water District, North Kern Water Storage District and Semitropic Water Storage District request your consideration of an appropriation of $500,000 in the fiscal year 2000 Federal budget for the United States Army Corps of Engineers for feasibility studies for the Poso Creek Stream Group (Deer Creek, White River, Rag Gulch and Poso Creek). The President's budget for the Poso Creek Stream Group Corps general investigation for fiscal year 2000 contains $60,000 which is inadequate.

The Corps of Engineers are currently developing a reconnaissance study of the four streams of the Poso Creek Stream Group for flood control, and it is the opinion

of the local sponsors, identified above, that the Corps will determine that at least two of the stream studies will indicate a Federal interest for continuation of a 50/50 cost sharing feasibility study.

Poso Creek, White River and Deer Creek are uncontrolled streams that continue to devastate agricultural lands and flood the communities of Earlimart, McFarland, Alpaugh and Allensworth. The major arterials State Route 99 and SR 43 have been closed, resulting in the disruption of commerce by time delaying detours for several days, during the past two years due to flooding from the streams under investigation by the Corps.

Since the Corps of Engineers typically expend up to $1,000,000 over a two year period for a feasibility study, the fiscal year 2000 federal appropriation for the Poso Creek Stream Group needs to be $500,000 for an orderly continuation of flood control investigations by the Corps.

The local sponsors urge the subcommittee's appropriation of $500,000 in fiscal year 2000 for Poso Creek Stream Group feasibility studies by the Corps.

PREPARED STATEMENT OF ED HENDERSON, CHAIRMAN, NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

NAPA RIVER FLOOD CONTROL PROJECT

Background

The Napa River is the main waterway into which all tributaries on the Napa Valley flow. The river reaches its highest flow and the main point of concentration of storm water in the heart of the downtown city of Napa. The original town of Napa was established at the head of the navigable Napa River channel in 1848 as its only port for transportation and commerce until the railroad extended from Benicia to Napa in 1902.

The project is located in the city and county of Napa, California. The population in the city of Napa, approximately 67,000 in 1994, is expected to exceed 77,000 by the year 2000. Excluding public facilities, the present value of damageable property within the project flood plain is well over $500,000,000. The Napa River Basin, comprising 426 square miles, ranging from tidal marshes to mountainous terrain, is subject to severe winter storms and frequent flooding. In the lower reaches of the river, flood conditions are aggravated by high tides and local runoff. Floods in the Napa area have occurred in 1955, 1958, 1963, 1965, 1986 (flood of record), 1995 and 1997. Last February, the river rose just above flood stage on three occasions, but subsided before major property damage occurred.

Over the years, the community has expressed a strong desire for increased flood management. Since 1962, twenty-seven major floods have struck the Valley region, exacting a heavy toll in loss of life and property. The flood of 1986, for example, killed three people and caused more than $100,000,000 in damage. The town of Napa is particularly vulnerable to floods: during a typical 100-year flood, more than 325,000 gallons of water flow through the downtown river area per second, with the potential of inundating 2,000,000 square feet of businesses and offices and nearly 3,000 homes.

Flood damage in downtown Napa has recurred in January 1993, January and March 1995, January 1997 and February 1998, resulting in disaster declarations and Damage Survey Reports filed with FEMA, reaffirming the urgent need to implement the cost-effective project. In March 1995 and January of 1997, additional flood disasters occurred and FEMA is reviewing the damage claims.

Damages throughout Napa County totaled about $85,000,000 from the January and March 1995 floods. The floods resulted in 27 business and 843 residences damaged countywide. Almost all of the damages from the 1986, 1995 and 1997 floods within the project area would have been prevented by the project; this was just the latest in a long history of flooding disasters. During the past 36 years of flooding, Napa County residents have suffered devastating loss of lives and livelihoods, and over $542,000,000 in property damage alone. According to the most up-to-date models, uncontrolled flooding over the next 100 years will likely cause $1,600,000,000 worth of property damage.

Locally developed flood measures currently in place provide minimal protection and include levees, floodwalls, pump stations, upstream reservoirs, restrictive flood plain management ordinances, and designated flood evacuation zones. Vast areas of flood plain are restricted to agricultural and open space uses, precluding development that would be damaged by flooding. These local measures still leave most of the city of Napa vulnerable to frequent damaging floods. Congress has authorized flood control projects since 1944, but due to their expense, lack of public consensus

on the design and concern about environmental impacts, a project has never been realized. The most recent Corps of Engineers project plan consisted of a deepening and channelization project. In mid-1995, federal and state resource agencies reviewed the plan and gave notice to the Corps that this plan had significant regulatory hurdles to face.

REVISED PLAN—PROJECT OVERVIEW

In an effort to identify a meaningful and successful plan, a new approach emerged that looked at flood control from a broader, more comprehensive perspective. Citizens for Napa River Flood Management was formed, bringing together a diverse group of local engineers, architects, aquatic ecologists, business and agricultural leaders, environmentalists, government officials, homeowners and renters and numerous community organizations.

Through a series of public meetings and intensive debate over every aspect of Napa's flooding problems, the Citizens for Napa River Flood Management crafted a flood management plan offering a range of benefits for the entire Napa region. The Corps of Engineers served as a partner and a resource for the group, helping to evaluate their approach to flood management. The final plan produced by the Citizens for Napa River Flood Management was successfully evaluated through the research, experience and state-of-the-art simulation tools developed by the Corps and numerous international experts in the field of hydrology and other related disciplines. The success of this collaboration serves as a model for the nation.

Acknowledging the river's natural state, the project utilizes a set of living river strategies that minimize the disruption and alteration of the river habitat, and maximizes the opportunities for environmental restoration and enhancement throughout the watershed. This strategy replaces the former project and now entails flood plain acquisition and restoration, restoration of a geomorphically stable river channel, replacement of bridges and environmentally sensitive stream bank treatment in the urban reaches of the city of Napa.

The revised plan, which provides 100-year protection, has been developed by the Corps with the assistance of the community and its consultants into the Supplemental General Design Memorandum (SGDM) and its accompanying draft Environmental Impact Statement/Environmental Impact Report (SEIS/EIR). These reports were released for public comment in December of 1997 and are now under final review by Corps Headquarters. Land acquisition is planned to begin this spring with a goal of a new construction start in the summer of 2000.

The coalition plan now memorialized in the Corps draft SGDM includes the following engineered components: lowering of old dikes, marsh plain and flood plain terraces, oxbow dry bypass, Napa Creek flood plain terrace, upstream and downstream dry culverts along Napa Creek, new dikes, levees and flood walls, bank stabilization, pump stations and detention facilities, and bridge replacements. The benefits the plan will provide include reducing or elimination of loss of life, property damage, cleanup costs, community disruption due to unemployment and lost business revenue, and the need for flood insurance. The plan will protect access to businesses, public services, and create opportunities for recreation and downtown development, boosting year-round tourism. As a key feature, the plan will improve water quality, create urban wetlands and enhance wildlife habitats.

The plan would protect over 7,000 people and over 3,000 residential/commercial units from the 100-year flood event on the Napa River and its main tributary, the Napa Creek, and the project has a positive benefit-to-cost ration under the Corps calculation. One billion in damages will be saved over the useful life of the project. The Napa County Flood Control District is prepared to meet its local cost-sharing responsibilities for the project. A countywide sales tax, along with a number of other funding options, was approved last year by a two-thirds majority of the county's voters for the local share. Napa is California's third highest repetitive loss community. This plan is demonstrative of the disaster resistant community initiative, as well as the sustainable development initiatives of FEMA and EPA.

PROJECT SYNOPSIS

Fiscal Year 1999 Funding

The 1999 budget included $744,000 to prepare plans and specifications and finalize the Project Cooperation Agreement for the project.

Necessary fiscal year 2000 Funding

Funding for the Napa River Project during 2000 in the amount of $6,500,000 is needed to initiate construction of the project.

Recommendation

Based on continuing high flood risk and severe damage from the Napa River, we request that the Committee support $6,5000,000 to initiate construction of the Napa River Flood Control Project.

PROJECT ELEMENTS

March 1999

The current plan, which is the result of the Coalition effort in concert with the Corps of Engineers, includes land acquisition for river widening, levee and flood wall construction, recreational facilities, open space and an oxbow dry bypass, among other items. The Corps has incorporated the refined design into its key preconstruction documents. Design documents are under final review and the construction drawings are being prepared. The County is negotiating the Project Cooperation Agreement (PCA) with the Corps and is planning to begin acquiring lands this spring. The County is working to ensure that construction of the project will start in fiscal year 2000.

PROJECT COMPONENTS

The following redesigned project components were developed by the Community Coalition, incorporated by the Corps and listed here with a brief description. These components are included in the Corps' final design plan.

Marsh Plain and Flood Plain Terraces

Providing room for rising floodwaters, terraces are natural attributes of all river systems. Two types of terraces are included in the project, beginning near Kennedy Park and extending to the southern end of the oxbow. Marsh plain terraces are submerged during the twice-daily high tide cycles, creating a diverse wetland habitat. Elevated slightly from the marsh plain terraces, flood plain terraces are inundated by floods every several years, providing room for large floods.

New and Restored Wetlands

Through concerted planting efforts and the removal and lowering of levees, the project will create over 650 acres of new wetland habitat, including emergent marsh, riparian and seasonal wetlands.

Bank Stabilization and Protection

Bank stabilization techniques combined with native vegetative cover in both marsh and flood plains; maintenance of existing trees; planting of new trees; the addition of rock bank toe protection and a grade control structure are all included in this component.

Napa Creek Conveyance

Napa Creek conveyance will be increased by the construction of a flood terrace on the north bank of the creek, removal of a number of bridges and the construction of culvert dry bypasses.

Napa River Dry Bypass

A dedicated dry bypass allows the safe flow of excess water and serves as recreational and open space during normal flows, when the river returns to the meandering oxbow.

Napa Creek Bypass Culverts

Two concrete dry bypass culverts will be constructed, each designed to convey 100-year flood flows.

Roadway Bridge Reconstruction

Overall, a total of seven bridges will be removed and replaced to allow the safe passage of water and debris during a 100-year flood.

Pump Stations and Detention Facilities

During large events, the new floodwalls and levees will trap local storm water. The project includes the construction of three pump stations to safely return this water through the floodwall into the Napa River.

Floodwalls

Located at the tops of the riverbanks, floodwalls offer substantial protection from large floods.

NAPA VALLEY WATERSHED MANAGEMENT

Background

The Napa Valley watershed faces many challenges and stresses to its environmental health and flood management abilities. From a healthy river point of view, the Napa River has been on a recovery path since its low point in the 1960's, when the last of the native salmon were taken from the system by severe water pollution and habitat destruction. Steelhead trout have survived as a remnant population of two hundred that is presently in need of higher quality and more extensive spawning areas for recovery to a significant population. Beginning populations of fall run Chinook salmon have taken up residence in the watershed in those few areas available for spawning. While the chemical and wastewater pollution of earlier years has been effectively dealt with, excess sediment is still a critical stress on the salmon population, as it is to the spawning and rearing areas of the river in the estuarine zone upstream of San Pablo Bay, populated by delta smelt, splittail, green sturgeon and striped bass.

The River has been prioritized as an impaired water body by the U.S. EPA and Region II Water Quality Control Board because of the sediment production. The excess sediment generated in the watershed suffocates spawning areas, reduces the stream's flood-carrying ability, fills deep pools, increases turbidity in the stream and estuary, carries with it nutrients that bring significant algae blooms during the summer and fall, and changes the morphological balance of the streams and river toward more unstable conditions.

Over time, both private and public diversions and levees have been constructed in a chaotic way. The accumulated encroachment has constrained the river and its riparian corridor to approximately one third of its optimum morphological width for much of its length. The Napa Valley has also been extensively drained in the last century, eliminating nearly all of the sloughs and extensive wetlands that once covered the valley floor. Combined with increasing agricultural and urban development, the narrowed channel and loss of wetlands has greatly changed the river and its major tributaries, limiting its flood management capabilities. The river now regularly scours extensively on both bed and banks, generating large amounts of sediment that settle in the lower river and estuary, only to be stirred and moved by the tides during the dry season. Loss of tidal wetlands in the lower river due to 70 years of dike construction has resulted in a much smaller area to disperse sediment, exacerbating losses in all types of riverine and estuarine-related complex habitats in the system.

In an effort to address these conditions and to develop local tools for improving natural resource management, Napa County Resource Conservation District is proceeding with a local effort entitled the Napa River Watershed Stewardship program. This project, which has recently received funding through the CALFED Category III Program, is intended to address a broad range of ecological and biological values in the Napa River watershed, including steelhead and salmon populations, and improved wetlands and flood plain functions.

One of the key elements of the program, from the Napa County Flood Control District's perspective, is the watershed monitoring and computer modeling of watershed functions. Their goal is to use these modeling and monitoring efforts to form strategies in developing flood management and restoration approaches for the upper Napa Valley watershed. The overall project is intended to extend the implementation of the recommendations included in the Napa River Watershed Owner's Manual, a framework for watershed management for the Napa River basin. It will address the issues of habitat and fishery degradation, and will enhance and expand riparian, riverine, estuarine, and freshwater aquatic habitats for species. It will provide services to the project collaborators in the form of training, education, computer-assisted design and modeling of enhancement projects, and financial assistance for implementation. It will also provide training in specific project monitoring, as well as general watershed monitoring, to be included in the database and GIS at the Resource Conservation District. Services will be delivered through work with existing and new local tributary stewardship groups throughout the Napa Valley.

The approach to implementation is the Stewardship Watershed Management, which relies on a large degree of participation by landowners and residents of tributary and mainstream regions. The stewardship process has been very successful in developing and supporting local responsibility for natural resources management, with a heavy emphasis on monitoring and adaptive management of the resources based on monitoring feedback. Planning is done using interest-based consensus, with implementation from a wide variety of partners that may vary from one specific project to another. Watershed education exchange typically takes place through existing groups. Project implementation is commonly done by the landowner, wheth-

er public or private with support from the District, rather than by the district on behalf of the landowner.

REQUEST

In an effort to develop a complementary approach to this total effort, the Napa County Flood Control District is seeking that the Napa Valley Watershed Management Study be continued by the Corps of Engineers. The authority for this study is the Northern California Streams Study Authority stemming from the Rivers and Harbors Act of 1962, Public Law 87–874. Specifically, the Napa County Flood Control District is beginning to work closely with the Corps in examining the watershed management needs, including flood control, environmental restoration, storm water retention, storm water runoff management, water conservation and supply and wetlands restoration in the Napa Valley, including the communities of Yountville, St. Helena and Calistoga in Napa County. To ensure maximum utility, the District has requested the Corps to work closely in this effort with the Napa County Flood Control District, the Natural Resources Conservation Service, the Napa County Resource Conservation District, the Napa County Farm Bureau, the California Department of Fish and Game, the local communities, and the Napa River Watershed Task Force, which was recently appointed by the Napa County Board of Supervisors to develop a collaborative process to assess the watershed management needs of the Napa Valley. In particular, the County is requesting the Corps to examine the following issues: Up-Valley communities flood protection strategies;Hillside erosion mitigation strategies in conjunction with the agricultural industry and Groundwater preservation and water supply issues

The study must be conducted in close coordination with the Napa County Resource Conservation District's on-going Napa River Watershed Stewardship Program.

PROJECT SYNOPSIS

Fiscal Year 1999 Funding

Congress appropriated $100,000 to initiate the Napa Valley Watershed Management Study.

Necessary Fiscal Year 2000 Funding

Funding for the Napa Valley Watershed Management Study during fiscal year 2000 in the amount of $100,000 is needed to have the Corps of Engineers continue the study to examine watershed management needs.

PREPARED STATEMENT OF THE CITY OF STOCKTON, CALIFORNIA

The City of Stockton supports the following Corps of Engineers and Bureau of Reclamation water, flood control and fishery projects:

Stockton Metropolitan Area	$200,000
Farmington Dam	150,000
San Joaquin Watershed	2,000,000
Cosumnes and Mokelumne River	50,000
Water Resources Development Act, 1996, Section 206, Aquatic Ecosystem Restoration, Stockton Waterfront	(1)
Port of Stockton and San Joaquin River Channel	150,000
South Delta Barriers	20,000

[1] No additional funds requested.

U.S. CORPS OF ENGINEERS

Stockton Metropolitan Area—$200,000

This project was analyzed by the United States Army Corps of Engineers' (Corps) 1997 Reconnaissance Report, which concluded that there was a Federal interest in a flood project for the Stockton area. During this same period, a levee project was authorized under Section 211 of the Water Resources Development Act of 1996 for the San Joaquin Area Flood Control Agency (SJAFCA) levee project. Before Federal dollars can be appropriated to reimburse SJAFCA (up to 75 percent reimbursement), a Section 211 Report must be approved by the Secretary of the Army. The requirements of this Report, since the project is essentially complete, and the funding of the report (potentially 100 percent local with reimbursement upon completion), are currently under negotiation. The President's budget of $200,000 is adequate to complete the required study if it is determined that the study can be cost-

shared. The local view is that the Reconnaissance Report by the Corps found the project to be highly beneficial and that additional expenditures on studies of nearly constructed projects are unwarranted. The United States Army Corps of Engineers proposes $1,000,000 of additional studies to secure approval of the existing project and to analyze the rural areas for a feasible project. The funding in the President's budget is adequate to allow completion of the studies required. The San Joaquin Area Flood Control Agency will provide local funding for this study. The Corp's draft feasibility report is due in August 1999, and the final feasibility report is due in March 2000.

Farmington Dam—$150,000

The study costs for this investigation will determine if a Federal interest may exist for converting Farmington Dam into a multiple purpose reservoir inclusive of flood control, water supply, groundwater recharge, and environmental enhancement. The President has included $150,000 in his fiscal year 2000 budget. The current fiscal year 1999 budget includes $500,000. Since this is a feasibility study, all Federal funds must be matched by local funds. The sponsor for this study is the Stockton East Water District.

San Joaquin River Watershed—$2,000,000

The San Joaquin River Comprehensive Study is an ongoing $9,000,000 study of the water resource's needs of the San Joaquin and Sacramento Rivers. Flood control and environmental needs will receive equal consideration. We expect setback levees and reoperation of existing reservoirs will receive a careful review in this study. A status report to Congress is expected to be released this April, which will outline $16,000,000 to $20,000,000 of studies to be performed in future years. The President approved $3,500,000 million for fiscal year 1999 and $2,000,000 for both the San Joaquin and Sacramento River Basin studies. At this time, we do not know the exact allocation between each of the basin, although 50–50 seems likely. The State is the cost sharing partner in these studies.

Cosumnes and Mokelumne Rivers—$50,000

A reconnaissance study of ecological restoration and non-structural flood control improvements is being performed on the Mokelumne and Cosumnes Rivers. The current fiscal year 1999 funding is $18,000, and the President's fiscal year 2000 budget is $50,000. Separate studies and report are being prepared by April 1999 for the Cosumnes River (between the Delta and Michigan Bar) and the Mokelumne River (between the Delta and Camanche Reservoir).

Water Resources Development Act, 1996, Section 206, Aquatic Ecosystem Restoration—Stockton Waterfront—No additional funds

The City of Stockton, CalTrans and the Port of Stockton have combined to initiate a study to restore the aquatic ecosystem of the Stockton Waterfront. The assistance of the Corps of Engineers to study, plan and eventually construct improvements will expedite this restoration project. An essential element of the study will be the development of a model of the channel to determine the appropriate level of oxygen required to restore aquatic life and improve water quality conditions in the channel. The channel is currently a dead-end slough, contaminated by urban storm runoff and boating discharges. Potential solutions include the installation of pumps to create flow and/or aeration devices to oxygenate the water. This project will not only improve water quality but significantly complement economic development in downtown Stockton. Additionally, restoring this segment of the lower San Joaquin River is consistent with the objectives of American Heritage Rivers program, a designation recently given by the President to the lower San Joaquin River.

BUREAU OF RECLAMATION

South Delta Barriers—$20,000

The project provides temporary barriers in the south Delta to improve water quality. The fiscal year 1999 budget includes funding for $16,000 and the President's fiscal year 2000 budget includes funding for $20,000.

The City of Stockton conditionally supports the following project:

BUREAU OF RECLAMATION

Bay-Delta Ecosystem Restoration—$95,000,000

Current year funding is for $143,000,000 and the President's fiscal year 2000 budget has included $95,000,000. Funds for this program have been used primarily for acquisition of lands and development of the habitat. We are concerned with the loss of agricultural lands and the lack of accountability with the funds. No docu-

mentation of benefits will be derived from expenditure of funds. This program does not help with water supply. There are no water quality improvement objectives and the program does not recognize area of origin protections.

RESOLUTION NO. 99–0108 STOCKTON CITY COUNCIL

WHEREAS, during the week of March 22, 1999, appropriate committees of the Congress of the United States will conduct hearings to consider federal appropriations for water, flood control, and fishery projects for fiscal year 2000; and

WHEREAS, several projects to be considered at said Congressional hearings will directly impact the City of Stockton and its environs; and

WHEREAS, the expeditious construction of said projects is required to protect the health, welfare and safety of the residents of this area; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON AS FOLLOWS:

1. That the City of Stockton does hereby support the appropriation by the Congress of the United States of funds for fiscal year 2000 for the planning, continuation and completion of flood control and reclamation projects, namely: a. Stockton Metropolitan Area, $200,000; b. Farmington Dam, $150,000; c. San Joaquin River Watershed, $2,000,000; d. Consumnes and Mokelumne Rivers, $50,000; e. Water Resources Development Act, 1996, Section 206, Aquatic Ecosystem Restoration-Stockton Waterfront, No additional funds requested; f. Port of Stockton and San Joaquin River Channel, $150,000; and g. South Delta Barriers, $20,000.

2. That the City of Stockton does hereby support the appropriation by the Congress of the United States of funds for fiscal year 2000, with conditions, namely: a. Bay-Delta Ecosystem Restoration, $95,000,000.

(1) The City of Stockton is concerned that the CALFED Program continues to overlook the need of surface and groundwater supply requirements within the County of San Joaquin.

(2) The City of Stockton is concerned that the CALFED Program does not recognize County area of origin protections and there are no water quality improvement objectives to improve the water quality of San Joaquin County water supplies.

(3) The City of Stockton is concerned that the CALFED Program does not provide documentation of the benefits that will be derived from the expenditure of funds, particularly to displace agricultural lands.

3. That the Statement by the City of Stockton, California, before the Committee on Appropriations, Subcommittee on Energy and Water Development of the Senate and House of Representatives, is hereby approved as the official Statement of the City Council. A copy of said document is attached as Exhibit "A" and incorporated by this reference.

4. That the Mayor is hereby directed to forward a copy of said Statement to the appropriate Congressional Committees and to the City of Stockton's representatives in the Senate and House of Representatives, and the City Manager will monitor and initiate proper follow-up communication and correspondence to reflect the City Council's position.

PASSED, APPROVED and ADOPTED March 2, 1999.

GARY A. PODESTO,
Mayor of the City of Stockton.

ATTEST:
KATHERINE GONG MEISSNER, City Clerk of the City of Stockton

PREPARED STATEMENT OF JIM VENABLE, CHAIRMAN, BOARD OF SUPERVISORS, RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RESOLUTION NO. 99–5 SUPPORTING FEDERAL APPROPRIATIONS FOR FLOOD CONTROL PROJECTS FOR FISCAL YEAR 2000

WHEREAS, the United States House of Representatives Committee on Appropriations, Sub-Committee on Energy and Water Development, and the United States Senate Committee on Appropriations, Sub-Committee on Energy and Water Development are holding hearings to consider appropriations for Flood Control and Reclamation Projects for fiscal year 2000 and have requested written testimony to be submitted to the committees prior to March 31, 1999; and

WHEREAS, the Riverside County Flood Control and Water Conservation District supports the completion of construction for the project to reduce flooding and bank destruction along the Santa Ana River at Norco Bluffs, California; the completion of a feasibility study and initiation of design efforts for a flood control project on

Murrieta Creek, a sub basin of the Santa Margarita River watershed in Riverside and San Diego Counties, California; the initiation of a flood control reconnaissance study for the San Jacinto River; the continuation of construction of the Santa Ana River Mainstem project; and the initiation of construction at Prado Dam; now, therefore,

BE IT RESOLVED by the Board of Supervisors of the Riverside County Flood Control and Water Conservation District in regular session assembled on February 16, 1999, that they support appropriations by Congress for fiscal year 2000 for the following projects:

U.S. Army Corps of Engineers

Santa Ana River at Norco Bluffs: Construction—General	$2,200,000
Murrieta Creek:	
Feasibility Study—Flood Control	232,000
Preconstruction Engineering & Design	100,000
San Jacinto River: Reconnaissance Study—Flood Control & Other Purposes	100,000
Santa Ana River Mainstem: Construction—General	23,000,000
Prado Dam: Construction—General	5,000,000

BE IT FURTHER RESOLVED that the General Manager-Chief Engineer is directed to distribute certified copies of this resolution to the Secretary of the Army, Members of the House of Representatives Committee on Appropriations and Sub-Committee on Energy and Water Development, the Senate Committee on Appropriations and Sub-Committee on Energy and Water Development, and the District's Congressional Delegation—Senators Dianne Feinstein and Barbara Boxer, Congressmen Ron Packard and Ken Calvert, and Congresswoman Mary Bono.

Santa Ana River at Norco Bluffs

The Santa Ana River passes along the northerly border of the City of Norco. The southerly bank of the river is a bluff varying in height from 46 to 96 feet above the streambed, atop which is a residential neighborhood. The floods of January and February 1969 caused flow impingement on the riverbank, which undermined the toe of the slope, causing severe bank sloughing. Although 50 to 60 feet of the bluff retreated to the south, and no improvements were lost, the threat to improvements from future river actions became apparent. The floods of 1978 and 1980 impinged further, causing another 30 to 40 feet of bluff retreat, and the loss of a single family residence.

Section 101(b)(4) of the Water Resources Development Act of 1996 provided for the authorization of the project, dependent upon the project receiving a favorable Chief's Report. On December 23, 1996, the Corps' Chief of Engineers issued a Chief's Report recommending the Norco Bluffs project for construction.

Design of the project by the Corps is nearly complete, and is fully funded. Certain geotechnical design considerations have resulted in an increased cost for the project. We, therefore, are now seeking the Committee's approval of supplemental funding in the amount of $2,200,000 in fiscal year 2000 for completion of construction of the Santa Ana River at Norco Bluffs Bank Stabilization Project. The Riverside County Flood Control and Water Conservation District is fully prepared to meet its cost-sharing obligation.

Santa MargaritA Watershed—Murrieta Creek Feasibility Study

The Santa Margarita Watershed lies in the south and northwesterly areas of Riverside and San Diego Counties, respectively. Murrieta Creek passes through the cities of Murrieta and Temecula in Riverside County, then confluences with Temecula Creek to form the Santa Margarita River which flows into San Diego County, through the Camp Pendleton Marine Base, and into the Pacific Ocean.

Murrieta and Temecula experienced severe flood damage in January 1993, estimated in excess of $10,000,000, from Murrieta Creek overflow. Camp Pendleton also suffered extensive flood damage, estimated at $88,000,000, to facilities and aircraft due to overflow of the Santa Margarita River. For the past several years, a coalition of local citizens, community leaders, environmentalists, and developers have worked closely with the District to identify solutions to the flooding problems within the Murrieta Valley.

A U. S. Army Corps of Engineers Feasibility Study addressing flood control, environmental enhancement, and recreation for Murrieta Creek was initiated in April 1998. We request that the Committee approve $232,000 in fiscal year 2000 appropriations to complete the Feasibility Study for a flood control project on Murrieta Creek within the Santa Margarita Watershed.

Murrieta Creek—Preconstruction Engineering & Design

The District anticipates the Corps completing the Murrieta Creek Feasibility Study in February 2000, and issuing a favorable Chief's Report in May 2000. The Corps will then be in a position to initiate the detailed engineering design necessary to develop construction plans and specifications for a Murrieta Creek Flood Control Project. The District respectfully requests that the Committee approve a fiscal year 2000 appropriation of $100,000 for the Corps to initiate the Preconstruction Engineering and Design phase for a Murrieta Creek Flood Control Project.

San Jacinto River

The 730-square mile San Jacinto River watershed drains into Lake Elsinore in western Riverside County. The San Jacinto River originates in the San Jacinto Mountains and passes through the cities of San Jacinto, Perris, Canyon Lake and Lake Elsinore. The only major flood control structures on the river are levees in the City of San Jacinto built by the Corps of Engineers in the early 1960's. In the 30-mile reach of the river between Lake Elsinore and the City of San Jacinto, only minor channelization exists as the river is characterized by expansive overflow areas, including the Mystic Lake area. The San Jacinto River has caused major flooding damage to agricultural areas and rendered Interstate 215 and several local arterial transportation routes impassable. However, the river is an important resource that provides water supply, wildlife habitat, drainage and recreation values to the region.

The District is requesting that the Corps of Engineers conduct a reconnaissance study of the San Jacinto River between the City of San Jacinto and the City of Lake Elsinore to investigate whether there is a Federal interest in flood control, environmental enhancement, water conservation and supply, recreation and related purposes.

We wish to request that the Committee approve $100,000 in fiscal year 2000 appropriations to undertake a Reconnaissance Study on the San Jacinto River. In fiscal year 1999 the House Committee on Transportation and Infrastructure through Docket No. 2588, directed the Corps to undertake the study, however, the necessary funding was not provided as a part of that Resolution.

Santa ANA River—Mainstem

The Water Resources Development Act of 1986 (Public Law 99–662) authorized the Santa Ana River All River project which includes improvements and various mitigation features as set forth in the Chief of Engineers' Report to the Secretary of the Army. The Boards of Supervisors of Orange, Riverside, and San Bernardino Counties continue to support this critical project as stated in past resolutions to Congress.

The Local Cooperation Agreement (LCA) was signed in December 1989 by the three local sponsors and the Army. The first of five construction contracts started on the Seven Oaks Dam feature in the Spring of 1990. Significant construction has been completed on the lower Santa Ana River Channel and on the San Timoteo Creek Channel. Construction activities on Oak Street Drain and the Mill Creek Levee have been completed. The Seven Oaks Dam construction effort is over 90 percent complete, and proceeding on schedule. We anticipate construction on Seven Oaks Dam to be completed in August of 1999. For fiscal year 2000, an appropriation of $3,000,000 is requested to address various endangered species issues, including that of the San Bernardino Kangaroo Rat, in the Santa Ana River wash in the vicinity of the damsite.

An appropriation of $8,000,000 is being sought to complete construction of "Reach 8", the last remaining segment of the lower Santa Ana River Channel. An appropriation of $5,000,000 is requested to initiate construction of "Reach 9" (immediately downstream of Prado Dam), a section of streambed to receive some floodwall/slope revetment work to protect existing development along its southerly bank. The removal of accumulated sediment within an already completed section of the Santa Ana River Channel near its outlet to the Pacific Ocean, along with much delayed landscaping work, will necessitate a fiscal year 2000 appropriation of $7,000,000 which includes engineering and project management support.

The Prado Dam feature of the Santa Ana River Mainstem project continues to move closer to an eventual construction start. Engineering design for the dam embankment and outlet works is approximately 90 percent complete. Design work has been initiated on the various interior dikes included in the project, and additional design contracts are ready to be let for the balance of engineering work necessary prior to construction. A fiscal year 2000 appropriation of $5,000,000 would allow the Corps to complete its design efforts on the Prado Dam project, including construction plans and specifications in advance of awarding construction contracts.

We, therefore, respectfully request that the Committee support an overall $28,000,000 appropriation of Federal funding for fiscal year 2000 for the Santa Ana River Mainstem project.

PREPARED STATEMENT OF CARL L. BLUM, DEPUTY DIRECTOR, DEPARTMENT OF PUBLIC WORKS, LOS ANGELES COUNTY, CALIFORNIA

Background

Floods are a part of the history of the Los Angeles area. Widespread floods have periodically devastated vast areas of the region and were responsible for taking lives, damaging property and interrupting commerce and trade.

The U.S. Army Corps of Engineers and County of Los Angeles, acting on behalf of the Los Angeles County Flood Control District, have built one of the most extensive flood control systems in the world. Construction of the major elements of the system began in the 1920s and consisted of 20 major dams, 470 miles of open channels, and many other appurtenant facilities. Fifteen of these major dams are owned and/or operated by the County while the remaining five dams (Hansen, Lopez, Santa Fe, Sepulveda and Whittier-Narrows), are owned and operated by the Corps. Since the major segments were completed, it is estimated that the system has prevented $3,600,000,000 in potential flood damage.

Development which occurred after World War II exceeded the projections the Corps used in the 1930s and has increased runoff to the point where, even in a moderate storm, the runoff could exceed the design capacity of portions of the system. For example, the lower Los Angeles River in the City of Long Beach came close to overtopping in 1980 from a 25-year flood. A storm of greater magnitude would have a tremendous impact, both personal and economic, on Los Angeles County, the nation's second largest metropolitan area.

At the request of the County of Los Angeles, the Corps analyzed the adequacy of the existing major flood control facilities serving the Los Angeles basin in the LACDA Review study. In 1990, a project to upsize a portion of the LACDA system received Congressional approval subject to a favorable report by the Chief of Engineers (received in 1995), and signature of the Record of Decision by the Secretary of the Army, which was obtained in July 1995.

The final report by the Corps identified 100-year flood damages totaling $2,250,000,000 covering an 82-square-mile area which houses over 500,000 people. These damages would occur in the heavily-urbanized Los Angeles basin, where adequate protection from a 100-year flood was previously provided.

The LACDA project is a critical modification to existing facilities. Obtaining funds to do the modification is critical for two reasons: The threat of flooding to over one-half million people and the large economic impact FEMA's final Flood Insurance Rate Maps (FIRMs) have on the overflow area that became effective July 6, 1998.

Until the project is completed, any delay in construction will cause great financial hardship on thousands of people, who thought the existing river provided adequate protection and now need to buy flood insurance (an impact as high as $65,000,000 annually).

This project, currently estimated to cost approximately $240,000,000, is scheduled to be completed within the next three years, pending adequate funding. The following table shows the history of federal funding for the project:

Federal fiscal year	Federal funding	Expenditure of federal funding
1994–95	$500,000	Initiation of first construction contract awarded in September 1995
1995–96	11,300,000	Continuation of first contract
1996–97	14,400,000	Completion of first contract and initiation of two contracts awarded in August and September of 1996
1997–98	20,700,000	Completion of contracts awarded in August and September 1996, and initiation of one contract awarded in February 1998
1998–99	50,000,000	Completion of contract awarded in February 1998, and initiation of two new contracts awarded in September and December 1998

Three additional construction contracts will be ready for advertising later this fiscal year and design of the entire project should be completed by the end of 1999.

In order to complete the project within an appropriate schedule in light of the serious flood threat and the devastating financial impacts of the mandatory flood insurance premiums, it is critical to maintain the level of construction activity at $50,000,000 this upcoming fiscal year. As a result, we strongly support the California Water Commission's recommendation for $50,000,000 of Federal funds to continue construction of the LACDA Project.

PREPARED STATEMENT OF DICK LYON, MAYOR, CITY OF OCEANSIDE, CA

The City of Oceanside is pleased to submit this request for appropriation for the City's Mission Basin Brackish Groundwater Desalting Research and Development Project. We would greatly appreciate your assistance in funding this important facility.

The existing Mission Basin Groundwater Desalting Facility has been an unqualified success. Since its completion in 1994, the facility has produced 2,000,000 gallons per day of superior-quality water from previously unusable brackish groundwater. This represents seven percent of the City's daily water supply needs—enough water to serve 4,000 Oceanside households. As our only water source that does not cross major earthquake fault lines, it is also a critically-needed emergency water supply.

The Mission Basin Brackish Groundwater Desalting Research and Development Project will be a genuine win-win project. It will expand the capacity of the facility to 6,200,000 gallons per day, serving twenty-two percent of Oceanside residents. By reducing our dependence on imported water from the Colorado River and the Sacramento-San Joaquin River Delta, Oceanside will be part of the solution to California's water supply dilemma. Closer to home, the project will significantly increase the reliability of our water supply—an essential ingredient in the long-term health of our regional economy. When the facility expansion becomes a demonstrable success, the City will explore the use of reclaimed water injected into the groundwater basin to increase its capacity to 20,000,000 gallons per day.

The cost of the expansion is estimated at $11,600,000. The authorization for this project recommends funding for twenty-five percent of 3,000,000 gallons per day of the 4,300,000 gallon per day expansion. It is estimated that the 3,000,000 gallon per day expansion will cost $8,100,000. Therefore an appropriation of $2,030,000 for the 3,000,000 gallons per day authorization from the Bureau of Reclamation will enable the City to complete the project while reducing the financial impact on rate payers, and will advance the City towards our ultimate goal of producing 20,000,000 gallons per day. The funding will create a ripple effect in Southern California and beyond by demonstrating the efficient use of groundwater desalting technology, stimulating other agencies to develop their own projects. Ultimately, appropriating funds to the City of Oceanside will provide some much-needed relief to the water supply crisis affecting the entire Southwestern United States. Construction is due to begin in mid-1999, and to be complete in 2001.

The City of Oceanside respectfully requests that you appropriate $2,030,000 in the fiscal year 2000 Energy and Water Development Appropriation bill for this project.

The City of Oceanside is requesting appropriations of $2,030,000 in the fiscal year 2000 budget for the Mission Basin Brackish Groundwater Desalting Research and Development Project.

APPROPRIATION REQUEST 1999

The City of Oceanside is requesting appropriations of $2,030,000 in the Fiscal Year 2000 budget for the Mission Basin Brackish Groundwater Desalting Research and Development Project.

Construction cost estimate is $11,600,000.

Benefits to the City of Oceanside and the Southern California Region include the following:

—Provides an emergency water supply for the City and the Camp Pendleton Marine Corps Base.
—Creates a highly reliable water supply, which is critical to the region's long-term economic health and its ability to attract and retain businesses.
—Provides benefits to California and the rest of the nation by reducing the region's demand for imported water from the Colorado River and the environmentally sensitive Sacramento-San Joaquin River Delta.

The existing Mission Basin Brackish Groundwater Desalting Facility.

Background

The City of Oceanside owns and operates a 2,000,000-gallon-per-day facility that recovers and desalts brackish Groundwater from the San Luis Rey Mission Groundwater Basin. Oceanside proposes to expand this facility to 6,300,000 gallons per day.

Water from the Mission Basin was previously considered unusable as a municipal water source due to its high salinity and mineral content.

The current desalting facility produces 2,200 acre-feet of potable water annually—enough water to meet the annual needs of 4,000 households.

Oceanside's local water supply development has received support from many agencies including the State of California, which loaned the City $5,000,000 to build the initial small-scale demonstration project.

PROPOSED BRACKISH GROUNDWATER DESALTING & DEVELOPMENT PROJECT

The project will increase production capacity of the existing desalting facility to 6,300,000 gallons per day, or 6,400 acre-feet per year. This new water supply will be sufficient to meet 22 percent of the City's average annual water supply needs.

The project will benefit Oceanside and the larger San Diego region by creating a local, highly reliable water supply. Unlike imported water, this local water supply does not cross major earthquake fault lines to reach consumers. A reliable water supply is critical to the region's long-term economic health, and its ability to attract and retain businesses.

The project will also serve as a model for other groundwater desalting projects in San Diego County and elsewhere in Southern California. The proposed expansion involves the use of Energy Saving Polyamide (ESPA) reverse osmosis membrane elements. The membranes offer significant savings in both investment and operation expenses that exceed other membrane elements currently on the market.

The Mission Basin Brackish Groundwater Desalting Research and Development Project will use reverse osmosis technology to produce potable water of higher quality than the City's imported water supply.

The reverse osmosis process involves pumping water at high pressure through semi-permeable membranes. Membrane pores are large enough to let water molecules through, but small enough to remove salts, metals, and other dissolved impurities.

—Groundwater pumped from the basin is treated first with chemicals to optimize membrane operations, then filtered.

—The pretreated water then is pumped through the reverse osmosis membranes to remove all but the smallest molecular compounds. Dissolved minerals and other impurities removed by the reverse osmosis membranes are discharged to the City's ocean outfall for disposal.

—The water receives additional chemical treatment to meet drinking water standards before it is added to the City's potable water system.

PREPARED STATEMENT OF DONALD R. KENDALL, PH.D., P.E., GENERAL MANAGER, CALLEGUAS MUNICIPAL WATER DISTRICT

CALLEGUAS MUNICIPAL WATER DISTRICT RECYCLED WATER PROGRAM

Mr. Chairman and members of the Committee, thank you for the opportunity to submit this written testimony on the U.S. Bureau of Reclamation appropriations for fiscal year 2000. The Calleguas Municipal Water District is listed in the Bureau's budget as a "new start" for Title XVI water recycling funding ($1,500,000).

PROJECT DESCRIPTION

A. Main Features

The Calleguas Municipal Water District proposes to implement a regional water reuse program. The principal objectives of the proposed program are: Increase the reliability of water service within the District's service area; Assist in achieving regional solutions to meeting wastewater discharge requirements; Provide necessary facilities to achieve long-term salt balance in the region; and Implement the Calleguas Creek Watershed Plan.

The program is made up of several water recycling projects which include wastewater reclamation and groundwater recovery projects which will use reverse osmosis (RO) technology for demineralization. The treatment facilities will be connected by a Brine Disposal Pipeline designed to collect the concentrated effluent from the various demineralization facilities which are planned.

The source of water for the water recycling projects are eight wastewater treatment plants located throughout the District's service area. The source water for the RO plants will be local brackish groundwater high in total dissolved solids (TDS). Most of the area is underlain by two aquifer systems and generally the upper aquifer system is high in TDS as a result of over extraction, the concentration effects of agricultural use, and discharges from the local publicly owned treatment works (POTW) that percolate to the upper aquifer system.

The water which will be developed through this program will provide a wide range of beneficial potable and non-potable uses and will substantially reduce the region's demand for additional imported water supplies. The time frame for project implementation extends through the year 2020. The individual projects which make up the program include:

Simi Valley Wastewater Reclamation Project.—The project will construct distribution and related facilities to enable the use of recycled water produced at the Simi Valley Water Quality Control Plant. Ultimate project yield is 5,000 AF.

Conejo Creek Diversion Project.—This project will construct distribution and related facilities to enable the reuse of secondary treated wastewater from the City of Thousand Oaks Hill Canyon Wastewater Treatment Plant. The secondary effluent is currently discharged into Conejo Creek, a tributary of Calleguas Creek. The project will construct a diversion structure on Conejo Creek which will be used to diver the treated wastewater for deliveries to Pleasant Valley County Water District and Camrosa Water District. The two Districts will in turn deliver the reclaimed water to their customers for use in agricultural and landscape irrigation applications. The two Districts, which produce a good portion of their supply from the Pleasant Valley Groundwater Basin, will use the recycled water in-lieu of pumped groundwater. In exchange, the groundwater will remain in storage. The ultimate yield of the project is 14,000 AFY.

Camarillo Wastewater Reclamation Project Expansion.—The project will expand the reuse of recycled water form the Camarillo Wastewater Treatment Plant. Recycled water will be used for agricultural and turf irrigation. The ultimate yield of the project is 2,840 AFY.

Oak Park/North Ranch Wastewater Reclamation System Expansion.—The proposed project will expand an existing recycled water distribution system to enable the additional use of recycled water produced at the Tapia Water Reclamation Facility in Los Angels County. The proposed expansion will construct facilities to expan d service to an additional 200 acres within the North Ranch area of Ventura County and will serve recycled water to a 27 hold golf course, two public parks, and about 35 landscape irrigation customers. The additional amount of recycled water which will be used is 750 AFY.

South Las Posas Brackish Groundwater Recovery Project.—This project will construct wells, treatment and distribution facilities to enable the recovery and use of groundwater from the south Las Posas Groundwater Basin. The project will entail the extraction of groundwater, desalination, and the conveyance of the product water to the Calleguas MWD potable water distribution system for further deliver to Calleguas' retail water customers. The ultimate project yield is 5,300 AFY,

West Simi Valley Brackish Groundwater Project.—The project will construct facilities to enable the recovery of groundwater from the western portion of the Simi valley Basin. The extracted and demineralized groundwater will be delivered to Calleguas' potable water distribution system for delivery to C alleguas' retail water customers. The project will convert five existing wells, drill and equip three new wells, construct well collection and transmission pipelines, a reverse osmosis treatment facility and related transmission distribution facilities. The ultimate project yield is 3,400 AFY.

Thousand Oaks Brackish Groundwater Recovery Project.—The proposed project will construct distribution and related facilities to enable the recovery of groundwater from the Thousand Oaks Groundwater basin. This groundwater currently cannot be used either for potable or agricultural applications due to its poor water quality, mostly due to the high mineral content. The project will entail the extraction of groundwater, blending the groundwater with imported water which is of better quality, and the conveyance of the product water to Calleguas' distribution system for further deliver to their retail water customers. The ultimate project yield is 900 AFY.

Regional Brine Line Disposal Facility.—The proposed project will construct facilities to dispose of brine which will be generated through the demineralization of recycled water and brackish groundwater. The proposed pipeline will be a regional facility which will collect the brine from six exi sting major wastewater treatment plants and two proposed groundwater desalination facilities within the Calleguas

service area. The brine will be conveyed via the regional brine line for disposal to the Pacific Ocean via an ocean outfall.

B. Operational Aspects

The Calleguas Recycled Water Program is a series of projects involving wastewater treatment facilities, recycled and potable water distribution facilities, brackish groundwater treatment facilities and a regional brine line. All of these agencies are participating in this regional program: Ventura County Waterworks District No. 8 and No. 1, Southern California Water Company, City of Simi Valley, Metropolitan Water District of Southern California, Pleasant Valley County Water District, Camrosa Water District, City of Thousand Oaks, City of Camarillo, Camarillo Sanitary District, City of Oxnard, Oceanview Municipal Water District, United Water conservation District, City of Port Hueneme, Ventura County Public works Agency, Construction Battalion Center at Port Hueneme, California Water Service Company, Las Virgenes Municipal Water district, Triunfo County Sanitation District, City of Moorpark, and California American Water Company.

C. Schedule

The Recycled Water Program is comprised of several projects most of which will be implemented in phases. It is anticipated that all or most of the projects will be implemented by the year 2010. Three of the projects are in the advanced stages of implementation. For these project, feasibility studies and CEQA compliance documentation have been completed and can, therefore, be implemented in 2000.

D. Project Costs

The capital costs of the proposed program is estimated at $161,350,000 million. Table 1 delineates the program cost by project. A summary of the project cost is as follows:

Simi Valley Wastewater Reclamation Project	$18,600,000
Conejo Creek Diversion Project	23,900,000
Camarillo Wastewater Reclamation Project	4,400,000
Oxnard Wastewater Reclamation Project	97,700,000
OakPark/North Ranch System Expansion	2,200,000
Moorpark Wastewater Reclamation Project	2,400,000
South Las Posas Groundwater Recovery Project	9,100,000
West Simi Valley Groundwater Recovery Project	6,900,000
Thousand Oaks Groundwater Recovery Project	1,500,000
Regional Brine Line	24,100,000

E. Sources and Status of Nonfederal Funding

The potential funding sources which have been identified to finance the implementation of the water recycling program include: $20,000,000 USBR Grant; $20,000,000 Proposition 204 Water Recycling Loan; Recycled Water Sales—Wholesale; Metropolitan Local Projects Program ($35,000,000); Calleguas rates and charges (e.g., connections fees, new demand charges); Certificates of Participation or Water Revenue Bonds; and POTW's contributed funding to avoid nitrification expenses.

WATER SUPPLY

A. Amount of Recycled Water Put to Beneficial Use.

Total ultimate project yield is 54,000 AFY. The recycled water produced from these projects will either be utilized for; agricultural purposes, landscape irrigation, groundwater recharge or direct consumptive use. The irrigation components of the projects increase the overall water supply to the region. In-lieu groundwater replenishment components of the projects will serve two purposes. First, the replenishment of the groundwater basin will aide in the correction of the existing groundwater overdraft problem. Secondly, the groundwater placed in storage will be subsequently recovered and used as a potable supply. The groundwater recovery projects will be put to beneficial use groundwater that would otherwise be unusable due to poor water quality and will therefore, increase the availability and reliability of the region's sources of supply.

B. Describe and Quantify the Demands That Will Be Met With the Recycled Water.

Calleguas is primarily dependent upon the Metropolitan Water District for its water supply. In fact, the District's entire drinking water supply is provided by the California State Water Project.

Since 1964, the Districts population has quadrupled from 138,000 to 520,000 in 1996 (roughly 75 percent of Ventura County's population. Rapid population and eco-

nomic growth has placed additional demands on the District resulting in an increase in annual deliveries from 9,000 AF to in excess of 95,000 AF in the same period. The projected demand for imported supplies in 202 is 148,000 AFY if no additional recycled water projects are implemented and 120,000 AFY if a majority of the proposed projects are implemented. If the proposed projects are fully implemented then Calleguas MWD does not need any additional imported supplies from MWD (e.g., Colorado River and SWP). This is very significant given the issues with the California 4.4 Plan and the CALFED Bay-Delta Program.

C. How Would the Project Reduce Demand on Existing Federal Water Supply Facilities?

Calleguas' only other water supply alternative is the Metropolitan Water District. Metropolitan has two sources of imported supplies, the Colorado River and the Sacramento Bay-Delta. In both watersheds the Federal government through the US Bureau of Reclamation is the primary stakeholder. To the extent Calleguas can lessen its demand for imported water from Metropolitan by developing local supplies, Metropolitan will correspondingly reduce is demand for Federal water through the Colorado River Aqueduct and the Sacramento Bay-Delta.

D. Regional or Watershed Perspective?

The program provides the following water supply and management benefits:

—Enhanced Reliability: By enhancing and preserving the local sources of supply, the program will provide an increased measure of water supply reliability in the event of curtailment of imported water deliveries due to drought or earthquake. This reliability will ensure adequate supplies for thousands of area families and that the region will continue to meet the water needs of various industries. Moreover, the program will guarantee a long-term water supply for agricultural operations in the region.

—Resource Conservation: Groundwater replenishment of the various aquifer systems underlying the Calleguas' service area will alleviate the prevailing overdraft condition and will also aide in the mitigation and prevention of further seawater intrusion.

—Increased Level Of Independence: Since the early 1960's, much of urbanized Ventura County has become exceedingly reliant upon imported water deliveries. The program will assist the region in maximizing beneficial use of local water resources thereby decreasing the region's precarious dependence on unpredictable, imported water deliveries.

—Delta Protection: Development of the program will benefit biological resources in the Sacramento bay-Delta due to reduced demands for imported water. To the degree that recycled water is utilized to supplant imported deliveries, an equivalent amount of water could remain in the Delta to aid in sustaining sensitive species and habitat.

TABLE 1.—CALLEGUAS MUNICIPAL WATER DISTRICT SUMMARY OF WATER RECYCLING PROGRAM, YIELDS AND CAPITAL COSTS

Project Name/Phase	Project Code	Project Yield (AFY)	Estimated Project Capital Costs
WASTEWATER RECLAMATION			
Simi Valley Wastewater Reclamation Project:			
Phase I	RW.01.01	250	$1,500,000
Phase II	RW.01.02	3,250	$15,000,000
Phase III	RW.01.03	1,500	$8,500,000
Subtotal	N/A	5,080	25,000,000
Conejo Diversion Project (Hill Canyon Wastewater Reclamation Project):			
Phase I	RW.02.01	6,000	$16,500,000
Phase II	RW.02.02	8,000	$9,500,000
Subtotal	N/A	14,000	$26,000,000

TABLE 1.—CALLEGUAS MUNICIPAL WATER DISTRICT SUMMARY OF WATER RECYCLING PROGRAM, YIELDS AND CAPITAL COSTS—Continued

Project Name/Phase	Project Code	Project Yield (AFY)	Estimated Project Capital Costs
Camarillo Wastewater Reclamation Project:			
Phase I	RW.03.01	1,710	$1,200,000
Phase II	RW.03.02	1,130	$3,000,000
Subtotal	N/A	2,840	$4,200,000
Oxnard Wastewater Reclamation Project:			
Phase I	RW.04.01	5,000	$45,000,000
Phase II	RW.04.02	5,000	$10,000,000
Phase III	RW.04.03	10,000	$5,000,000
Subtotal	N/A	20,000	$60,000,000
Oak Park/North Ranch Wastewater Reclamation System Expansion: Phase II	RW.05.02	750	$1,750,000
Moorpark Wastewater Reclamation Project:			
Phase I	RW.06.01	757	$3,000,000
Phase II	RW.06.02	953	$3,000,000
Subtotal	N/A	1,710	$3,000,000
Total Wastewater Reclamation	N/A	44,300	$119,950,000
BRACKISH GROUNDWATER RECOVERY PROJECT			
South Las Posas Brackish Groundwater Recovery Project	GW.01.01	5,258	$11,500,000
West Simi Valley Brackish Groundwater Recovery Project	GW.02.01	3,382	$7,100,000
Thousand Oaks Brackish Groundwater Recovery Project	GW.03.01	900	$300,000
Total Brackish Groundwater Recovery Projects	N/A	9,540	$18,900,000
REGIONAL BRINE DISPOSAL			
Regional Brine Disposal Pipeline:			
Phase I	BD.01.01	N/A	$18,250,000
Phase II	BD.01.02	N/A	$4,250,000
Total Regional Brine Disposal Pipeline	N/A	N/A	$22,500,000

PREPARED STATEMENT OF MICHAEL D. ARMSTRONG, GENERAL MANAGER, MONTEREY COUNTY WATER RESOURCES AGENCY (MCWRA)

Mr. Chairman, thank you for the opportunity to provide testimony for inclusion in the hearing record of the fiscal year 2000 Energy and Water Development Appropriations bill. The people of the Salinas Valley in California's 17th Congressional District appreciate your willingness to accept our statements in support of the Castroville Seawater Intrusion Project. I would further like to express our deep appreciation for this Subcommittee's efforts on past Energy and Water Development Appropriations bills. I am pleased to report that the project is complete and operational.

As with the past five years the Monterey County Water Resources Agency has worked diligently to present the Subcommittee with an fiscal year 2000 funding request that is supported by the Administration as well as all the other Small Rec-

lamation Loan Program participants. Through close consultation with the Bureau of Reclamation and other Program participants, we have developed the funding plans that were included in the President's fiscal year 2000 budget for the Public Law 84–984 Small Reclamation Loan Program. I therefore respectively request that the Subcommittee provide the full Administration request for the project of $2,600,000.

This is the sixth year of an eight year fiscal strategy designed to meet the requirements of all the projects in the Program while recognizing the fiscal constraints facing all levels of government. Originally, the Program was to provide all appropriations ($16,500,000) over a three year period. During the past five years this Subcommittee provided $9,264,000 for our project. The current appropriation amount of $2,600,000, when combined with other federal funding which is available from the U.S. Treasury in the amount of $4,550,000 pursuant to the Federal Credit Reform Act of 1990, should yield a total loan amount of $7,150,000 for fiscal year 2000 that will allow the project to proceed on schedule.

The Monterey County Water Resources Agency (MCWRA) is a local government entity formed under the Monterey County Water Resources Agency Act. It is an agency with limited jurisdiction involving matters related primarily to flood control and water resources conservation, management, and development. The Salinas Valley is a productive agricultural area that depends primarily on ground water as a water supply. The combination of the Valley's rich soils, mild climate, and high quality ground water makes this Valley unique among California's most fertile agricultural lands and has earned the Valley the distinction as the "Nation's Salad Bowl". As agricultural activity and urban development have increased in the past forty years, ground water levels have dropped allowing seawater to intrude the coastal ground water aquifers. Seawater intrusion is extensive adjacent to the coast near the town of Castroville. The Castroville Seawater Intrusion Project will provide 19,500 acre-feet of recycled water annually for agricultural irrigation to over 12,000 acres and help solve the seawater intrusion problem by greatly reducing groundwater pumping in the project area. The Castroville Seawater Intrusion Project is an essential component in the MCWRA's plan to deal with basin-wide ground water overdraft and seawater intrusion.

The amount requested in fiscal year 2000, when combined with the additional Treasury portion, is intended to fulfill the Bureau's sixth year loan commitment for assistance to construct the project. As stated above, the funding request that we anticipate is the result of a lengthy and complex financial agreement worked out with the other Loan Program participants and the Bureau. The agreement recognized the tight federal budgetary constraints and represents the absolute minimal annual amount necessary to proceed with the project. The MCWRA has been extremely accommodating of the Bureau's budgetary constraints and has agreed to expend considerable local funds to bridge the federal government's budgetary shortfall. Any additional cuts in federal funding will jeopardize the complex financing plan for the project.

In August 1992, the original loan request was submitted to the Bureau. Subsequent approval was received from the Secretary of the Interior in May 1994. Through extensive discussion and negotiations between the MCWRA and the Bureau, a project financing plan was created. The Bureau made it quite clear that the original provisions in the loan application of full disbursement during the three years of construction could not be met due to federal budget shortfalls. As defined in the repayment contract, the Bureau will disburse funds to the MCWRA over an eight-year period. This means that the MCWRA will receive these funds for five years after the project is operational. The fiscal year 1999 funding provided monies for the second year after completion of the project. The MCWRA had to acquire "bridge financing" to meet the needs of the Castroville Seawater Intrusion Project construction costs. Even though the additional private debt service has increased the project costs, the critical problem of seawater intrusion demanded that the project proceed. The Bureau loan is a crucial link in project funding, and it is imperative that the annual appropriations, even at the planned reduced rate over eight years, continue. Federal appropriations have been received in fiscal years 1995, 1996, 1997, 1998, and 1999 as shown in the table below and must continue in subsequent years in accordance with the negotiated agreement in order for the projects to be successful. The federal funds requested under the Public Law 84–984 program will be repaid by landowners in the Salinas Valley with assessments that are currently in place. The MCWRA has spent approximately $36,000,000 of its own funds getting to this point.

FEDERAL APPROPRIATIONS [1]

[Millions of dollars]

	Received in 1995	Received in 1996	Received in 1997	Received in 1998	Received in 1999	Requested for 2000	Total
CSIP	1.064	1.5	2.0	2.1	2.6	2.6	11.864

[1] Does not include Treasury portion of $9.092 for CSIP.

Mr. Chairman, we urge you and the members of the Subcommittee to give your continued support to the Small Reclamation Program and we urge the inclusion of funds for the Castroville Seawater Intrusion Project. Without your continued support, we will not be able to realize the benefit of the work completed over the past several years and the Salinas ground water basin will continue to deteriorate, creating a significant threat to the local and state economies as well as to the health and welfare of our citizens.

Again, thank you for your support and continued assistance.

PREPARED STATEMENT OF KEITH ISRAEL, GENERAL MANAGER, MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY (MRWPCA)

Mr. Chairman, thank you for the opportunity today to provide this testimony for inclusion in the hearing record on the fiscal year 2000 Energy and Water Development appropriations bill. But most importantly, let me express my sincere appreciation for your continued support for the Small Reclamation Projects Loan Program, and specifically, the funding for the Salinas Valley Reclamation Project. During the past five years, this subcommittee provided $6,500,000 for our project. I am pleased to report that the funds appropriated thus far have been well spent on our project, which began construction in August 1995. The new facility was dedicated in October 1997 with full operation beginning in April 1998, and since full operation, the plant has produced somewhat over 5,000 acre-feet (AF) of recycled water.

The project will ultimately provide 19,500 acre-feet of recycled water per year to land south and west of Castroville where abandonment of wells threatens agricultural production and the loss of a portion of rural America. It will also reduce discharge of secondary treated wastewater to the recently created Monterey Bay National Marine Sanctuary. In addition, the California State Water Resources Control Board specifically indicated its strong support for the Salinas Valley Reclamation Project in a prior letter to the U.S. Bureau of Reclamation.

The Monterey Regional Water Pollution Control Agency (MRWPCA), a joint-powers entity formed under the laws of the State of California, was created in 1971 to implement a plan that called for consolidation of the Monterey Peninsula and northern Salinas Valley wastewater flows through a regional treatment plant and an outfall to central Monterey Bay. The plan also required studies to determine the technical feasibility of using recycled water for irrigation of fresh vegetable food crops (artichokes, celery, broccoli, lettuce, and cauliflower) in the Castroville area. These studies were initiated in 1976 and included a five-year full-scale demonstration of using recycled wastewater for food crop irrigation. California and Monterey County health departments concluded in 1988 that the water was safe for food crops that would be consumed without cooking. Subsequently, the Salinas Valley Seawater Intrusion Committee voted to include recycled water in their plan to slow seawater intrusion in the Castroville area.

In addition, a supplemental water testing program (October 1997 through March 1998) was initiated to confirm the new plant's removal of what are termed "emerging pathogens." These organisms, which include Cryptosporidium, Giardia, Cyclospora, and E. Coli, were not evaluated in the original five-year field study. The results of the follow-up testing program again verified that the water is safe for irrigation of food crops.

As in the past, we have been in close consultation with the Bureau of Reclamation and the other Small Reclamation Projects Loan Program participants in an attempt to provide the Committee with a consensus budget request that has the support of the Administration and the Loan Program participants. Based on these discussions, the Administration requested, with our support and endorsement, sufficient funding for the Salinas Valley Reclamation Project as part of the Bureau of Reclamation's Public Law 84–984 Small Reclamation Projects Loan Program for continuation of loan obligations. This appropriation amount, $1,700,000, when combined with other federal funding which is available from the U.S. Treasury pursuant to the Federal

Credit Reform Act of 1990, will yield a total loan amount that we believe will meet the federal government's commitment for fiscal year 2000. The amount requested, when combined with the additional Treasury portion, is intended to fulfill the Bureau's sixth-year loan commitment for assistance to construct the project.

As I indicated, the funding request is the result of a lengthy and complex financial agreement worked out with the other Loan Program participants and the Bureau. The agreement represents the absolute minimum annual amount necessary to continue with the project. The MRWPCA worked under the premise of accommodating the Bureau of Reclamation's budgetary constraints and is expending considerable local funds to bridge the federal government's budgetary shortfall. Any additional cuts in federal funding will jeopardize the complex financing plan for the project.

The MRWPCA has received Federal Grant and Loan Funds in Federal fiscal year 1995, fiscal year 1996, fiscal year 1997, fiscal year 1998, and fiscal year 1999 through February 4, 1999, as follows:

FEDERAL APPROPRIATIONS [1]

[Millions of dollars]

	Received in 1995	Received in 1996	Received in 1997	Received in 1998	Received in 1999	Requested for 2000	Total
SVRP	.....	2.0	1.5	1.3	1.7	1.7	8.2

[1] Does not include Treasury portion of $6,205,000 for SVRP.

Even though the additional private debt service and bridge financing will increase the project costs, the critical problem of seawater intrusion demands that the project be continued. The Bureau of Reclamation loan is a crucial link in project funding, and it is imperative that annual appropriations continue, even at the planned reduced rate over eight years. The federal funds requested under the Public Law 84–984 program will be repaid by landowners in the Salinas Valley with assessments that are currently in place. Local funds totaling $21,200,000 have already been spent getting to this point.

Mr. Chairman, we urge you and the members of the subcommittee to give your continued support to the Small Reclamation Projects Loan Program, and specifically, funding for the Salinas Valley Reclamation Project. Your support and continued assistance for this critical project is greatly appreciated.

PREPARED STATEMENT OF BRUCE GEORGE, MANAGER, KAWEAH DELTA WATER CONSERVATION DISTRICT

Mr. Chairman and Members of the Subcommittee: My name is Bruce George, and I am the Manager of the Kaweah Delta Water Conservation District in the eastern San Joaquin Valley of California. Thank you for the opportunity to present testimony regarding the fiscal year 2000 budget for the U.S. Army Corps of Engineers.

The President's fiscal year 2000 budget request for the Corps of Engineers includes $582,000 to complete pre-construction engineering and design (PED) of a project to increase the water storage capacity of Terminus Dam at Lake Kaweah in California's San Joaquin Valley. The project would add approximately 43,000 acre-feet of flood control and conservation storage space to Lake Kaweah by raising the Terminus Dam spillway by 21 feet. The estimated total first cost of the project is $35,000,000.

The President's budget also provides $1,680,000 for ongoing operation and maintenance of Terminus Dam in fiscal year 2000. The Kaweah Delta Water Conservation District and its project cosponsors support these PED and operation and maintenance requests.

In addition to the amounts proposed in the President's budget, we respectfully request a General Construction appropriation of $2,500,000 to initiate construction of the Terminus spillway project in fiscal year 2000 and keep the project on schedule.

The Corps of Engineers has been actively studying and planning this modest project for more than 10 years. During that time, the Kaweah Delta Water Conservation District and other local authorities have invested $1,800,000 of their owns funds in the planning and development process. The State of California is committed to be the lead non-federal sponsor of the project. Other local sponsors are the counties of Kings and Tulare, the City of Visalia and the Tulare Lake Basin Water Storage District.

Under the Corps' current schedule, pre-construction engineering and design will be completed in the spring of 2000. With an additional appropriation of $2,500,000, the Corps could begin construction work in the early summer. A commitment of construction funding for fiscal year 2000 would save time and money for all parties by allowing formal cost-sharing agreements to be signed sooner, clearing the way for the expenditure of state and local funds for the acquisition of real estate and valuable environmental mitigation lands.

The California Water Commission supports a $2,500,000 General Construction appropriation for the Terminus Project in addition to the amounts requested in the President's fiscal year 2000 budget for pre-construction and operation and maintenance. The State of California has already appropriated funds for the purchase of mitigation lands, and the state and other non-federal sponsors have budgeted their required funds for fiscal year 2000.

BACKGROUND

The Kaweah Delta Water Conservation District was formed in 1927 to conserve and protect the surface and groundwater of the Kaweah delta. The District serves 337,000 acres, which include the cities of Visalia and Tulare and several other incorporated and unincorporated areas in Kings and Tulare counties. Those two counties consistently rank among the most productive agricultural counties in the nation.

Terminus Dam and Lake Kaweah, located on the Kaweah River three and one-half miles east of the District, was completed in 1962 by the U.S. Army Corps of Engineers. The purpose of the project is to provide storage space for flood protection and irrigation on the Kaweah River. The Conservation District manages the irrigation and flood control releases for Lake Kaweah, as well as assisting in the conjunctive use of the surface and groundwater of the Kaweah delta.

Flooding downstream from the dam occurs when flows from individual creeks blend together and form a sheet flow through urban and agricultural areas. Included in the flooded areas are the communities of Visalia, Farmerville, Tulare, Ivanhoe and Goshen. Since construction of Terminus Dam, 10 damaging floods have occurred, the most recent in 1997 and 1998.

Inadequate flood protection and a long-term groundwater overdraft in the region have created a need for greater reservoir storage space for flood control and irrigation storage. With a maximum capacity of 143,000 acre-feet, Lake Kaweah currently provides a less than 50-year level of flood protection for communities downstream. Raising the spillway at Terminus Dam (by the installation of fuse gates) would increase the reservoir storage capacity by 30 percent, thus providing a much higher level of flood protection for the region.

California's growing population will place ever-increasing demands on its water supply and flood control infrastructure. Improving existing facilities such as Terminus Dam is one of the most economical and environmentally sensitive ways to meet those new demands. It is important for Congress to encourage such projects.

We are grateful for the Committee's continued support of the Terminus project.

PREPARED STATEMENT OF MICHAEL DI GIORGIO, MAYOR, CITY OF NOVATO, CALIFORNIA

Mr. Chairman and Members of the Subcommittee: My name is Michael Di Giorgio, and I am the Mayor of the City of Novato, California, located 20 miles north of San Francisco. Thank you for the opportunity to present testimony regarding the fiscal year 2000 budget for the U. S. Army Corps of Engineers.

The City of Novato requests $600,000 in fiscal year 2000 for Phase II of the Novato Urban Flood Control Project, a Section 205 small flood control project on Rush Creek. Phase II improvements are necessary to maximize the value of the Phase I work, for which Congress earmarked $350,000 in fiscal year 1999.

Once completed, the Rush Creek project will resolve chronic flooding in the downtown area of the City of Novato. Flooding has occurred on Rush Creek in three of the last four rainy seasons, damaging residential and commercial property, local infrastructure, and jeopardizing public safety.

Included in the City's scope of work for Phase II of the Novato Urban Flood Control project is a new culvert under Olive Avenue, flood flow pipes from Olive Avenue to Golden Gate Place, and earth channel dredging from Golden Gate Place to the Caltrans U.S. Highway 101 right-of-way. The City is prepared to cost share this project consistent with the authorization.

The City is optimistic that only one additional year of funding will be necessary, beyond the requested appropriation for fiscal year 2000, to bring Rush Creek flood

flows under control. The total cost for this project is estimated at $2,000,000, including the local share.

BACKGROUND

In the past, the City of Novato has spent over $9,000,000, from property assessments, to pay for local creek improvements and other flood control measures. In 1985, a local election approved benefit assessment funds to finance flood control improvements for the City of Novato. These funds are completely expended with a portion of the work left uncompleted. Until the fiscal year 1999 appropriation, no federal funds had been utilized for those channel improvements in the City.

Currently, the community pays more than $100,000 annually in flood insurance, and 2,958 parcels are located within the special flood hazard area, based on the flood insurance rate maps prepared by the Federal Emergency Management Agency (FEMA). Following completion of the Rush Creek improvements, it is expected that a re-mapping of the FEMA flood insurance maps would reduce the community outlay for flood insurance.

PREPARED STATEMENT OF JOE SERNA, JR., MAYOR, CITY OF SACRAMENTO, CALIFORNIA

On behalf of the City of Sacramento, I would like to thank you for the opportunity to provide testimony to the Senate Appropriations Subcommittee on Energy and Water Development in support of fiscal year 2000 funding for flood control protection projects in Sacramento. First, I would like to express my appreciation to the Subcommittee for its efforts in past years to fund flood protection measures for the City. Sacramento, California, continues to face the highest flood risk in the nation. During the past several years, the Energy and Water Appropriations Subcommittee has recognized the dire need for flood protection in and around the Sacramento area and has provided funds for a variety of previously authorized projects. In order to continue our efforts, we must once again request your support for funding vital Sacramento area flood control projects in fiscal year 2000.

This year, the City of Sacramento is seeking $43,100,000 in federal funding through the U.S. Army Corps of Engineers in order to finance ongoing projects, which are described below and in the enclosed chart. The projects include the so-called "common elements" authorized in the 1996 Water Resources Development Act as well as other projects previously authorized.

The Clinton Administration's fiscal year 2000 budget provides $34,000,000 for these projects, which is $9,100,000 less than the City's request. The major difference is that the Corps of Engineers did not include construction money for the South Sacramento Stream Group Project. If the Congress authorizes a Water Resources Development Act (WRDA) this year, construction money could be used for this important project in fiscal year 2000. The City urgently needs the Subcommittee's leadership and support to obtain our full funding request in order to move forward with these previously authorized projects.

The U.S. Army Corps of Engineers proposed budget for fiscal year 2000 recently submitted to Congress provides $17,000,000 for continuation of construction of the Common Elements Project. This level of funding is necessary to keep the project moving forward and we support the Administration's request. The Common Elements Project is a vital first step in our flood control efforts and full funding to keep this project on track is essential.

The City of Sacramento has been working in cooperation with the Sacramento Area Flood Control Agency (SAFCA) on the construction of bank protection improvements which are vital to correct harmful erosion along the banks of the American River which threatens the integrity of our existing levees. Additional improvements will be needed over the next several years to prevent erosion at other American River sites. This work is already authorized under the Sacramento River Bank Protection Project which is used to fund erosion control projects throughout the Sacramento River System. The President's budget proposes $7,000,000 for the Sacramento River Bank Protection Project, which we fully support and urge the Subcommittee to support.

Due to the significant flood risk along creeks in the South Sacramento area, the U.S. Army Corps of Engineers, submitted the South Sacramento Streams Group Chief's Report to Congress for inclusion in WRDA 1998. We urge the Subcommittee to fund design and construction for this project in the fiscal year 2000 Corps of Engineers' budget.

Under the Corps' Section 205 program, a feasibility study and environmental documentation have been completed for a project that would provide a high degree of

flood protection on Magpie Creek. This year the President has requested $26,900,000 for all Section 205 flood control projects. We urge the Subcommittee to support Section 205 funding in the fiscal year 2000 budget and recommend that the Corps of Engineers be directed to provide sufficient funds for completion of the Magpie Creek project in its distribution of Section 205 funds.

For the American River Watershed (Natomas) improvements which were authorized by Congress in 1992, we are seeking continued construction appropriations in the amount of $4,000,000 for reimbursement to SAFCA for the Federal share of the flood control improvements, as well as $3,900,000 in construction appropriations to complete the Ueda Parkway recreation elements of the project.

The President's Budget for fiscal year 2000 provides for $5,000,000 in Preconstruction, Engineering and Design (PED) funds for the American River Watershed comprehensive plan. The City, SAFCA, and the Reclamation Board and members of our congressional delegation are working diligently on congressional authorization of additional improvements on the American River system as part of the 1999 Water Resources Development Act. Once authorized, the Corps of Engineers will need significant funds to proceed with meaningful design in 2000 and not lose a year in the schedule to implement these improvements. Therefore, we urge the Subcommittee to support $5,000,000 in PED funds for the American River Watershed comprehensive plan.

Once again, thank you for the opportunity to submit this statement and for your consideration of the funding that the City of Sacramento needs to protect its residents. Adequate flood protection is essential in this most flood-prone of American cities. We thank you again for the Subcommittee's commitment in previous years to providing this vital protection, and we ask for your renewed support in assuring its continuation.

FISCAL YEAR 2000 SACRAMENTO AREA FLOOD CONTROL

[In millions of dollars]

Project	Fiscal year 1999 enacted	Fiscal year 2000 city/SAFCA request	Fiscal year admin. request
American River Comprehensive Plan: Funds to continue the planning and design of Sacramento flood protection projects	0.05	5.0	5.0
American River Common Elements: 24 miles of levee improvements along the American River and 12 miles of improvements along the Sacramento River levees, flood gauges upstream of Folsom Dam, and improvements to the flood warning system along the lower American River	15.0	17.0	17.0
South Sacramento Streams: Prevention of flooding of portions of Sacramento from the south, where four creeks convey foothill runoff through urbanized areas into Beach Lake and the Delta	0.9	[1] 4.0	0.5
Mapgie Creek: Authorized under the Corps' Section 205 program, this project will provide a high degree of flood protection on Magpie Creek	1.65	1.7	[2] (26.9)
Sacramento River Bank Protection: Will correct harmful erosion along the banks of the American River which threatens the integrity of the existing levees	10.08	7.0	7.0
American River Watershed (Natomas): Reimbursement to SAFCA for the Federal share of the flood control improvements undertaken by the local project sponsor	9.0	4.0	4.0
American River Watershed (Natomas Recreation, Ueda Parkway): A waterway, bike and pedestrian path that connects all of Sacramento as the recreation component of the recently-completed Natomas Flood Control Project (see above)	0.0	3.9	0.0

FISCAL YEAR 2000 SACRAMENTO AREA FLOOD CONTROL—Continued

[In millions of dollars]

Project	Fiscal year 1999 enacted	Fiscal year 2000 city/SAFCA request	Fiscal year admin. request
Lower Strong & Chicken Ranch Sloughs (DO5 Pump Station): a feasibility study to restore 100-year level of flood protection to Chicken Ranch Slough drainage to the American River	N/A	0.5	0.5
Total	36.68	43.1	34.0

[1] Construction funds assume passage of WRDA in 1999.

[2] Total request for the Corps of Engineers Section 205 programs. No specific earmark is available for Magpie Creek. This funding level is therefore not included in the total.

Prepared Statement of the Metropolitan Water District of Southern California

Chairman Domenici and members of the subcommittee. The Metropolitan Water District of Southern California (MWD) appreciates the opportunity to submit testimony regarding the U.S. Bureau of Reclamation's (Reclamation) and the Army Corps of Engineers' (Corps) fiscal year (fiscal year) 2000 budget, for the Hearing on Energy and Water Appropriations. MWD is a public agency created in 1928 to meet the supplemental water demands of those people living in what is now portions of a six-county region of Southern California. Today, the region served by MWD includes 16,000,000 people living on the coastal plain between Ventura and the international boundary with Mexico. It is an area larger than the State of Connecticut and, if it were a separate nation, would rank in the top ten economies of the world.

Included in our region are more than 225 cities and unincorporated areas in the counties of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura. We provide more than half the water consumed in our 5,200-square-mile service area. MWD's water supplies come from the Colorado River via the district's Colorado River Aqueduct and from northern California via the State Water Project's California Aqueduct.

INTRODUCTION

Our testimony focuses on Reclamation's water resources management and ecosystem restoration programs that are of major importance to MWD and other Southern California water supply agencies. Specifically, MWD strongly recommends your approval of a Reclamation fiscal year 2000 budget that includes full funding for San Francisco Bay-Sacramento/San Joaquin Delta Estuary restoration activities, as requested in the President's budget. We also recommend your approval of the full budget request for Corps participation in these Delta restoration activities. MWD urges your support for adequate federal funding for Reclamation's Colorado River Basin Salinity Control Program that will ensure protection of water quality for this important source of water supply. MWD also urges your support for Reclamation's Endangered Species Conservation/Recovery projects that will provide for conservation of endangered and threatened species and habitat along the lower Colorado River, and provide mitigation for impacts associated with Reclamation's projects. Finally, MWD urges your full support for Reclamation programs that will help stretch existing water resources, such as water reclamation and groundwater recovery projects for Southern California agencies. These programs are essential for regional water supply reliability.

U.S. BUREAU OF RECLAMATION BUDGET

California Bay-Delta Ecosystem Restoration

In 1996, Congress passed the California Bay-Delta Environmental and Water Security Act, which authorized $430,000,000 over three years for ecosystem restoration and water management improvements in the San Francisco Bay-Delta Estuary. The Bay-Delta serves as the hub of California's water system, fueling the State's $750,000,000,000 economy, supplying more than two-thirds of the State's 33,000,000

residents with a portion of their drinking water and irrigating 45 percent of the nation's produce.

Recognizing the importance of the Bay-Delta to California's economic and environmental health, the California voters approved a $1,000,000,000 general obligation bond in November 1996, which contains $600,000,000 for improvements in the estuary.

In 1999, $75,000,000 was appropriated for environmental restoration activities in the Bay-Delta. The Administration's fiscal year 2000 budget request of $95,000,000 represents the first year of broad program implementation for the CALFED Bay-Delta Program. This federal money for the Bay-Delta will fund an array of critical improvements, including habitat restoration, watershed protection, fishery enhancement, water supply reliability and water quality improvement. MWD strongly urges your support for the restoration of one of the largest estuaries in the nation by ensuring the appropriation of these critically-needed funds.

Colorado River Basin Salinity Control

The Colorado River is a large component of the regional water supply and its relatively high salinity causes significant economic impacts on water customers in the MWD's service area, as well as throughout the Lower Colorado River Basin. For this reason, MWD and the Bureau of Reclamation are currently conducting a Salinity Management Study in Southern California. The first phase of the study (completed in February 1997) concluded that the high salinity from the Colorado River causes significant impacts to residential, industrial and agricultural water users. Furthermore, high salinity adversely affects the region's progressive water recycling programs, and is contributing to an adverse salt buildup through infiltration into Southern California's irreplaceable groundwater basins. The second phase of the study is scheduled to be completed in July 1999. Based on a 1988 study, Reclamation estimated that water users in the Lower Basin were experiencing in excess of $750,000,000 in annual impacts from salinity levels in the river in 1995, and that impacts would progressively increase with continued agricultural and urban development upstream of California's points of diversion. As part of the Salinity Management Study, the economic impacts have been refined for MWD's service area and have been submitted to Reclamation for its use in updating its Lower Basin estimate. Droughts will cause spikes in salinity levels that will be highly disruptive to Southern California water management and commerce. The Salinity Control Program has proven to be a very cost-effective approach to help to mitigate the impacts of higher salinity. Continued federal funding of the program is essential.

The Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin states' salinity control efforts, issued its 1996 Review, Water Quality Standards for Salinity, Colorado River System (1996 Review) in June 1996. The 1996 Review found that additional salinity control was necessary beginning in 1994 to meet the numeric criteria in the water quality standards adopted by the seven Colorado River Basin states and approved by the U.S. Environmental Protection Agency, with normal water supply conditions. For the last four years, federal appropriations for Reclamation have not equaled the Forum-identified funding need for the portion of the program the Federal Government has the responsibility to implement. It is essential that implementation of Reclamation's basinwide salinity control program be accelerated to permit the numeric criteria to be met again under average annual long-term water supply conditions, making up the shortfall. To assist in eliminating the shortfall, the Forum once again recommends that Reclamation utilize upfront cost sharing from the Basin states to supplement federal appropriations. This concept has been embraced by Reclamation and is reflected in the President's proposed budget.

The President's proposed fiscal year 2000 budget contains funding of $12,000,000 for implementation of the basinwide program. MWD requests that Congress appropriate $17,500,000 for implementation of the basinwide program, an increase of $5,500,000 from that proposed by the President. This level of funding is necessary to meet the salinity control activities schedule in order to maintain the state adopted and federally approved water quality standards. The Forum supports this level of funding. MWD as well as the Forum supports the level of funding proposed by the President for operation and maintenance of the salinity control units already constructed, and investigations.

Endangered Species Conservation/Recovery

MWD is presently engaged in an innovative partnership with Reclamation and other Department of the Interior agencies, as well as other water, power, and wildlife agencies, environmental organizations, and Indian Tribes in the states of Arizona, California, and Nevada, to develop a multi-species conservation program for

the Lower Colorado River. The program will address the conservation, enhancement, and recovery needs of a broad suite of more than 70 listed and sensitive species and their associated aquatic, wetland, and riparian habitats in the three states, while providing long-term regulatory certainty for all parties. An effort of this nature can only succeed through the development of innovative voluntary public-private partnerships.

MWD encourages your support for Reclamation's participation in the Lower Colorado River Multi-Species Conservation Program. Reclamation's participation in this program has been a valuable asset to the partnership. Funds provided under this project will in part help fund critically needed interim conservation measures for endangered species and their habitats, as well as planning under the long-term conservation program.

The President's budget requests $15,118,000 for fiscal year 2000 to fund programs under the "Endangered Species Conservation/Recovery" activity and $13,540,000 to fund programs under the "Lower Colorado River Ops Program" activity. Included in the former amount are funds to support preservation, conservation, and recovery of native and endangered, threatened, proposed, and candidate species in the Lower Colorado River region. Included in the latter amount are funds to implement measures required by the interim biological opinion on Reclamation's lower Colorado River operations, and develop the multi-species conservation program. MWD strongly supports funding at the requested levels.

National Fish and Wildlife Foundation

The National Fish and Wildlife Foundation (Foundation) facilitates implementation of fish and wildlife mitigation and enhancement programs associated with Reclamation's projects through cost-sharing partnerships with local, state, tribal, and/or nongovernmental organizations. The Foundation is able to leverage federal dollars on at least a 1:1 matching basis.

The Foundation's support for programs like the Lower Colorado River Multi-Species Conservation Program is extremely important to the development of comprehensive solutions to these complex endangered species issues. An effort of this nature can only succeed through the development of innovative voluntary public-private partnerships.

The President's budget requests $1,300,000 for fiscal year 2000, which anticipates a two dollar nonfederal match for each federal dollar. MWD strongly supports the President's requested level of funding.

Water Recycling and Groundwater Recovery

Projects funded under Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102–575) and the Reclamation Recycling and Water Conservation Act of 1996 (Public Law 104–266) as well as the Bureau's Loan Program will greatly improve Southern California's water supply reliability and the environment through effective water recycling and recovery of contaminated groundwater. Implementation of such projects is difficult without combined federal, state and regional assistance for planning, design and construction. MWD expects to contribute about $20,600,000 in fiscal year 2000 to recycled water and groundwater recovery projects in the region, and the State is assisting with low-interest loans. Funding in the fiscal year 2000 budget for previously unfunded projects as well as the continued support for previously-funded projects is a positive step toward realizing regional water supply reliability. MWD urges your full support for the $31,514,000 for Title XVI and $12.425 for the Loan Program in the President's fiscal year 2000 budget, as well as future funding for all Southern California projects that might move forward under the jointly-funded Southern California Comprehensive Water Reclamation and Reuse Study.

Brackish Water Desalination

Metropolitan requests for federal funding, appropriations for desalination activities aimed at developing new and innovative technologies. Technologies to be investigated include innovative pretreatment options such as nanofiltration, ultra low pressure reverse osmosis membranes, and carbon aerogel capacitive deionization (CDI). Brackish water desalination represents a potentially viable alternative to reduce reliance on imported water supplies and minimize the economic impact associated with high salinity water. Current salinity removal technologies are energy-intensive and expensive. Treating Colorado River water to the secondary total dissolved solids (TDS) standard, using conventional membrane technology, can cost $300 or more per acre-foot. These high costs have precluded the widespread implementation of brackish water desalination technologies, especially for large-scale applications. Breakthroughs in desalination technology will offer potential benefits to water utilities with sources impaired by high salinity levels. It is estimated that

$2,000,000 will be required to continue this research being sponsored by Metropolitan and its member agencies.

ARMY CORPS OF ENGINEERS

The Army Corps of Engineers' (Corps) comprehensive civil works program has the capability to contribute to the social, economic, and environmental well-being of California. MWD is primarily interested in the Corps' environmental restoration studies and projects that address the needs of the Bay-Delta Estuary.

The President's proposed fiscal year 2000 budget includes numerous programs in the Corps' South Pacific Division, which includes California. Several ecosystem restoration studies and projects specifically address significant habitat issues at various locations in the Bay-Delta watershed. These ecosystem restoration and flood prevention programs, and the Corps' full participation in CALFED Bay-Delta efforts, represent an important opportunity in the process of developing and implementing a solution to the water resources and environmental problems facing the Bay-Delta Estuary. Corps programs that will contribute to the long-term Bay-Delta solution include environmental restoration studies in the Sacramento and San Joaquin River watersheds, habitat conservation and mitigation elements of flood damage prevention projects, and ecosystem restoration programs.

MWD urges Congress to fully support these Corps programs as the fiscal year 2000 federal appropriations process moves forward.

Thank you for your consideration of our testimony. We believe our comments emphasize the importance of continued funding for Reclamation and Corps' water resources management and ecosystem restoration programs that are critical for water supply reliability in Southern California.

LETTER FROM LAWRENCE M. LIBEU, PRESIDENT, WESTERN COALITION OF ARID STATES

EASTERN MUNICIPAL WATER DISTRICT,
Perris, CA, March 22, 1999.

Hon. PETE V. DOMENICI,
Chairman Senate Appropriations Subcommittee, on Energy and Water Development, Dirksen Senate Office Building, Washington, DC.

DEAR CHAIRMAN DOMENICI AND MEMBERS OF THE SUBCOMMITTEE: As the President of the Western Coalition of Arid States (WESTCAS) and as Chairman of the National Water Resources Association's (NWRA) Water Resources Management Committee, I am writing to urge your support for the $12,425,000 contained in the President's fiscal year 2000 Budget Request for the five projects in the Bureau of Reclamation's Small Reclamation Loan Program. The funding that would be provided will move these projects closer to completion in a timely manner so the Federal Government and the local districts can see a return on the investment regarding this vital infrastructure program.

I appreciate that under the Balanced Budget Agreement between the Congress and the President that every program and the dollars for those programs are looked at with a critical eye in terms of the worthiness of the investment. This is why I am concerned with the trends that I have seen regarding the overall Bureau of Reclamation budget. I believe the Bureau's budget needs to be focused and increased to place a greater emphasis on completing the authorized project and programs that are already on the books.

I want to thank your subcommittee for its past support and would ask that your subcommittee continue to support this valuable program.

Sincerely,

LAWRENCE M. LIBEU,
WESTCAS President.

PREPARED STATEMENT OF STEVE MIKLOS, MAYOR, CITY OF FOLSOM, CALIFORNIA

SECTION 503 WATERSHED RESTORATION PROJECT

Mr. Chairman and Members of the Subcommittee. My name is Steve Miklos and I am the Mayor of the City of Folsom, California, located approximately 25 miles east of Sacramento. Thank you for the opportunity to present testimony regarding the fiscal year 2000 budget for the U.S. Army Corps of Engineers.

The City of Folsom is an historic gold rush town, dating back to the mid-1800s. As such, the storm drainage system in the original portion of the city is inefficient

and unsophisticated at best. The untreated storm runoff from this area flows directly into Lake Natoma and the American River. To study and address needed water quality-related improvements and restoration of the City's urban watershed, the City of Folsom requests $500,000 in fiscal year 2000 to continue a Section 503 Watershed Restoration Project.

The Section 503 funding is necessary for technical, planning and design assistance with the City storm drainage system, which directly impacts water quality in the American River and the Sacramento River watershed. The Sacramento River watershed is specifically authorized in the Water Resources Development Act of 1996 to receive funding under this program. Recent hydrology studies suggest that the existing storm drainage systems in Folsom should be upgraded to handle heavier and sustained water runoff. Left unresolved, these storm drainage problems will continue to pose a threat to water quality in the American River and the Sacramento River watershed. Analysis of the current drainage system will help us determine how to minimize these problems.

Historic Folsom drains by a system of roadside ditches, swales, street culverts, and urban streams that traverse through the area. The hills are steep, and the ground is a mixture of gravels, soils, and granite outcroppings. One major urban stream system has become so interlaced with the above, that it flows under structures, is intertwined with pipes and culverts and, under flood conditions, impacts several properties. This creates problems during heavy rains for numerous residents, businesses, and vehicular traffic, conveying sediment into the river, flooding roadways and neighborhoods. This system drains into Lake Natoma through the historic Powerhouse State Park. Constant erosion has been an ongoing problem in these roadside ditches and yards. Another section of Historic Folsom drains overland through our City Corporation Yard, which includes a landfill, and into Lake Natoma.

In fiscal year 1999, Congress earmarked $100,000 to initiate a Section 503 Watershed Study on these storm drainage problems. Staff has met several times with Corps staff to identify the problem and investigate solutions. The 905b study is underway and is expected to be completed in the summer of 1999.

The City of Folsom has committed over $2,000,000 in local funds for watershed study and storm drainage improvements throughout the community. While this work has greatly improved storm drainage in certain areas, additional work is still needed to restore the urban watershed, so that sediment does not continue to impact the system or Lake Natoma, and provide increased security against water quality degradation by contamination from urban uses.

The City proposed that the U.S. Army Corps of Engineers continue technical, planning and design assistance on a Section 503 Watershed restoration project for the city's storm drainage system for urban watershed restoration and water quality-related improvements. The City is prepared to cost-share work on this project, consistent with the authorization.

PREPARED STATEMENT OF MAYOR GEORGE PETTYGROVE, CITY OF FAIRFIELD, CALIFORNIA

SECTION 205—LEDGEWOOD CREEK PROJECT

Thank you, Mr. Chairman, and members of the committee for this opportunity to speak before you today in support of the City of Fairfield's Ledgewood Creek project. The City of Fairfield appreciates this committee's continuing support for our flood control efforts over the years, and we look forward to working with the committee to continue to improve our flood control infrastructure.

The City requests that this committee provide an earmark of $400,000 for the continuation of the Section 205 Ledgewood Creek Project. This project received $300,000 in funding for fiscal year 1999.

When the U.S. Army Corps of Engineers studied Ledgewood Creek in preparation for design of the Fairfield Vicinity Streams Project improvements, the Corps predicted that Ledgewood Creek could bifurcate and flood Interstate 80 (I–80). On February 3, 1998, the prediction came true. Run-off from the Ledgewood Creek drainage basin could not be contained within the unimproved creek channel and the creek overflowed. From approximately 7:45 a.m. until 12:45 p.m. (roughly five hours), all four westbound lanes of I–80 were closed. Within an hour after the closure, a logjam of cars backed up over 15 miles. Three of the four eastbound lanes were also closed for a portion of the morning due to the flooding. In addition to preventing flooding in I–80, the improvement of Ledgewood Creek from Abernathy Road to the Fairfield

city limits will remove approximately 300 acres of residential, commercial, and industrial property from the FEMA AO flood zone.

The City of Fairfield appreciates the committee's continuing assistance on the Ledgewood Creek project. As you know, our city is one of the fastest growing communities in California. Fairfield's population continues to grow rapidly, and we continue to attract major corporate and industrial development. Fairfield faces new and difficult flood control challenges. Your assistance is greatly appreciated on all of these projects. Thank you.

PREPARED STATEMENT OF MAYOR STEVE MIKLOS, CITY OF FOLSOM, CALIFORNIA

HIGHWAY 50 POND STUDY AND REMEDIATION

Thank you, Mr. Chairman, and members of the committee for this opportunity to speak before you today in support of the City of Folsom's request for a $100,000 earmark for the Bureau of Reclamation to study and remediate the possibly dangerous situation at the Highway 50 Lake Natoma Pond.

Lake Natoma, created by Nimbus Dam and a part of the American River Watershed, is located at Folsom, California. The southern shoreline of the lake crosses beneath Highway 50 and creates a small "pond" south of the highway. This "pond" is actually a relatively still backwater of the lake and apparently suffers from very poor circulation. The Highway 50 pond is in full view of all traffic on the highway and is an unsightly introduction to the Folsom community for residents and visitors. Scum, floating trash and other debris are constantly present on the surface of the water. Further, the pond's status with respect to contaminants, disease, and other water quality threats to both Lake Natoma and the American River are unknown at this time.

This project will provide funding to the Bureau of Reclamation for purposes of investigating the current status of the pond area, causes of the apparent contamination of the pond, and identifying and undertaking remedial work. Without this earmark, it is likely that the pond will continue in its current state or further deteriorate, with unknown effects on Lake Natoma and the American River. I should also point out that the Nimbus Fish Hatchery, the main hatchery on the Lower American River, is located less than a half mile downstream from this obviously contaminated pond.

Mr. Chairman, thank you again for the opportunity to testify regarding the City of Folsom's three important projects before your committee, and I request that the committee view favorably this very important project.

PREPARED STATEMENT OF KARAN MACKEY, CHAIR, BOARD OF SUPERVISORS, COUNTY OF LAKE, CALIFORNIA

Mr. Chairman and Members of the Subcommittee: My name is Karan Mackey, and I am the Chairperson of the Board of Supervisors in Lake County, California. I appreciate this opportunity to present to the Energy and Water Development Subcommittee an urgent request for federal assistance.

The County of Lake requests $2,000,000 in fiscal year 2000 to construct the next phase of the Clear Lake Basin 2000 project, a Section 206 Aquatic Ecosystem Restoration project. Clear Lake in Lake County experiences serious water quality problems as a result of both sewage and sediment discharge directly into the Lake. Phase II of Basin 2000 will improve the quality of water flowing into Clear Lake, Cache Creek-the only outlet for Clear Lake-and, ultimately, the Sacramento River and the delicate Bay-Delta ecosystem.

Lake County has designed and partially implemented the Clear Lake Basin 2000 Initiative. Basin 2000 is a multi-phased watershed restoration effort that recycles wastewater effluent to create wildlife habitat, improve Clear Lake's water quality, and generate geothermal power. The initiative's first phase became operational in 1997.

Lake County has completed has completed a Section 503 Watershed study, include all planning and design work for development of a series wetland sites that will cleanse the water flowing into Clear lake and completely eliminate the discharge of sewage into the Lake. The requested $2,000,000 will begin construction of 300 acres of wetlands out of the 1,000 acres ultimately planned for the project, a wetlands effluent pipeline, and flow control facility to feed water into the wetlands.

With the completion of Phase II, the Clear lake basin 2000 Initiative offers the following benefits: restores 20 percent of the watershed's lost wetlands; eliminates

the last potential wastewater discharge to the Sacramento River, protects local ratepayers from quadrupling of rates that would be needed without wetlands recycling; provides multiple environmental and economic benefits from recycling that would be lost if traditional disposal methods were used instead; and insures compliance with a state-ordered deadline for a new disposal method.

Lake County received funding from the Corps in the last two fiscal years to complete a Section 503 Watershed Study and initiate a Section 206 Aquatic Ecosystem Restoration Project to improve the water quality of Clear Lake. The County contributed significantly to this process, funding much of the engineering and design work with non-federal monies. The Corps of Engineers Preliminary Restoration Plan (PRP) for this restoration project will be completed shortly; the final PRP is expected to follow approximately two months later. Construction could proceed in September 1999 and be in "full swing" next Spring.

The total cost of Phase II is $36,100,000. Seventy-five percent of the funding will come from Lake County, State partners and non-governmental partners. The other 25 percent will come from federal funds through EPA and the Corps of Engineers. Lake County urgently needs a federal commitment in fiscal year 2000 of $2,000,000.

Communities in Lake County, represented by Congressman Mike Thompson, and communities in Yolo County, represented by Congressman Doug Ose, will directly benefit from federal funding for Phase II of the Basin 2000 Initiative. Cache Creek is mostly in Yolo County and it receives the benefits of treated effluent because situated downstream of the constructed pipeline that was the successful result of Phase I.

I thank the Subcommittee for its attention to this urgent request.

PREPARED STATEMENT OF TOM HOLLINGSWORTH, MAYOR, CITY OF RANCHO PALOS VERDES, CALIFORNIA

As your distinguished Subcommittee writes the fiscal year 2000 Energy and Water Resources Appropriations bill, I would like to bring a very important environmental restoration project to your attention.

The Corps of Engineers and the City of Rancho Palos Verdes have been working on a cost-sharing feasibility study to investigate Federal improvements to restore pristine environmental areas along the Pacific coastline since 1995. The President's fiscal year 2000 Budget Request does not contain enough money to perform both pre-construction design and modeling tasks.

I would like to take this opportunity to request that your distinguished Subcommittee include $400,000 in the fiscal year 2000 Budget Request for the continuation of the pre-construction engineering and design. The addition of $200,000 to the proposed budget will allow the modeling to take place in conjunction with preliminary engineering. The City of Rancho Palos Verdes is prepared to commit their portion of the cost-share to complete the study next year.

The area along the Rancho Palos Verdes coastline that is being studied has been severely degraded as a result of landslide movement of material and coastal erosion causing sediment and continuous turbidity that has buried sensitive habitat. The study involves investigations to define landslide and erosion relationships, impacts on the environment and potential restoration benefits. This project should be considered as essential mitigation for large local port projects.

Thank you for the opportunity to submit this request.

PREPARED STATEMENT OF RICHARD AKIN, SUPERVISOR, COUNTY OF SUTTER, CALIFORNIA

FISCAL YEAR 2000 ENERGY & WATER APPROPRIATIONS SUTTER BASIN STUDY

Thank you, Mr. Chairman, and members of the committee for this opportunity to speak before you today in support of the Sutter Basin Study. The County of Sutter appreciates this committee's continuing support for our flood control efforts over the years, and we look forward to working with the committee to continue to improve our flood control infrastructure.

The County of Sutter requests a $300,000 earmark in the fiscal year 2000 Energy & Water Appropriations bill to proceed with the Army Corps of Engineer's General Investigation Reconnaissance Study for the Sutter Basin in Sutter County, California.

Between the west bank of the Feather River, the Sutter Bypass, and the east bank of the Sacramento River, Sutter County contains approximately 220 miles of floodwater retaining levees. The County has repeatedly sustained damages due to

flooding. This area has a long history of flooding which supports the perception that a serious threat to lives and property exists. The County's economy is depressed, at least party due to the reluctance of businesses to locate in an area they perceive to be prone to flooding.

The US Army Corps of Engineers is currently conducting a General Investigation Reconnaissance Study for the Sutter Basin in Sutter County, California, for which Congress provided $100,000 in the fiscal year 1999 Energy and Water Appropriations bill. Sutter County requests an earmark of $300,000 in the fiscal year 2000 Energy & Water Appropriations bill to proceed with the Sutter Basin Feasibility Study. The Study is required to provide an in-depth evaluation of flood control capability and needs, and to identify projects needed to achieve a specified level of protection.

Mr. Chairman, the County of Sutter appreciates the committee's continuing assistance related to flood control in our region. Thank you for the opportunity to appear before your committee.

NATIONWIDE WATER RESOURCE ORGANIZATIONS

PREPARED STATEMENT OF THE NATIONAL WATERWAYS ALLIANCE

As members of the National Waterways Alliance, we appreciate the opportunity to submit this statement in support of adequate funding for the Army Corps of Engineers' civil works program. The Alliance is a coalition of waterway-related associations, industries, and organizations in the agricultural, aluminum, building materials, chemical, coal, fertilizer, iron and steel, paper and wood products, petroleum, and other sectors shipping or receiving products by water transportation. It also includes both shallow- and deep-draft ports, river valley associations, shippers, flood control interests, water recreation and coastal entities, electric utilities, agricultural and electric power cooperatives, maritime labor, dredging operators, shipyards and repair facilities and other waterways services, all serving many millions of producers, customers, and consumers across the country.

As a coalition of waterways interests, we are well aware of the Subcommittee's strong commitment to meeting the Nation's water resources needs, as evidenced by the level of funding provided for civil works programs in the Fiscal Year 1999 Energy and Water Development Appropriations Act. Your commitment to a program of adequate investment in the waterways infrastructure is deeply appreciated, and we urge you to continue to invest the necessary funds to sustain waterways programs in a realistic, responsible manner.

We are concerned, however, with the lack of necessary support for civil works evidenced in the President's fiscal year 2000 budget request. The great stride forward taken by your Subcommittee last year in providing a more reasonable funding level would be erased should the fiscal year 2000 budget request be adopted. The proposed level of funding of $3.9 billion assumes collection of some $950 million from the still-to-be-submitted Harbor Services Fund proposal. This is a budgetary gimmick relying upon a legislative measure yet to be revealed—a dangerous assumption that poses a substantial threat to fulfillment of civil works missions.

AN IMBALANCED FISCAL YEAR 2000 BUDGET REQUEST

Most of the increase in the fiscal year 2000 budget request is earmarked for deep-draft port maintenance and construction, which is dependent upon revenue to be transferred from the Harbor Maintenance Trust Fund, contingent upon enactment of the proposed Harbor Services Fee. Other civil works missions, principally inland navigation and flood control, are funded at roughly two-thirds of what is needed for efficient program operation.

The level of funding requested for civil works activities would endanger our ability to continue an effective waterborne transportation system. The construction program, for instance, is funded at $1.239 billion, which is some $200 million below fiscal year 1999 appropriations. This downward trend in spending would stretch out construction schedules, adding to project costs and delaying the realization of project benefits, and also increase the already substantial backlog of necessary rehabilitation. Lack of a modern, first-class navigation system already places agricultural producers, miners, and forestry workers, among others, at risk of losing global markets. Although budgeted at a higher level, the operations and maintenance program is still underfunded, with a backlog of at least $1.5 billion in deferred maintenance. Also, many worthy flood control projects would see reductions in funding or simply cease to be funded, a dangerous gamble with billions of dollars of potential damages.

Of additional concern is the general investigations category, the vehicle through which new projects are considered and studied. The President's budget request reduces this category by $20 million from last year's appropriated level and only recommends one new reconnaissance study. In testimony before the Senate Appropriations Subcommittee on Energy and Water Development, Administration witnesses stated that the Army Corps of Engineers had recommended 90 new starts in the general investigations category! Without this critical step, many meritorious new projects may never be considered.

REALISTIC CIVIL WORKS FUNDING

Waterways-related industries strongly support a more realistic funding level of $4.7 billion for civil works activities in fiscal year 2000. This level would continue the progress made by this Subcommittee in its fiscal year 1998 and fiscal year 1999 appropriations and allow the Army Corps of Engineers to honor its commitments to local communities, ports and harbors, inland navigation and other water resources interests. Most of these demands are imposed by legislation and by cost-sharing commitments with non-Federal sponsors. Further, a $4.7 billion program can be fully justified as a prudent investment in helping the Corps of Engineers to maintain navigation, prevent floods, ensure dependable water supplies, facilitate water recreation, promote environmental restoration and meet other program needs.

Adequate investment in civil works programs positively impacts the country's economic development and global competitiveness. The U.S. waterways system includes 1,500 miles of deep-draft channels with 300 ports capable of handling ocean-going vessels along the Atlantic, Gulf, and Pacific Coasts as well as the Great Lakes. In addition, the inland waterways consist of 12,000 miles of mainstem navigable waterways. This vast network of shallow-and deep-draft navigation channels provides a reliable and efficient water transportation system that, in 1997, carried 2.3 billion tons of domestic and foreign commerce including 60 percent of U.S. grain exports, 23 percent of chemical movements, and 20 percent of coal shipments. These and other commodities that move on the waterways are the building blocks of our economy. Water transportation supports the economies of many regions of the country and keeps U.S. products competitive in international markets.

Also, in the last half-century, Corps of Engineers' flood control projects have prevented nearly $500 billion in river and coastal damages. In 1997 alone, these projects saved an estimated $45.2 billion in flood damages. The investment made by Congress in these programs has been critical in protecting life and property. The civil works program also funds over 4,000 water recreation sites as well as coastal protection programs, bank stabilization, hydropower, and municipal and industrial water supply.

We respectfully urge you, therefore, to consider the diverse public benefits of civil works programs and the tremendous return on Federal investments that they provide. We request that you allocate sufficient funds to meet civil works needs as we prepare to enter the next millennium. In the case of waterways programs, adequate investment now will be a much lower price to pay than dealing with the consequences later of delaying needed maintenance and modernization.

We thank the Subcommittee for the opportunity to submit this statement, which we hope you will consider in marking up your fiscal year 2000 bill.

PREPARED STATEMENT OF THE AMERICAN FARM BUREAU FEDERATION

The American Farm Bureau Federation appreciates the opportunity to submit this statement in support of adequate funding for the Army Corps of Engineers civil works program. The American Farm Bureau Federation is the nation's largest general interest organization for farmers and ranchers. American Farm Bureau represents 4.9 million Farm Bureau families in all 50 states and Puerto Rico. Farm Bureau's members grow all commercially produced agricultural commodities cultivated in the United States.

Farm Bureau compliments the Subcommittee on its strong commitment to meeting the nation's water resources needs, as evidenced by the level of funding provided for civil works programs in the Fiscal Year 1999 Energy and Water Development Appropriations Act. Farm Bureau and its members appreciate the Subcommittee's commitment to a program of adequate investment in the waterway infrastructure. We urge you to continue to invest the necessary funds to sustain waterways programs in a reasonable manner.

Farm Bureau is concerned by the lack of commitment to civil works demonstrated in the administration's fiscal year 2000 budget request. The Subcommittee's effort to provide adequate funding for civil works last year would be lost should the fiscal

year 2000 budget request be adopted. The proposed level of funding of $3.9 billion assumes collection of some $950 million from the as yet undefined Harbor Services Fund proposal. Relying upon this $950 million assumption is dangerous and poses a substantial threat to fulfillment of civil works programs.

Most of the increase in the fiscal year 2000 budget request is earmarked for deep-draft port maintenance and construction, which is dependent upon revenue to be transferred from the Harbor Maintenance Trust Fund which itself is contingent upon enactment of the proposed Harbor Services Fund. Other civil works missions, principally inland navigation and flood control, are funded at roughly two-thirds of what is needed for efficient program operation.

One of the most important things Congress can do to help farmers is to provide a low-cost, efficient transportation infrastructure. An important part of that infrastructure was initially created decades ago with the inland waterways transportation system, featuring a series of locks and dams on the Mississippi between Minneapolis-St. Paul and St. Louis.

The inland waterway system is absolutely critical to American agriculture. About ⅓ of American agricultural production is exported; about 60 percent of those exports move down the Mississippi River system to our ports on the Gulf of Mexico. As these barges return upriver, they often bring agricultural inputs like fertilizers into the interior regions of the Midwest. This barge traffic has been estimated by Price Waterhouse to support between 300,000 and 450,000 jobs in the ten-state region of the Mississippi River Valley. These jobs generate about $4 billion in income.

For farmers in midwestern states, the ability to use the river to transport what they produce is critically important. Farmers in Minnesota shipped an average of 195 million bushels of corn, 64 million bushels of soybeans, and 26 million bushels of wheat on the Minnesota and Mississippi Rivers every year during the 1990's. This is equivalent to ¼ of the total corn crop grown in Minnesota, and these corn shipments were worth over $470 million in 1997. In other Midwestern states, river transportation is as important as it is to Minnesota, or more so. Missouri farmers shipped an average of 52 million bushels of corn, 30 million bushels of soybeans, and 42 million bushels of wheat annually in the 1990's. Iowa farmers shipped an average of 203 million bushels of corn annually, and 66 million bushels of soybeans annually on the Mississippi River system in the 1990's. Illinois farmers shipped a whopping 591 million bushels of corn (about ⅓ of the state's total corn crop), 170 million bushels of soybeans, and 26 million bushels of wheat on the Mississippi and Illinois rivers annually in the 1990's. Clearly, the Mississippi, Missouri, Minnesota, and Illinois Rivers are key transportation arteries that carry the massive agricultural production of the Midwestern states to their export markets.

Unfortunately, as the system ages, it is increasingly taxed and is less able to meet the demands placed on it. Many of these facilities are 60 years old and are inadequate to meet modern navigation needs. Many of these locks are only 600 feet long, when the average tow in use today is 1,100 feet long, inclusive of barges and towboat. You can imagine the back-ups that often occur during peak shipping seasons as each tow must stop, be broken into two parts, pushed separately through the lock, and reassembled on the other side. This is a process that takes about ninety minutes for each tow; this creates delays that cost the entire economy money and reduces the per-bushel price farmers earn for their produce. This congestion is costing our economy millions of dollars annually in lost time and productively that a comparatively small federal investment in improved infrastructure could recover.

River congestion on the Mississippi equals lost income to farmers who can't afford to forgo any income with commodity prices so low. Inefficient water transportation will result in further lost export market share for U.S.-grown grains and less income for farmers. Preliminary results from a Texas A&M study indicates that producers could lose between $100 million and $150 million a year if bottlenecks on the Mississippi continue to reduce the efficiency of our inland waterway system.

At Farm Bureau, we believe that farmers are the first environmentalists because we depend on the land to earn a living. There will also be environmental benefits to improving the navigation infrastructure on the Mississippi and Illinois Rivers. Moving bulk freight is the most efficient and safest means available. The movement of 100 million tons of bulk commodities on the Mississippi River system (an average year's bulk freight on the rivers now) keeps 1 million rail cars or 4 million trucks available for other movements of grains or other commodities and keeps these rail cars and trucks off the roads and away from road crossings in rural communities, according to the Iowa Department of Transportation. The U.S. Environmental Protection Agency laboratory tells us that towboats emit 35–60 percent fewer pollutants than railroad locomotives or trucks. According to the U.S. Department of Transportation, a gallon of fuel in a towboat can carry a ton of freight 2.5 times farther than rail and 9 times farther than a truck. The U.S. Army Corps of Engineers recently

suggested that anywhere from $100 million to $300 million is saved annually in air clean-up costs due to usage of the river system that might otherwise have to be spent if river freight had to move on other modes.

Farm Bureau policy #117 (Waterways), as approved by the AFBF's voting delegate body at the Farm Bureau convention in January 1999 says, in part:

> Public policy should encourage expansion of inland water transportation since it represents the most efficient mode—We encourage a Midwestern, multi-state effort to review results of existing river and related studies and identify impacts of associated state and federal regulation. Based on that review, we will propose a multiple-use strategy for the Upper Mississippi River and its tributaries that serves agriculture, industry, transportation, and the environment—We support the Corps' (of Engineers) efforts in updating locks and dams and cleaning of channels in the Mississippi River system to accommodate new, larger barges.

Farm Bureau requests that Congress increase the appropriation for the Army Corps of Engineers in fiscal year 2000 for improvements for the Mississippi River system. This appropriations increase should include $9 million in additional funds to conduct pre-engineering and design studies for lock chamber extensions and guide wall extensions for Locks 25, 24, 22, and 21 on the Mississippi and the La-Grange and Peoria locks on the Illinois River; $5 million to meet dredging shortfalls on the Upper Mississippi and Illinois Waterways, and $17 million in funding for major maintenance on the Mississippi River system.

The level of funding requested for civil works activities would endanger our ability to continue an effective waterborne transportation system. The President's request would fund construction program is funded at $1.239 billion, $200 million less than the fiscal year 1999 appropriations. This downward trend in spending would stretch out construction schedules, adding to project costs and delaying the realization of project benefits, and also increase the already substantial backlog of necessary rehabilitation. Lack of a modern, first-class navigation system already places agricultural producers, miners, and forestry workers, among others, at risk of losing global markets. Also, many worthy flood control projects would see reductions in funding or simply cease to be funded, a dangerous gamble with billions of dollars of potential damages.

The waterways industry strongly supports a more realistic funding level of $4.7 billion for civil works activities in fiscal year 2000. This level would continue the progress made by this Subcommittee in its fiscal year 1998 and fiscal year 1999 appropriations and allows the Army Corps of Engineers to honor its commitments to local communities, ports and harbors, navigation and other water resources interests. Most of these demands are imposed by legislation and by cost-sharing commitments with non-Federal sponsors. Further, a $4.7 billion program can be fully justified as a prudent investment in helping the Corps of Engineers to maintain navigation, prevent floods, ensure dependable water supplies, facilitate water recreation, promote environmental restoration and meet other program needs.

Adequate investment in civil works programs positively impacts the country's economic development and global competitiveness. The U.S. inland waterways system includes 1,500 miles of deep-draft channels with 300 ports capable of handling ocean-going vessels along the Atlantic, Gulf, and Pacific Coasts as well as the Great Lakes. In addition, the inland waterway system consists of 12,000 miles of mainstem navigable waterways. This vast system provides a reliable and efficient water transportation system that, in 1997, carried 2.3 billion tons of domestic and foreign commerce including 60 percent of U.S. grain exports, 23 percent of chemical movements, and 20 percent of coal shipments. These and other commodities that move on the waterways are the building blocks of our economy. Water transportation keeps U.S. products competitive in international markets and supports the economies of many regions of the country.

We respectfully urge you, therefore, to consider the many public benefits of civil works programs and the tremendous return on federal investments that they provide. We request that you allocate sufficient funds to meet civil works needs as we prepare to enter the next millennium. In the case of waterways programs, adequate investment now will be a much lower price to pay than dealing with the consequences later of delaying needed maintenance and modernization.

PREPARED STATEMENT OF W. RON ALLEN, PRESIDENT, NATIONAL CONGRESS OF AMERICAN INDIANS

INTRODUCTION

Chairman Domenici, Vice-Chairman Reid and distinguished members of the Appropriations Subcommittee on Energy and Water Development. Thank you for the opportunity to present this statement regarding the President's Budget Request for fiscal year 2000 Indian programs and services specifically in the Department of Energy. My name is W. Ron Allen. I am President of the National Congress of American Indians (NCAI) and Chairman of the Jamestown S'Klallam Tribe located in Washington State.

NCAI views the fiscal year 2000 federal budget process as an opportunity to begin to set a better course for federal Indian policymaking in the next century. Tribal governments have found themselves in an increasingly defensive posture in the development of federal Indian policy over the last four years, and budget cuts and budget riders have been the point of attack on tribal self-determination.

Tribal leaders have set as an important goal that the tribal budget must become a higher priority within the appropriations process. The federal government has treaty and trust obligations to support Indian tribes that it is simply not meeting. Also, tribal citizens pay federal taxes but receive little support from federal funds that go to states. Programs serving the American Indian and Alaska Native population have rarely received the federal funding required to fulfill even the most basic needs and funding for Indian programs has lagged far behind the funding of non-Indian programs. Compared to all other sectors of the American populace, American Indians and Alaska Natives most often rank at or near the bottom or top of most social and economic indicators, whichever is worse. Of the 558 federally-recognized Indian tribes, a great majority of their populations are characterized by the most severe unemployment, poverty rates, ill-health, poor nutrition and sub-standard housing in the U.S. In an era of federal budget surpluses, there are no excuses for failing to meet the federal obligation to remedy the human tragedy behind the statistics.

The solution for the poor conditions in Indian Country must be a reinvigorated approach to economic development. The federal budget for fiscal year 2000 can do much to build the necessary infrastructure of roads, schools, housing, child and elder care, hospitals, clinics, technology, law enforcement, courts and other critical elements of any functioning economy in the United States. The United States has an obligation to help rebuild the shattered infrastructures of Indian Nations and create the opportunity for economic prosperity that will benefit not only Indian people, but the entire American economy. It should also be noted that the conversion of welfare entitlement funds into state discretionary funding has added to the urgency felt throughout Indian Country to boost economic development.

Also, the use of appropriations riders to ambush tribal self-government has become more and more frequent. Tribal self-government is recognized in the United States Constitution and hundreds of treaties, federal statutes and Supreme Court cases and is deserving of serious consideration by the Congress. At the very least, if the federal government is going to contemplate legislation affecting tribal self-government, the legislation should be considered in the authorizing Committees, given opportunity for consultation with the affected tribes, and taken up as stand-alone legislation where Members of Congress can know and understand what they are voting on. We have been made aware of the introduction of Senate Resolution 8 by Senators Ted Stevens and Robert Byrd. S. Res. 8 would amend the Senate rules to reinstate a former rule which prohibited legislative riders on appropriations bills and which would require a three-fifths vote to waive a point of order under the rule. NCAI would surge the members of this Sub-committee to support S. Res. 8.

As Congress begins to shape the fiscal year 2000 budget, the NCAI urges an increased investment in Indian programs and tribal government infrastructure. We believe that the President's fiscal year 2000 budget request has taken a very positive step in that direction. The following testimony is an overview of the recently released President's fiscal year 2000 budget request that provides NCAI's viewpoint on sections of the budget that are most critical to tribal governments.

BACKGROUND INFORMATION

Mr. Chairman, I would like to begin my testimony by providing a general context regarding federal funding for Indian programs. Unfortunately it has been a rare occasion indeed, if ever, that programs serving the American Indian and Alaska Native population have received the federal funding required to fulfill even the most basic needs of tribal members. Of the 558 federally-recognized Indian tribes, a great

majority of our populations are characterized by severe unemployment, high poverty rates, ill-health, poor nutrition and sub-standard housing. Historically, funding for Indian programs has lagged far behind the funding of many non-Indian programs and this gap only continues to grow.

Compared to all other sectors of the American populace, American Indians and Alaska Natives most often rank at or near the bottom or top of most social and economic indicators, whichever is worse. When comparing trends between fiscal year 1975–1999 for the total BIA budget and the federal non-defense budget as a whole, federal spending as a whole increased at a rate of $41 billion a year, with an average level of $669.8 billion, while when corrected for inflation, the BIA budget actually declined by $10 million a year, on an average spending level of $1.7 billion. Throughout the entire fiscal year 1975-fiscal year 1999 period, per capita spending on the U.S. population as a whole consistently increased, whereas per capita spending on Indians through major Indian-related programs began to fall after fiscal year 1979.

Furthermore, in fiscal year 1996, federal funding for Indian programs fell short 13 percent or $581 million from the President's budget request for that fiscal year. This was mostly seen in dramatic cuts in funding for the BIA ($322 million less), Department of Housing and Urban Development (HUD) New Indian Housing ($134 million less), and the Indian Health Service (IHS) ($80 million less). In fiscal year 1997, funding for these programs fell short 4.1 percent or $175 million below the President's request. And in fiscal year 1998, there was a 1.2 percent or $52 million shortfall from what the President requested. In fiscal year 1999, this unfortunate trend continued with a $100 million shortfall.[1] Mr. Chairman, in a year when the U.S. economy is booming and the federal government is expecting over seventy billion dollars in surplus funds, the federal government should not be cutting funds to American Indians, this nation's poorest people.

As you are well aware, in recent years tribes have faced extraordinary challenges throughout the appropriations process. Unprecedented reductions in federal Indian program funding left many tribes facing extreme circumstances. Non-funding "riders" attached to Interior Appropriations bills reached well past the scope of the appropriations process and were interpreted by Indian Country as an attempt to diminish tribal sovereignty and change the basic fabric of the federal-tribal relationship. While we appreciate the commitment to balance the federal budget and reform the welfare system, we maintain that such laudable initiatives do not and should not preclude the federal government from fulfilling its trust responsibilities to Indian tribes throughout this great nation. In short Mr. Chairman, extraordinary budget reductions in federal Indian programs have created a state of emergency for many tribal governments. NCAI is encouraged, however, with the Administration's fiscal year 2000 commitment to begin addressing some areas of priority concern to Indian Country.

As Congress begins the appropriations process for fiscal year 2000, NCAI aggressively seeks support from this Subcommittee in reversing the decline in funding for federal Indian programs that we have experienced since fiscal year 1996. In general, we believe that the President's fiscal year 2000 budget request has taken a very positive step in this direction. We are concerned, however, that even the Administration's request for certain essential tribal programs and services remain seriously inadequate. Accordingly, tribal budgets are insufficient to meet the most basic needs of tribal populations.

The following testimony is an overview of the recently released President's fiscal year 2000 budget request that provides NCAI's viewpoint on sections of the budget under the Department of Agriculture that are most critical to tribal governments. As more specific information is released from the Administration regarding the details of the budget request, NCAI will provide further information regarding the priorities of the tribal government members of NCAI.

DEPARTMENT OF ENERGY

The Department of Energy (DOE) manages programs to mitigate and remediate Indian lands including ceded and former Indian lands contaminated by the Cold War legacy. Inadequate funding is detrimental to programs that institute: tribal involvement in decision-making processes; shipping of high and low level radioactive waste through Indian Country (whose jurisdictions do not have adequate emergency response programs in place to protect people, lands and resources); and, the siting of permanent repositories for spent nuclear waste on former traditional lands (under

[1] See generally "Indian-Related Federal Spending Trends. FY 1975–1999", Congressional Research Service (CRS), February 1998.

an arbitrary policy which inequitably supports non-Indian state and county governments for oversight activities, but does not involve tribes in geographical proximity and indigenous to the area).

The Nevada Test Site is within the traditional homelands of the Shoshone and Paiute peoples whose culture, environment, and health has been already impacted by federal government-sponsored atomic testing and other activities. The DOE Office of Civilian Radioactive Waste Management (OCRWM) has performed scientific and technical studies at Yucca Mountain on the Nevada Test Site for a proposed high-level spent nuclear fuel and radioactive waste permanent repository. The 16-year compilation of the Yucca Mountain study, the Yucca Mountain Viability Assessment, was released in December 1998. However, the Indian nations indigenous to the area do not have the technical staff to analyze the massive data.

Last year's DOE-OCRWM budget did not provide funding for oversight activities for the tribes indigenous to this area. However, $16 million was given to the state of Nevada, nine Nevada counties, and one California county (designated local units of government under the Nuclear Waste Policy Act of 1987, as amended) for oversight activities at Yucca Mountain. This year, $10.2 million has been requested for non-Indian governments. NCAI asks that this committee end the disparate treatment of tribal governments by earmarking $5 million for tribal involvement in the Yucca Mountain area. By funding the impacted tribes, Congress will transform the DOE-OCRWM's arbitrary policy of ignoring the tribes who remain in their homelands but are left out of the oversight process at Yucca Mountain.

The NCAI Nuclear Waste Program, funded through a DOE-OCRWM cooperative agreement, is a national information dissemination effort to provide tribal governments with updates on the implementation of the Nuclear Waste Policy Act of 1982, as amended. The long-range issues and impacts to Indian Country are significant and national in scope, but tribes do not have adequate staff or resources to track this program. The current NCAI Nuclear Waste Program year is the second under a renewed five-year cooperative agreement period. The Program budget is at its lowest funding level since its inception in 1982, and DOE-OCRWM did not request funding to continue this highly successful program and important link to Indian Country. In order to sustain a viable program to provide tribal leaders with relevant and current information and assist in the interactive DOE process, the NCAI requests the Congress to direct the DOE-OCRWM to provide annual funding to the NCAI cooperative agreement in the amount of $300,000 as part of its trust responsibility toward keeping tribes informed on programmatic impacts and maintaining open dialogue with impacted tribal communities.

The NCAI is making an effort to inform tribes located near nuclear utilities that the DOE Office of Nuclear Energy, Science and Technology budget contains $10 million for research and development collaboration to refurbish and upgrade those nuclear utilities whose licenses will soon expire and will have to apply to the Nuclear Regulatory Commission for relicensing. This budget reflects a 44 percent increase in nuclear energy research and development. We request the DOE direct a portion of this funding to be shared with tribes within the 10-mile Emergency Planning Zone and the 50-mile Ingestion Pathway Zone around commercial nuclear reactors.

Under the DOE Office of Environmental Management Office of Public Accountability (EM–22), ten tribes have cooperative agreements to participate in site cleanup and waste management oversight activities. The DOE-EM program fiscal year 2000 budget request does not provide an increase for critical tribal program continuity. Adequate tribal program funding always has been a problem, despite the fact many federal sites slated for cleanup are former tribal lands or ceded territory and contain significant cultural sites. DOE-EM officials have suggested they are working to avoid negative impacts on tribal budgets, however their budget does not reflect this assertion. We request the Congress provide increased tribal funding for a total of $6 million for the cooperative agreements so as not to undermine tribal cleanup programs, and to provide funding for Indian outreach by organizations including NCAI.

Funding for the Waste Isolation Pilot Project comes primarily through DOE-EM. We are aware that DOE-EM has lowered funding allocation for emergency preparedness, public information, and accident prevention activities in the fiscal year 2000 budget. The tribes on the WIPP transportation corridor in the designated corridors do not have adequate emergency response capability in the event of a radiological transportation accident. Emergency response organizations require several years to develop. In the interest of protecting tribal communities, NCAI requests that the DOE-EM's WIPP emergency preparedness funding be increased to $1 million.

NCAI also supports funding for the following tribal programs: (1) Energy Efficiency & Renewable Energy—provides grants and technical assistance to tribes for weatherization, wind energy systems, hydropower, photovoltaic, and renewable en-

ergy technologies, $5 million; (2) Fossil Energy—supports oil exploration and drilling research which is beneficial to tribes, $540,000; (3) Defense Programs—educational and scientific outreach by national laboratories, $750,000; (4) Economic Impact & Diversity—support for small business and educational grants $200,000; and, (5) Bonneville Power Administration—cultural resources for Pacific Northwest Tribes, $5 million.

Non-Indian organizations are being provided funding to conduct forums and policy analysis about tribal government participation and impacts. Tribal businesses and Indian organizations are capable of doing this work, probably at a more reasonable cost. We reject the notion that outside consulting and convener groups like Aspen and Keystone are receiving funding to delve into American Indian and Alaska Native issues while they remain largely ignorant of tribal sovereignty and cultural matters. We believe such funding should be made available to tribes and Indian organizations, such as NCAI. A tribal organization will also protect tribal integrity, maintain confidentiality, and prevent breaches of protocol. NCAI respectfully requests this committee recommend to the DOE the need change this outdated and unproductive practice of non-Indian intrusion.

CONCLUSION

Mr. Chairman, we urge the Congress to fulfill its fiduciary duty to American Indians and Alaska Native people and to uphold the trust responsibility as well as preserve the Government-to-Government relationship, which includes the fulfillment of health, education and welfare needs of all Indian tribes in the United States. This responsibility should never be compromised or diminished because of any Congressional agenda or party platform. Tribes throughout the nation relinquished their lands as well as their rights to liberty and property in exchange for this trust responsibility. The President's fiscal year 2000 budget request acknowledges the fiduciary duty owed to tribes. We ask that Congress maintain the federal trust responsibility to Indian Country and continue to aid tribes on our journey toward self-sufficiency. This concludes my statement. Thank you for allowing me to present for the record, on behalf of our member tribes, the National Congress of American Indians' initial comments regarding the President's fiscal year 2000 Budget.

PREPARED STATEMENT OF R. MAX PETERSON, EXECUTIVE VICE PRESIDENT, INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES

U.S. ARMY CORPS OF ENGINEERS

The fiscal year 2000 budget proposal for Civil Works Appropriations of the U.S. Army Corps of Engineers is $4.2 billion, of which $3.9 billion is requested in appropriated funds and $0.3 billion would be financed through non-Federal funds and trust fund receipts. The budget proposal reflects continued commitment to proper management of our natural resources, through dedication of $687 million to environmental programs (a $56 million increase over fiscal year 1999) and through $258 million in contributions to intergovernmental environmental programs. The Association appreciates the fact that many of our recommendations from recent fiscal years have been maintained by the Corps in their succeeding year's budget request.

We continue to encourage the Corps to expedite design and grant administration associated with Section 1135 projects as provided for within the Water Resources Development Act of 1986. We urge the Corps to continue to take steps to expedite the approval process for those projects.

The Association encourages the Corps to cooperate, coordinate, and develop civil works and restoration activities with State fish and wildlife agencies. The State fish and wildlife agencies are generally aware of where Corps projects could most effectively enhance the status of fish and wildlife resources through improvements to habitat. We are especially interested in the new "Challenge 21 Initiative" which will result in development of partnerships to restore riverine ecosystems to address flood prevention through non-structural alternatives.

Our Association particularly appreciates the leadership of Congress in providing funding for mitigation projects. We are especially pleased that the Corps is requesting, and the Association supports, $100 million for Columbia River Fish Mitigation in Washington. The Association also strongly encourages Congress to appropriate necessary funding within the Corps budget to facilitate the mitigation feature of the West Tennessee Tributaries Project, which is needed to satisfy legal constraints to enable initiation of river restoration work within this significant watershed. We recommend that the Congress explore the need for generic legislative direction to the Corps to ensure that the older projects include the authority for fish, wildlife, water

quality, and sustained minimum flow mitigation and enhancement, and if legislation is necessary, to act on that need. Further, the Association recommends that mitigation funding for ongoing projects be listed as a separate line item within the Civil Works Appropriations. This action would separate the funds from routine operations and maintenance and better facilitate the separate states' ability to identify the funds and seek support for the projects. The Association urges the Corps to work with those States interested in transferring mitigation properties in fee simple for management by the state. Such transfers should result in an overall savings to the Corps.

The Association is also generally supportive of the funding requested for some of the large river restoration projects. The Association supports the fiscal year 2000 request of $39.8 million for restoration of meanders and wildlife habitat on the Kissimee River and $75 million to restore water flows through the Everglades and other areas in Florida. It is in the best interest of the country to restore the habitat and hydrologic components of these rivers that have been significantly altered under previous Corps projects.

With regard to the Corps' regulatory authority under the Clean Water Act of 1972, we strongly support the request of $117 million for implementation of a streamlined program to process, review, issue permits and provide an appeals procedure for the committing of activities in waters of the United States, including wetlands associated permits and jurisdictional determination.

Furthermore, the Association believes a strong partnership program with state agencies affords the best opportunity for balanced conservation of aquatic resources.

The Association recommends that the Corps continue in partnership with State fish and wildlife agencies to initiate applicable restoration, mitigation and conservation projects. For example, we request the Corps continue to participate with State agencies and non-Federal interests in the North American Waterfowl Management Plan through wetlands conservation and wetlands identification.

The Association is excited by the potential for significant environmental accomplishments in restoration, conservation, and sustainable management of water, fish, and wildlife resources through the Administration's Clean Water Initiative. The Association is especially pleased with Federal plans to partner with local, state and tribal agencies and with the watershed management emphasis. The States are interested in forging a true partnership through sharing ideas, plans, design, implementation structure and enforcement in establishing a unified, cooperative approach to improving water quality.

TENNESSEE VALLEY AUTHORITY (TVA)

The Association supports the President's budget request for TVA to receive $7 million in appropriations to fund operations of Land Between the Lakes (LBL) National Recreation Area. The LBL requested appropriation is the same level of funding enacted for the area in fiscal year 1999. Four million dollars in proceeds are expected from user fees and other sources for a total operating budget of approximately $11.0 million. LBL's operation is vitally important to boating, fishing, hunting, camping, wildlife observation and other conservation-oriented activities in the southeastern U.S.

Other funding for traditional TVA stewardship programs will be attained through monies obtained by restructuring of TVA's debt. These programs will be paid for with power revenues using the flexibility provided by refinancing of the debt. No other appropriations are proposed for TVA.

TVA's new approach to funding of other stewardship programs places these programs in a precarious position for future years. The Association strongly urges TVA to continue to fund these vital programs using power system revenues. TVA has previously utilized appropriated dollars to improve the quality of life in the Tennessee Valley. TVA is requested to keep the Association and member organizations apprised of significant changes in the delivery of these traditional services.

TVA has established itself as a global leader in tailwater restoration and technology and has established the national standard for such activity. The Association commends TVA for these efforts. The Association also supports TVA's efforts to implement new comprehensive shoreline management policies and urges TVA to work closely with member states within the Tennessee Valley. Water level management and aquatic vegetation management programs remain important issues to the member states and we urge TVA to continue to work closely with States on these issues.

The Association is concerned about the status of the navigation lock at Chickamauga Dam. TVA is requested to work closely with the U.S. Corps of Engineers to determine best construction options and strategies for obtaining federal funding.

The Association urges Congress to appropriate funding to address this critical problem.

The Association recommends that TVA continue to actively support and participate in the States' Clean Streams Initiative with the Office of Surface Mining (OSM) to complete projects in the TVA service area. These state-Federal-private cooperative projects are engaged in restoring fish, aquatic life, recreational and economic opportunity in watersheds damaged by acid mine drainage from past coal mining activities.

We are encouraged that TVA has undertaken a serious review of public lands along TVA reservoirs and rivers to insure these properties are not utilized in such a manner as to exclude reasonable public use. Further, we support current and future planning efforts that insure conservation and protection of riparian habitat.

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

The Association recommends Congress appropriate $7.5 million to allow FERC to reimburse state fish and wildlife agencies for studies and reviews associated with hydropower relicensing activities. Section 1701 of the Federal Power Act was amended in 1992 specifically to authorize reimbursement to states for this work. FERC has never sought appropriated funds for this purpose. If appropriated funds cannot be provided, FERC should be instructed to require reimbursement for this work by the licensee. Otherwise, projects will be proposed for relicensing without adequate studies of appropriate fish and wildlife licensing requirements. This invites conflict and possibly more stringent requirements, including water releases, than would be needed if more adequate studies were made.

BUREAU OF RECLAMATION (BOR)

Over its 97-year history, the BOR has played a vital role in harnessing and managing water resources for a young and growing Western United States. The fulfillment of those high national priorities has not always been accomplished with a long-term vision for the health of fish and wildlife resources within BOR project design, construction and operational practices. Thus, the development of high priority public services has sometimes proven highly detrimental to other public values, including certain fish and wildlife resources. The agency's publicly stated policy is to sustain the health and integrity of ecosystems and protect the environment as it goes about the important work of providing dependable sources of water. The agency has embarked upon refreshing new goals that better balance these sometimes competing uses of limited natural resources. It is, therefore. eminently satisfying to the Association to witness and strongly support BOR's efforts to refocus considerable financial resources on ameliorating historical water development-related damages to fish and wildlife and their habitats.

California Bay-Delta Ecosystem Restoration.—The BOR seeks $95 million to continue this work, which has never been funded at the full authorization level of $143 million per year. This authorization expires in 2000, and the Association supports legislation extending the authorization to 2003 to allow for funding the entire $403 million authorized program. This program, which responds to Congressional direction through the California Bay-Delta Environmental Enhancement and Water Security Act, provides vital Federal cost-sharing dollars for ecosystem restoration in California's Bay-Delta. This effort is based on collaborative efforts among several federal agencies and the State of California. Restorative efforts such as fish screening, flood plain habitat restoration, instream flow provisions and watershed management, typify the work being accomplished. The Bay/Delta system provides habitat for 120 fish and wildlife species. The Association fully supports BOR's request for $95 million for this work for fiscal year 2000, and would encourage Congressional extension of the authorization until 2003.

Central Valley Project.—Created by Congress in the Central Valley Project Improvement Act, the CVP Restoration Fund is expected to collect just over $49 million from rate payers for fish and wildlife management and development work in the Central Valley Project area of California. The BOR is seeking a Congressional appropriation of $47.3 million from the Fund to undertake important anadromous fisheries habitat work, water acquisition, fish screening and other works that are necessary to continue efforts to restore the fish and wildlife-related damages created by this federal project. The Association encourages the Congress to fully fund this work at the requested level of $47.3 million, and to make the CV Project Restoration fund a Permanent appropriation.

Endangered Species Recovery Implementation.—The BOR is requesting a total of $15 million for endangered species recovery work spread among four BOR Regions. This is six percent above the 1998 appropriation. This represents a modest increase,

particularly when viewed in the context of the geographical areas affected by prior BOR activities and the complex of imperiled fish, wildlife and essential habitats that need attention as a consequence of these earlier actions. A significant proportion of the BOR's request for work in the Upper Colorado Region and Lower Colorado River Region is directed at endangered species recovery. As just one example of the important projects planned for fiscal year 2000, in this instance in the Upper Colorado, is the work on the Platte River. This multi-agency cooperative program is essential to restore endangered and threatened species and the requested $2.5 million would allow implementation activities such as water conservation and critical habitat restoration. The request for $15 million for endangered species recovery projects, proposed by the BOR for fiscal year 2000, is deemed essential by the Association and is strongly supported.

Pacific Northwest.—As reported by the BOR, "perhaps the region's largest and most visible challenge is the restoration of the anadromous fishery." The Association concurs with this assessment and strongly supports the request of $13.1 million for Pacific salmon recovery.

Water Reclamation and Reuse.—As the population of the West continues to grow at remarkable rates, competition will continue to intensify among the many important uses of water. Renewable natural resources, including fish and wildlife, are directly dependent upon the availability of water. To meet citizens' demands for water and water-related public services, including healthy natural resources, will require intelligent use, conservation and reuse of the limited water supplies. The Association is pleased to support efforts designed to conserve and reuse water and supports the BOR's fiscal year 1999 request for $31.5 million for these purposes.

PREPARED STATEMENT OF THE ASSOCIATION OF STATE DAM SAFETY OFFICIALS

The Association of State Dam Safety Officials (ASDSO) strongly supports full funding, as authorized in the National Dam Safety Program Act of 1996 (Public Law 104–303), for the National Inventory of Non-Federal Dams in fiscal year 2000. Full funding is $500,000. This critical database of state- and federally-regulated dams, administered by the U.S. Army Corps of Engineers, has provided vital information on dams in the country. The timely information provided by the National Inventory of Dams is essential in our ongoing efforts to mitigate dam failures.

ASDSO is a national organization of more than 1,600 state, federal, and local dam safety officials and private sector individuals dedicated to improving dam safety through research, education, and communication. ASDSO is based in Lexington, Kentucky.

The National Inventory of Dams is one part of a continuing effort by federal and state dam safety officials to identify and mitigate the risk associated with dams and to preserve the nation's investment in its water control infrastructure. It is an essential tracking tool, which has revealed pertinent statistics on a national level while, at the same time, providing critical data needs to state dam safety regulators. The funding provides for updating, transmittal, compilation and distribution of information to the national database. The funding also gives the Corps the ability to continually upgrade the system to maintain its technological validity.

THE DATABASE

This computer database houses vital information on federally and state-regulated dams across the nation. The database tracks information about the dam's location, size, use, type, proximity to populations, hazard classification, regulatory facts, and other technical data. It can be used by the dam safety community to access comprehensive statistical information and to integrate effects of dams within Geographic Information Systems (GIS), the state-of-the-art technology in tracking lifeline systems and responding to emergency events.

The database can be used by policy makers as a tool when dam safety issues are under consideration. For instance, the Federal Emergency Management Agency uses the data to determine State Dam Safety Assistance Grants awarded annually under the National Dam Safety Program. It is essential that the National Inventory data is current to make equitable and accurate decisions about these grant determinations. Another example: data indicates that a majority of non-federal dams do not have emergency action plans in place something important to policy officials not only as it concerns dam safety, but also as it affects emergency preparedness. The inventory is a critical database for emergency managers during severe weather, earthquakes or other natural events that threaten dams.

To date, detailed data on approximately 75,000 dams is housed in the inventory. Of this number, about 9,500 dams are termed high-hazard, meaning they threaten

human life and could cause significant downstream damage should they fail. Reports generated from the Inventory have highlighted the fact that about 1,800 of these high-hazard structures are within one mile of a downstream city a statistic not known before the database was in place.

The National Inventory has determined that dams are built primarily for recreation, flood control, irrigation, water supply, fire and farm ponds, mine tailings impoundment, and hydroelectric power generation. States regulate about 71,000 of these structures; the federal government owns or regulates the remaining 4,000.

NEED FOR CONTINUED FUNDING

An inventorying system, such as this one, was determined by dam safety administrators and federal legislators in the 1980's to be one of the primary objectives in a national program to improve dam safety in this nation. A priority which was paramount on the minds of the public after several devastating failures had occurred:

—The Buffalo Creek Dam failure of 1972 killed 125 in West Virginia.

—The Teton Dam failure in 1976 caused the deaths of 14 and $400 million in property damage.

—The Laurel Run Dam failure in 1977 killed 40 in Pennsylvania.

—The Kelly Barnes Dam in Taccoa Falls, Georgia killed 39 and caused $2.5 million in damages in 1977.

As a result of these disasters and the clear recognition of the tremendous potential for more failures, Congress passed the National Dam Safety Program Act of 1986 and re-authorized and updated this law with the National Dam Safety Program Act of 1996. Through these laws, Congress and has been very clear, in recent years, that it recognizes the need to mitigate disasters from dam failure. This recognition of the need for a national dam safety program, accompanied by funding, must continue to advance the programs now in place to reduce risks from dam failure.

Although we have not seen a dam failure to match the ones mentioned above, failures and devastation continue to occur and still threaten this nation as dams continue to age and deteriorate and as downstream populations grow. In the past year alone, approximately 88 documented failures have occurred across the nation. A woman was killed in New Hampshire two years ago as a direct result of dam failure. Dam and downstream repair costs resulting from failures in 23 states reporting in a recent year totalled $54.3 million. Failures can affect large populations, may flood into neighboring states and may cost millions of dollars in federal disaster relief spending.

Most failures occur at dams that are determined to be deficient or unsafe. There are over 1,800 unsafe non-federal dams in the United States including: 3 unsafe dams in New Mexico; 8 unsafe dams in Nevada; 49 unsafe dams in West Virginia; 41 unsafe dams in Utah; and 13 unsafe dams in Washington.

The priority on rehabilitating our aging and deteriorating national infrastructure must include dams. Dams provide people with tremendous everyday benefits such as drinking water, electricity, protection from floods, wetlands areas, recreation and irrigation.

To measure our progress toward assuring the safety of all dams, a centralized, accurate database of information on dams is essential. The National Inventory of Dams can supply this necessary statistical data. But, this type of data is only as good as its last update. The database must be continuously updated and the system upgraded as the vital information on dams changes.

CONCLUSION

In summary, the data in the National Inventory of Dams is important to federal and state dam regulators to have access to accurate, current information on dams that impact the safety of communities, other dams, flood prone areas and future projects. In addition, the data is essential to managers of the National Dam Safety Program at FEMA, who requires the data to make accurate and equitable determinations of annual state dam safety assistance grant awards. Emergency managers need the data in disaster mitigation and response, as do policy makers who constantly need to know the "state of America's dams." Continual updating of this data is imperative to the value of the National Inventory of Dams.

ASDSO strongly urges this Subcommittee to continue funding in the amount of $500,000 in fiscal year 2000 to the Corps of Engineers for the National Inventory of Dams.

PREPARED OF LISA S. HOLLAND, CHAIR, ASSOCIATION OF STATE FLOODPLAIN MANAGERS, INC.

The Association of State Floodplain Managers appreciates the opportunity to express support for fully funding several programs of the Army Corps of Engineers which can significantly expand the Corps' ability to reduce losses due to flooding. We have found that Planning Assistance to States (Section 22) and Flood Plain Management Services provide for important elements of effective floodplain management. Challenge 21, the proposed Riverine Ecosystem Restoration and Flood Hazard Mitigation Initiative, offers new opportunities for use of non-structural options to achieve flood loss reduction. These are all elements of the Corps' activities that are especially helpful to communities and states around the country in reducing flood losses.

The Association of State Floodplain Managers is an association of over 3,500 state and local officials and other professionals engaged in floodplain management, flood hazard mitigation, flood preparedness, warning and recovery and in working with the National Flood Insurance Program. Our members have expertise in the fields of engineering, planning, community development, hydrologic forecasting, emergency response, and water resources.

The three programs we are discussing, PAS, FPMS and Challenge 21, are all programs which directly support the two major themes identified by Assistant Secretary Westphal in his testimony before the Subcommittee as important to the way the Corps should formulate and implement Civil Works policy. He said it should be based on building strong partnerships with states and local communities as well as other federal agencies. Additionally, he stated that Civil Works policy should help economic growth and prosperity by "combining sound infrastructure management and development with environmental protection and ecosystem restoration". We full support these strategies for the Corps.

Under General Investigations, "Coordination Studies With Other Agencies" includes $6.5 million for Planning Assistance to States in the budget request for fiscal year 2000. As you know, the fiscal year 1999 budget provided $6.3 million for this program. This amount, which was 1 million over the budget request, was provided by the Congress to help to reduce the work backlog and meet the growing need of localities and local and regional governmental entitles for technical assistance from the Corps. The Senate provided $7.5 million in recognition of the backlog and the $6.3 was agreed to in Conference. The situation has, of course, been helped by the Congressional effort this fiscal year, but a significant backlog remains. Further, increasing federal efforts to encourage cooperation and capability building among federal agencies and state and local governments have produced more demand for the Corps' guidance and assistance. We hope that the Committee will approve funding at least at the budget request and, hopefully, above the budget request.

Also under General Investigations, Flood Plain Management Services, $9 million is requested for fiscal year 2000. This is the funding level for fiscal year "99, although last year's budget request sought $9.4 million. The Floodplain Management Services Program funds specific technical assistance requests from states, local governments and tribes. Generally, these address needs for identification of flood hazards in communities under growth pressure, assessing and taking steps to assure the safety of dams and providing the technical information to identify appropriate flood mitigation options, floodproofing, flood warning and hurricane evacuation studies. Without the technical assistance the Corps provides, structures may be built at risk, exposing citizens and the nation's taxpayers to future costs. Clearly, projects funded under FPMS work tangibly to reduce flood losses and costs to the federal government and support the partnership and economic growth/infrastructure management strategies above.

The Corps is requesting $25 million for its Challenge 21 initiative. While authorization is not yet in place for this promising program, the Senate version of this year's Water Resources Development Act does including authorizing language. Challenge 21 would provide the Corps with a full-range toolbox to help communities and states. It offers essential flexibility such as the ability to accommodate smaller projects for communities where a traditional structural project might not be justified or the ability to mix structural and non-structural elements to better design an overall project. The continuing authorities nature of the proposed program is important because confidence in a sustained federal commitment is important to communities for development and implementation of these smaller projects. It is probable that hundreds of communities in the nation have the potential to benefit substantially from this innovative initiative. We hope that the Committee will provide the nation's communities with the valuable tools of Challenge 21.

It is a pleasure to share our views on the effectiveness and usefulness of these programs in the achievement of flood loss reduction. Thank you for the opportunity to present testimony. We are always ready to respond to your questions. Please contact ASFPM Executive Director, Larry Larson, at (608) 274–0123 if further information is needed.

NEW YORK AND NEW JERSEY WATER RESOURCE PROJECTS

LETTER FROM PHILIP BEACHEM, CHAIRMAN, NEW JERSEY MARITIME ADVISORY COUNCIL

MARCH 26, 1999.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: New Jersey relies heavily on waterfront and coastal commerce to maintain its healthy economy. New Jersey's deep draft commercial waterways handle in excess of a quarter billion tons of cargo a year, producing more than $1 billion in customs revenue for the Federal Government. In addition to our ports, New Jersey's $50 billion maritime industry includes more than $1 billion in commercial and recreational fishing activities on our inland waterways and rivers. The continued partnership between the Corps of Engineers and the State of New Jersey is crucial to our local, regional, and national economy.

Shore protection and flood control projects are equally important to the economy of our State and the health and safety of our citizens. These projects protect vital infrastructure and reduce storm damage to personal and public property.

In addition to this testimony on behalf of the sixty-two corporate, government, and academic members of the New Jersey Maritime Advisory Council, we have also provided technical data for the benefit of the members of your Subcommittee.

We respectfully request your favorable consideration. New Jersey is prepared to move resolutely ahead in partnership with the Federal Government.

Respectfully submitted,

PHILIP BEACHEM,
Chairman.

SUMMARY OF THE PORT AUTHORITY OF NEW YORK NEW JERSEY FEDERAL CIVIL WORKS APPROPRIATIONS, FISCAL YEAR 2000

	President's Budget	Sponsor Recommendation
CONSTRUCTION		
Kill van Kull—Newark Bay Channels, NY & NJ	$60,000,000	$60,000,000
NY & NJ Channels: Arthur Kill, NY & NJ	.....	2,000,000
NY & NJ Channels: Port Jersey, NJ	2,000,000	2,000,000
NY Harbor Collection & Removal of Drift, NY & NJ	.....	1,000,000
Subtotal	62,000,000	65,000,000
STUDIES		
Arthur Kill Channel Extension	100,000	100,000
NY Harbor & Red Hook Flats Anchorages	300,000	300,000
NY & NJ Harbor Navigation Study	884,000	884,000
NY & NJ Harbor Navigation Study—PED	2,534,000	2,534,000
NY & NJ Channels: Arthur Kill, NY & NJ	1,312,000	1,312,000
NY & NJ Estuary Restoration Study	.....	100,000
NY Harbor & Adjacent Channels: Claremont Channel, NJ	.....	1,500,000
Subtotal	5,130,000	6,730,000

SUMMARY OF NEW JERSEY FEDERAL CIVIL WORKS APPROPRIATIONS, FISCAL YEAR 2000

	President's Budget	Sponsor Recommendation
FLOOD CONTROL		
Green Brook	$1,000,000	$1,000,000
MillBrook	.....	2,200,000
Molly Anns Brook	.....	1,000,000
Passaic River Flood Storage	1,800,000	1,800,000
Passaic River Minish Park	.....	8,000,000
Poplar Brook	.....	250,000
Ramapo River-Oakland	1,300,000	1,300,000
Raritan River-South River	569,000	569,000
Upper Passaic-Long Hill	200,000	200,000
Upper Rockaway River	200,000	200,000
Woodbridge & Railway River	100,000	100,000
Shrewsbury River	.....	100,000
Subtotal	5,169,000	16,719,000
SHORE PROTECTION		
Barnegat Bay	400,000	400,000
Barnegat Inlet to Little Egg Inlet	.....	700,000
Brigantine Inlet-Great Egg Inlet-Absecon	.....	14,300,000
Brigantine Inlet-Great Egg Inlet-Brigantine	.....	337,500
Cape May Inlet to Lower Township	1,700,000	2,000,000
Delaware Coastline-New Jersey & Delaware	.....	850,000
Great Egg Inlet and Peck Beach	419,000	419,000
Great Egg Inlet to Townsend Inlet	.....	226,000
Lower Cape May Meadows-Cape May Point	.....	523,000
Manasquan Inlet to Barnegat Inlet	.....	300,000
Raritan Bay & Sandy Hook Bay-Cliffwood	.....	275,000
Raritan Bay & Sandy Hook Bay-Highlands	.....	200,000
Raritan Bay & Sandy Hook Bay-Keyport	.....	200,000
Raritan Bay & Sandy Hook Bay-Leonardo	225,000	225,000
Raritan Bay & Sandy Hook Bay-Port Monmouth	.....	400,000
Raritan Bay & Sandy Hook Bay-Union Beach	320,000	320,000
Raritan Bay & Sandy Hook Bay-Section 934	.....	200,000
Sandy Hook to Barnegat Inlet	9,000,000	18,000,000
Townsend Inlet to Cape May Inlet	.....	1,250,000
Subtotal	12,064,000	41,125,500
DREDGING		
New Jersey Intracoastal Waterway Environmental Restoration	519,000	519,000
New York Collection & Removal of Drift	.....	5,500,000
Dredging in Support of OpSail 2000	.....	1,000,000
Subtotal	519, 000	7,019,000
PLANNING ASSISTANCE		
Section 22, Public Law 93–251	.....	300,000
OPERATION & MAINTENANCE		
Barnegat Inlet	1,270,000	1,580,000
Cold SpringInlet	545,000	545,000
NJ Intracoastal Waterway	1,854,000	1,854,000
Salem River	.....	1,200,000

SUMMARY OF NEW JERSEY FEDERAL CIVIL WORKS APPROPRIATIONS, FISCAL YEAR 2000—Continued

	President's Budget	Sponsor Recommendation
Subtotal	3,669,000	5,179,000

SUMMARY OF PHILADELPHIA DISTRICT CORPS OF ENGINEERS FEDERAL CIVIL WORKS APPROPRIATIONS, FISCAL YEAR 2000

	President's Budget	Sponsor Recommendation
PROJECT		
Delaware River, Philadelphia to the Sea Construction & Maintenance of Disposal Areas	$3,660,000	$4,160,000

PREPARED STATEMENT OF HON. SHARPE JAMES, MAYOR, CITY OF NEWARK, NEW JERSEY

Mr. Chairman and members of the Subcommittee, thank you for giving me the opportunity to submit testimony about a project under your jurisdiction which is very important to the people of Newark, New Jersey and the surrounding region. The Passaic River Streambank Restoration Project, known as the Joseph G. Minish Passaic River Waterfront Park and Historic Area, is an important part of the overall economic, land use and transportation development plan of the City of Newark.

The project was authorized at a level of $75 million in the 1996 Water Resource Development Act, and has been fully planned by the Army Corps of Engineers. The streambank restoration and bulkhead replacement, which is the first phase of the overall project, is set to begin in the summer of 1999 two months utilizing last year's appropriation of $3,000,000, which also brought the project to final design. Prior appropriated funds have been utilized to fully design the bulkhead, a segment of naturalized streambank, and a system of walkways and public open spaces. Adjacent, currently dormant, sites will become desirable locations for development of commercial properties. However, the fiscal year 1999 funding will only take us through the construction of five hundred feet of bulkhead and some of the mud flats restoration, not to a usable facility.

A supplemental appropriation of $15 million is requested so that this integral element in Newark's revitalization can move from partial construction to the beginning of full project build-out. This investment in Newark's future will help us to improve the economic status of our nation's third oldest major city. The development of the riverfront now is a critical element in the overall plan for Newark's downtown revitalization. This linear park will serve as a visual and physical linkage among several key and exciting development projects. It is adjacent to one of the oldest highways in the nation, Route 21, which is undergoing a multi-million dollar realignment and enhancement. A light rail system, the Newark-Elizabeth Rail Link, which will connect Newark's two train stations, and ultimately, Newark International Airport and the neighboring City of Elizabeth, will provide users with access to mass transportation. Conversely, the riverfront will become a destination served by that system, providing an important open space and waterfront opportunity for residents of one of the most densely populated cities in the nation.

The environmental benefits of the project include flood control, riverbank and wetlands restoration, creation of urban green space, and enhancement of water quality in the Passaic River. These improvements will allow the Passaic River to be converted from one of the nation's most troubled waterways to a cultural and recreational asset. Ongoing and planned greenway projects will provide pedestrian and bicycle access to the waterfront from Newark's residential neighborhoods as well as the City's five major institutions of higher learning.

The riverfront development will complement and provide a visual and physical connection with the new, $170 million New Jersey Performing Arts Center, which opened in the Fall of 1997 and has been incredibly successful. Further north along the riverfront, also accessible from the riverfront walkway when it is fully built, the City of Newark and Essex County are constructing a minor league baseball facility

along Route 21, which will be open for use this July. On the eastern portion of Minish Park, residents of a crowded community, Newark's Ironbound, will have direct access to the river and its streambank for active and passive recreation for the first time. The development of the Passaic Riverfront is also a driving consideration in the planned construction of a major downtown sports and entertainment venue to house major events and competitions.

The riverfront will be the nexus of these activities, creating a vibrant downtown center that will provide economic development opportunities for the citizens of Newark and our region. Visitors from throughout the nation are expected to come to visit our revitalized city, and participate in the exciting growth and development taking place. There is tremendous potential for Newark's riverfront to mirror the success of other riverfront developments throughout the country, and Newark stands ready to accept the challenges such developments present.

The City of Newark currently is conducting a master plan study for the entire riverfront area, which will guide us in tying together these incredibly exciting, and challenging, projects. We have a once in a lifetime opportunity to coordinate several major development activities into a virtually seamless development plan. The appropriation of $15 million which I am requesting will serve to incorporate the Army Corps of Engineers' construction into our overall economic development plan to reinvigorate Newark. I urge you to support this appropriation request.

In closing, I would like to extend my thanks to the entire New Jersey delegation for its ongoing support. The time and attention of this subcommittee are deeply appreciated.

PREPARED STATEMENT OF KEVIN S. CORBETT, EXECUTIVE DIRECTOR, PORT AUTHORITY AFFAIRS STATE OF NEW YORK, EMPIRE STATE DEVELOPMENT CORPORATION; FRANK M. MCDONOUGH, EXECUTIVE DIRECTOR, NEW JERSEY MARITIME RESOURCES STATE OF NEW JERSEY, COMMERCE & ECONOMIC GROWTH COMMISSION; AND LILLIAN C. BORRONE, DIRECTOR, PORT COMMERCE DEPARTMENT THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

On behalf of the Port of New York and New Jersey, we wish to thank you for the support you have shown for the navigation and water resources programs in recent years.

Herein, we offer our comments on the US Army Corps of Engineers' fiscal year 2000 budget request. We fully support the proposed funding for the construction of the Kill van Kull-Newark Bay Channels to 45 feet. However, we believe that funding is also required for the deepening of the Arthur Kill Channel to 41 feet. In order for the benefits of these and other projects to be realized as soon as possible, and to avoid unnecessary project cost increases, we request that the subcommittee appropriate funds at the levels described in this statement. These funds will ensure that essential navigation infrastructure will be in place to accommodate post-Panamax ships currently deployed in international commerce. Using a conservative estimate for future cargo volumes, we believe that our Port will grow in excess of three percent per year—which equates to cargo volumes doubling by 2015. Accommodating the deep draft vessels that will move this cargo is critical to not only the Port's vitality but also to the nation's commercial competitiveness. The Administration's proposal, enhanced by our requests for additional funds, will keep this critical work on track to the benefit of the regional and national businesses that utilize the East Coast's largest international gateway.

Listed below are the projects and appropriation amounts that we request for the Port of New York and New Jersey. Those projects displayed in bold are our additional requests.

	Port Request
Construction:	
Kill van Kull—Newark Bay Channels, NY & NJ	$60,000,000
NY & NJ Channels: Arthur Kill, NY & NJ	2,000,000
NY & NJ Channels: Port Jersey, NJ	2,000,000
NY Harbor Collection & Removal of Drift, NY & NJ	1,000,000
Studies:	
Arthur Kill Channel Extension	100,000
NY Harbor & Red Hook Anchorage	300,000
NY & NJ Harbor Navigation Study	884,000
NY & NJ Harbor Navigation Study—PED	2,534,000
NY & NJ Channels: Arthur Kill, NY & NJ	1,312,000
Flushing Bay and Creek, NY	600,000

	Port Request
NY & NJ Estuary Restoration Study	100,000
NY Harbor & Adjacent Channels: Claremont Channel, NJ	1,500,000

A brief description of each of these activities follows.

CONSTRUCTION

Kill van Kull—Newark Bay Channels, NY & NJ (Phase II).—The Kill van Kull-Newark Bay Channels project—deepening to 45 feet—was authorized for construction in the fiscal year 1985 Supplemental Appropriations Act (Public Law 99–88) as well as the 1986 Water Resources Development Act (WRDA). The channel serves the busiest and largest container facilities on the Atlantic seaboard. The terminal operators and ocean carriers that call on the Port Newark and Elizabeth Marine Terminals, as well as the harbor pilots, have insisted that rapid completion of the 45 foot deepening project is essential if the port is to efficiently serve major carriers that call in the port. It is imperative to the continued navigational safety and economic vitality of the port region, and its ability to accommodate projected commerce, that the construction to 45 feet below MLW be completed as soon as possible. With the funding provided for fiscal year 1999 and the proposed funding for fiscal year 2000, the project has been given a good start.

The Corps' current schedule forecasts that the project will be finished no earlier than 2005. The Port Authority, as local project sponsor, is prepared to provide the non-Federal cost-share, estimated at $256 million. The Port Authority is working in cooperation with the Corps to accomplish the project several years sooner than originally planned and bring the project in under its authorization level by providing an optimum dredged material disposal solution. We appreciate the Administration's second year budget for fiscal year 2000 of $60,000,000.

NY & NJ Channels: Arthur Kill Channel, NY & NJ.—The Arthur Kill Channel, NY & NJ, Howland Hook Marine Terminal (HHMT) project was authorized in the 1986, 1992 and 1996 WRDA's. The project's controlling depth is currently 35 feet. The proposed channel improvements include: (1) deepening the existing 35-foot channel to 41 feet below MLW from its confluence with the Kill van Kull Channel to the HHMT; (2) deepening to 40 feet below MLW from the HHMT to the Petroport and Tosco facilities in New Jersey; and (3) selected widening and realignment of the channel to ensure safe navigation. The Port Authority has invested $35 million to date to modernize the HHMT and has spent, along with the City of New York, approximately $18 million for the berth dredging required to return this terminal into active service. The HHMT currently employs 275 people on peak days and is expected to increase to a range of 650 to 800 employees by the year 2000. In addition, HHMT is the Northeast Strategic Port of Embarkation in the event of a national emergency. Finally, the City, the State of New Jersey and the Port Authority are working to augment operations by re-establishing rail service to the terminal in late 1999.

In addition to the benefits that will accrue to the HHMT and the petroleum facilities along the Arthur Kill, implementation of this deepening project is vital to the Port's future capacity to grow. The HHMT is the largest marine terminal in New York City and has significant potential for expansion. The deeper channel will not only improve container movement but also will enhance petroleum vessel transit in the harbor's waterways, minimizing lightering and reducing the chances of oil spills or accidental pollution of the harbor due to groundings. We, therefore, respectfully request that the fiscal year 2000 appropriations include $2,000,000 to initiate channel improvements in the Arthur Kill Channel. We would prefer a greater amount to shorten the construction time frame for the 41-foot project but recognize the budgetary constraints you currently face.

New York Harbor and Adjacent Channels: Port Jersey, NJ.—The 1986 WRDA authorized construction of the Port Jersey Channel to 41 feet. The Port Jersey Channel, located in Bayonne, NJ, presently serves approximately one half dozen shipping lines calling at Global Marine Terminal. In addition, the channel provides access for the U.S. Military Ocean Terminal (MOTBY) as well as the Port Authority Auto Marine Terminal. MOTBY (which will remain in service under Army control until mid-1999 and then be turned over to the City of Bayonne except for a portion used by the U.S. Coast Guard) has been approved by the Local Re-use Authority (LRA) for a number of maritime and commercial re-uses, including a 125 acre plus container terminal. As the only privately owned terminal in the port, Global pays approximately $10,000,000 in Federal, state, and local taxes annually. More than 300 vessels, carrying approximately 280,000 twenty-foot equivalent units, call annually upon the terminal. Well over 600 terminal employees, with an annual payroll of $25 million, and 3,000 indirect jobs depend on this facility for their livelihood. Recog-

nizing the demand of ocean carriers and responding to a critical need to provide deeper water on an emergency basis, the State of New Jersey in 1997 constructed a 38-foot channel leading to Global at a cost of $10,000,000. The Federal cost-share for construction of this channel would have been $6,500,000, using the standard 65/35-project cost share formula. We support the Administration's request of $2,000,000 for fiscal year 2000 to initiate construction plans and specifications, and to implement the deepening and disposal required to improve the Port Jersey Channel.

New York Harbor Collection & Removal of Drift, NY & NJ.—The Harbor Collection & Removal of Drift Project removes sunken hulls and dangerous, decaying shoreline structures, which are sources of drift, jeopardize the smooth and safe flow of maritime traffic, and foul the region's beaches. The Corps has estimated that nearly 18,000 commercial, public and recreation vessels collide annually with harbor drift, causing damage to propellers, shafts and hulls. The annual associated repair costs and other economic losses average greater than $53,000,000. Ample opportunities exist for advancing this project, particularly within the Arthur Kill (NY/NJ), Shooters Island, NY & NJ, and Kill van Kull (NY) reaches. This project was authorized under the 1988 WRDA with an annual authorization of $6,000,000. Although the project's benefits are primarily navigational and safety related, the Shooter's Island NY & NJ reach has significant environmental benefits for migratory birds as a rookery. We are, therefore, respectfully requesting a total of $1,000,000 in the fiscal year 2000 budget to complete design and initiate the Shooter's Island Reach.

STUDIES

NY & NJ Channels: Arthur Kill, Extension to Perth Amboy.—The Port is the busiest petroleum-handling harbor in the nation. An average of 30 billion gallons of product is transported annually. Much of this activity and chemical shipping activity is centered along the Arthur Kill. In order to adequately assess the navigation needs of the petroleum industry located on the lower Arthur Kill, an assessment is needed to evaluate channel improvements south along the Arthur Kill Channel below the current 41-foot project to Howland Hook Marine Terminal and Petroport facilities previously discussed. The State of New Jersey has indicated that it would support the study and provide the non-Federal cost share. We support the Administration's request for $100,000 in the fiscal year 2000 budget to complete the study.

New York Harbor & Red Hook Anchorages, NY.—The Red Hook Anchorage is part of the New York Harbor and Adjacent Channels project. The anchorage was designed and constructed by the Corps in the early 1960's for ocean going cargo ships and tankers averaging 525 feet in overall length and with 30-foot drafts. Today, the dimensions of the anchorage are inadequate to accommodate modern, ocean-going vessels that are 1,000 feet long with drafts of 40 feet or greater. Therefore, to ensure safe navigation and maintain the Port's capability to accommodate current and future vessel needs, we support the Administration's request for $300,000 in fiscal year 2000 to initiate a feasibility study for the deepening of Red Hook Anchorage. The Corps has the authority to undertake this study under a congressional resolution adopted by the Senate Committee on Environment and Public Works on December 5, 1980. The States of New York and New Jersey support this project; and they have agreed to fund the non-Federal cost equally.

NY & NJ Harbor Navigation Study.—In the reconnaissance study, authorized by the 1996 WRDA, the Corps determined that evaluation of the channel deepening needs of the NY & NJ Harbor to 50 feet below MLW, or greater, is in the national interest. The States of New York and New Jersey and the Port Authority are the local sponsors. As part of the ongoing $18 million feasibility study, scheduled for completion in December 1999, the Corps will make recommendations for future navigation infrastructure improvements for the Port, in the context of a National Economic Development Plan. These recommendations will facilitate the Port's ability to continue to serve the nation's marine transportation needs based upon anticipated trade growth demands on shipping. The ocean carrier industry has made it clear that their future container vessels will require navigation channels dredged to depths that exceed the depths found currently in the Port. To complete the Feasibility Study, we support the Administration's request to fund the remaining Federal share of $884,000. Upon completion of the feasibility work, the Corps is prepared to enter the pre-construction engineering and design (PED) stage of the project. We support the Administration's request for $2,534,000 to initiate these activities.

NY & NJ Channels: Arthur Kill Channel, NY & NJ.—As we noted earlier, the controlling depth for the Arthur Kill is 35 feet. Even as construction hopefully will commence in fiscal year 2000 for the 41-foot project, planning for an ultimate depth of 45 feet should continue. The 1996 WRDA authorized the project depth to as much

as 45 feet. Although new congressional authorization is needed to increase the Section 902 funding cap, a preconstruction, engineering and design effort will be needed for construction of the 45-foot channel. The Corps has estimated the cost of this study to be $3 million, with the local share provided by the State of New Jersey and Port Authority of New York and New Jersey. The Port supports the Administration's request for $1,312,000 in fiscal year 2000.

Flushing Bay and Creek, NY.—The purpose of this study is to determine the feasibility of providing environmental restoration to the Flushing Bay and Creek project vicinity. The New York City Department of Environmental Protection provided a letter of support for this study in 1996. Funds will be used to continue the feasibility phase of the study that will be shared on a 50–50 percent basis by Federal and non-Federal interests. We support the budget request of $600,000.

NY & NJ Estuary Restoration Project.—As part of the Harbor Navigation Study, investigations on upland improvements including terminal expansion are being conducted by The Port Authority of New York and New Jersey in cooperation with the States of New York and New Jersey and the Corps of Engineers. These activities have culminated in the development of a business investment plan for future port development and improvement. Proposed harbor improvements may include activities beyond construction of navigation infrastructure. For example, the implementation of a restoration and remediation plan for the New York/New Jersey Estuary is also a significant part of any future strategy for the harbor. To assess Federal participation in such a program, it is important for the Corps of Engineers to prepare a reconnaissance study to make a determination as to Federal interest in such an effort. To that end, we respectfully request that funds in the amount of $100,000 be appropriated for the Corps of Engineers to conduct the necessary assessment.

New York Harbor and Adjacent Channels: Claremont Channel, NJ.—Located on the Hudson River in the State of New Jersey, Claremont Channel currently has an average depth of 27 feet below MLW. Section 202(b) of the 1986 WRDA authorized federalization of the channel to 41 feet. The State of New Jersey, the Port Authority, and the region's pilots have identified optimal designs for the channel, with depths ranging from 34 to 38 feet. This deepening project will support current shipping activities in the channel. Two scrap metal exporting companies and a crushed stone aggregate terminal are the major users of the Claremont Channel. Scrap metal exports have averaged over 1.5 million long tons per year and are our region's number one export. Meanwhile, crushed stone transshipments approach 4 million tons annually. Combined, these three firms employ 300 persons directly and provide nearly 3,000 indirect jobs through suppliers as well as support to longshore services. New Jersey will invest $21,000,000 in construction activities in 1999. We respectfully request that $1,500,000 be appropriated for fiscal year 2000 to complete the study of this currently inadequate channel.

CONCLUSION

For the first time in a while, the budget request comes close to resembling the annual funding levels approved by Congress for deep draft navigation projects. The fiscal year 2000 budget for ports is of marked contrast to those of recent years, especially last year when the harbor construction budget totaled $40 million. The difference is partly explained by the Administration's proposal that Congress enact a new user fee scheme to replace the constitutionally crippled Harbor Maintenance Tax. Judging by the controversy surrounding the proposal and the difficulty Congress had in enacting the HMT in 1986, there is pessimism as to how quickly Congress will be able to come to a decision on a new fee. There is sufficient funding available in the Harbor Maintenance Trust Fund to support channel maintenance for the next few years. We ask that even as the authorizing committees consider this new fee proposal, your committee again provide sufficient appropriations to meet the needs for the deep draft navigation program. We believe that the budget levels proposed by the Administration for the Kill van Kull-Newark Bay and Port Jersey channels are sufficient to meet the demands of current navigation requirements. However, we believe that the Arthur Kill Channel to Howland Hook project should be constructed starting no later than fiscal year 2000. The Howland Hook Marine Terminal is growing rapidly and is key to our Port accommodating projected trade growth in the near term; hence, we urgently request that it be considered a priority under new starts for construction funding. (We also respectfully request that funds be appropriated to complete a feasibility study to deepen the Claremont Channel.) Lastly, we appreciate the Energy & Water Development Subcommittee's diligence in providing for the nation's water resource needs. Thank you, and we hope that you will have the opportunity to visit our Port in the very near future.

PREPARED STATEMENT OF VERNON A. NOBLE, CHAIRMAN, GREEN BROOK FLOOD CONTROL COMMISSION

SUMMARY

The Commission requests that the Congress appropriate $1,000,000 for the Project in fiscal year 2000, to continue construction of the Project in 2000.

Mr. Chairman and Members of the Subcommittee:

My name is Vernon A. Noble, and I am the Chairman of the Green Brook Flood Control Commission. I submit this testimony in support of the Raritan River Basin—Green Brook Sub-Basin project, which we request be budgeted in fiscal year 2000 for $1,000,000 in construction general funds.

The Commission was established in 1971, pursuant to an Act of the New Jersey Legislature, following disastrous flooding which took place in the Green Brook Basin in the late Summer of 1971. That flood caused $304,000,000 in damages (April 1996 price level) and disrupted the lives of thousands of persons.

In the late Summer of 1973, another very severe storm struck the area, and once again thousands of persons were displaced from their homes. $482,000,000 damage was done (April 1996 price level) and six persons lost their lives.

Thanks to the efforts of New Jersey's Representatives and Senators in Congress, the Corps of Engineers was authorized by Congress in 1986 to design a solution to this problem of flooding. The floods of 1971 and 1973 were only the most recent in a long series of severe floods. Flooding in this Sub-Basin dates back to the late 1800's when they were first recorded, and has become more damaging as the population of the area has grown.

The Green Brook Flood Control Commission is made up of appointed representatives from Middlesex, Somerset and Union Counties in New Jersey, and from the 13 municipalities within the Basin. This represents a combined population of almost one-quarter of a million (248,084) people.

The Members of the Commission are all volunteers, and for 28 years have served, without pay, to advance the cause of flood protection for the Basin. Throughout this time, the Corps of Engineers, New York District, has kept us informed of the progress of the project, and a representative from the Corps has been a regular part of our monthly public meetings.

Thanks to the vigorous support of New Jersey's Congressional Delegation, the Congress in 1986 authorized a comprehensive flood control project for the protection of the entire Green Brook Basin at a then established estimated cost, in 1985 dollars, of $203,000.000

In the Energy and Water Appropriations Act of 1988, Congress included a provision making it clear to the Corps of Engineers that protection is to be designed for the entire Green Brook Basin, rather than only the lower portion of the Basin, as had at one time been studied by the Corps of Engineers.

During 1998, the Congress, with the agreement of the President, appropriated $9,900,000 to initiate construction of the project. Final preparations are now underway, and it is expected that actual construction will begin in Bound Brook Borough and in western Middlesex Borough this year.

We believe that it is essential that the Green Brook Flood Control Project be carried forward, and pursued vigorously to achieve protection at the earliest possible date. This project is needed to prevent loss of life and property, as well as the trauma caused every time there is a heavy storm.

The General Reevaluation Report of the Corps of Engineers dated 1997 points out some sobering facts. It shows that the damages which would occur in a repetition of the flood experienced here in 1973, measured in 1996 dollars, would be $582,700,000.

New Jersey has programed budget money for its share of the project for fiscal year 2000.

Actual construction will begin this year. We believe that your decision of last year to authorize the initiation of construction was a wise and prudent decision. It is essential that construction be continued in fiscal year 2000.

We urgently request an appropriation for the project in fiscal year 2000 of $1,000,000, as proposed by the Administration.

The more quickly the construction of this project is completed, the less will be the total cost, and the sooner the project will provide protection.

Economics and costs are of course important, but personal human tragedy, and the loss of life, is more important.

As you may know, in 1998 an independent Task Force, consisting of representatives appointed by the affected municipalities and counties, examined alternative possibilities for providing flood protection for the upper portion of the basin.

In late 1998, after regular meetings throughout the year, the Task Force reached a unanimous conclusion. They recommended that the Corps of Engineers study a specific new possible site for a detention basin. They also recommended that the Corps of Engineers review another site which had been considered some years ago. Both of these sites are in the Watchung Mountains, where flood water must be detained to provide protection for the densely populated areas at the foot of the mountains.

Actual construction work in the upper-most portion of the Basin does not need to begin for a number of years, and accordingly we are confident that acceptable and workable project plans can be developed in ample time to meet the approximate ten year construction schedule.

Thank you, Mr. Chairman, and Members of the Subcommittee, for your vitally important past support for the Green Brook Flood Control Project; and we thank you for the opportunity to submit this testimony to you.

SOUTHEASTERN U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF SHELDON L. MORGAN, PRESIDENT, WARRIOR-TOMBIGBEE WATERWAY ASSOCIATION

HISTORICAL

The Warrior-Tombigbee Waterway Association represents a broad cross-section of shippers, carriers, and the general business community in the Warrior-Tombigbee basin in Alabama, and users in nine southern states. The Association began in 1949 to work for the redevelopment of the Warrior-Tombigbee Waterway System. Construction of its original 17 locks and dams began in the late 1870's, and completed in 1915. The navigation system provided by these locks and dams had gradually deteriorated and, following World War II, the annual tonnage had leveled off at 2.5 million tons, due to the condition and limited capacity of the obsolete locks. The Association began in 1950 to work with Alabama's Congressional Delegation and the Army Corps of Engineers to plan for modernization. Five new locks were built between 1954 and 1975. The last remaining old structure (Oliver Lock and Dam) was replaced in 1992—the first under the Water Resource Development Act of 1986. The Warrior-Tombigbee Waterway now has modern and standard sized locks throughout its length. These six new locks replaced the seventeen old, turn-of-the-century locks, and today, this system represents a most noteworthy example of the positive impact of the Federal water resource development program. The most persuasive evidence of the validity of this project and the wisdom of those who made it possible comes from the record compiled during and following the investment in its redevelopment. During the economic studies which justified these investments, it was projected that by 1980, the Waterway would carry some eight million tons annually, producing a positive benefit to cost ratio. These levels were reached in 1966 and, by 1980, twice the projected tonnage was being moved. Traffic has since reached 25 million tons annually, a level three times that which had been projected. Clearly this has been a valid investment in infrastructure.

Subsequently, due in large part to the federal investment in this waterway, several billion dollars have been invested by industry, agriculture and other non-Federal agencies, providing thousands of jobs. For example, the Alabama State Docks, as a result of a $300 + million expansion program, now offers the most advanced export coal handling technology available in this country, along with similar improvements for handling grain, bulk materials, steel and forest products. It is interesting to note that the investment by this one local agency exceeds the total Federal investment in building all the locks and dams on the entire waterway, including the new Oliver Lock. The Alabama State Docks is once again embarking upon a multi-million dollar improvement and expansion program.

DEVELOPMENTS BY USERS

This Waterway must continue to be efficient and reliable if its users are to remain competitive in world markets. Shipments of ore, steel, and related products have increased because of the new and modern U.S. Steel facilities in Birmingham, and a new British Steel mill at Tuscaloosa and Mobile. The efficiency and modernization of the waterway have been important factors in U.S. Steel's continuing investments to modernize its Fairfield mill. Fairfield is now again one of the bright stars in the USX crown. Recent investments substantially exceed $1 billion. The new British Steel mill surpassed $100 million in initial investment, and an additional $154 million is now underway. This mill utilizes the river southbound for export, as well as

northbound for raw materials and domestic sales of finished product. Hence there is a favorable impact on the balance of payments which will be further enhanced by the current expansion. British Steel has recently completed a $100 million Direct Reduction Iron Plant at Mobile to ship production on the Black Warrior-Tombigbee to Tuscaloosa Steel.

Major facilities for mining interests, forest products and marine equipment account for well over another $1.5 billion in recent investment. Coal comes out of Kentucky to electric generating plants on the BWT. There are new facilities at the Port of Mobile, which handle more forest products than the total handled by all other Gulf Coast ports. The efficiency and reliability of the waterway are key factors in the development and competitiveness of these facilities, upon which thousands of jobs depend.

These are but examples of how this waterway is so central to the economy of this entire region, impacting both domestic and international markets. Attached with this statement are letters further highlighting this importance. These represent a broad cross-section of the economic heartbeat of an entire region. Throughout these statements you will find repeated references to the importance of confidence in the waterway to the willingness of business and industry to continue to invest in our area and of their customers to depend on its reliability for the movement of their products. Please note the wide range of interests represented by these statements: financial institutions; public utilities; port facilities; coal mining; manufacturers; suppliers; marine interests; petroleum and chemical processors and general business.

BUDGET REQUESTS

We support the President's recommendation for O&M funds and ask for add-ons of $3 million for additional capability be provided for the Warrior-Tombigbee Waterway to help catch up on deferred projects. This would be realistic funding which we will support as absolutely essential to day to day activities of the O&M program, and with good management it will allow for the continuation of several on-going projects which are near the point of culmination, following several years of investigation, design and now beginning the actual work. These projects address long-standing problems and have required extensive research and coordination and reflect excellent teamwork by the Corps and the industry. But for the support of this committee, they would not be nearing reality. We wish to emphasize that this level of funding is the minimum essential level.

From this have come both short and long range programs which have provided a basis for orderly progress toward keeping the Waterway efficient and reliable. The funding requirements to which I have referred stem from work we need to continue now under these programs. I respectfully repeat that the performance of this waterway in successfully handling a level of tonnage some three times the projections made during its design, attest to foresight of this Committee.

To summarize, the Warrior-Tombigbee Waterway is a classic example of the positive aspects of the Civil Works Program. The Congress has seen its potential and has supported its development. And now the project continues to demonstrate its worth. Investment and expansion continue locally.

The Warrior-Tombigbee Development Association request for Operations & Maintenance funding in fiscal year 1999 for the Black Warrior-Tombigbee Waterway in the amount of $16.0 million. This is level funding for the normal O&M work, and is the minimum to keep navigation capability at a nominal level. However, additional capability of the Corps is important to the continuing improvements that have been deferred. These include upland disposal sites, mooring cells, rock removal, a long range study of future needs and demands and other vital improvements totaling $3.0 million. Therefore, our total request is for a total of $19,025,000 for fiscal year 2000.

PREPARED STATEMENT OF THE U.S. ARMY CORPS OF ENGINEERS

The following is a summary of the funding items for the U.S. Army Corps of Engineers for fiscal year 2000 to meet the needs of the Warrior-Tombigbee Waterway, and which we ask the Committee to approve:

Warrior-Tombigbee Waterway:	
Operations & Maintenance Funds for Corps' Budget fiscal year 2000 (level funding)	$16,000,000
Funds for Additional Capability not included in Corps' O&M Budget Request [1]	3,000,000

For General Investigations (Long Range Study)	250,000
Total Funds Required	19,250,000

[1] Funds for Additional Capability items are not included in the Corps' Budget request, so it is not likely that the committee has been informed of the need of funding for this particular Additional Capability. We are requesting the additional funds for continuing projects and emphasize the need for additional O&M capability funds if we are to have an adequate current year program, and to support on-going projects designed to improve safety and efficiency and to reduce future costs to the Federal Government. O&M projects to be funded from this request are continuing projects under the 20 year long range plan for improving the BWT, including remaining vital upland disposal sites and recycling three that are filled (these substantially reduce annual dredging costs) rock removal and stop log replacement (equipment needed for lock maintenance). General Investigations funds would be used to continue long range studies for further modernization of the waterway.

Other needs allied to the Warrior-Tombigbee are:

Mobile Harbor:	
Operations & Maintenance Funds, for Corps' Budget fiscal year 2000 [1]	$20,200,000
Construction	700,000
Total Funds Required	20,900,000

[1] Requested funds for Mobile Harbor are 2.5 million more than the President's budget. Historically, this is the level of funding required to maintain the harbor.

Written statements of support are attached.

PREPARED STATEMENT OF JAMES A. VANN, JR., PRESIDENT AND CHIEF EXECUTIVE OFFICER, ALABAMA ELECTRIC COOPERATIVE, INC., ANDALUSIA, AL

On behalf of Alabama Electric Cooperative, Inc. (AEC) and its member owners, I respectfully request your support for the Corps of Engineers fiscal year 2000 funding request for the Black Warrior-Tombigbee Waterway and Mobile Harbor. The enclosed statement explains AEC's interest in these projects which are vital to our business. The benefits of low-cost coal transportation afforded by these projects are enjoyed by our member systems and their individual electrical customers' accounts, which number approximately 325,000.

Please give your support to the Corps of Engineers' budget requests for these projects. We sincerely appreciate your continued support in this matter and in other issues related to the rural electric program.

PREPARED STATEMENT OF THE ALABAMA ELECTRIC COOPERATIVE, INC.

BACKGROUND INFORMATION

Alabama Electric Cooperative, Inc. (AEC) is a wholesale power supplier for 21 member-owners located in central and south Alabama and northwest Florida. The member-owners serve over 325,000 customer-members. AEC operates the Charles R. Lowman Power Plant, located at Milepost 89.5 on the Tombigbee River, a coal-fired power plant which burned 1,557,404 tons of coal in 1998. Also, AEC has a site on the Black Warrior-Tombigbee River which is a possible location for a future base-load fossil fired generating plant.

STATEMENT OF INTEREST AND SUPPORT

AEC joins the collective effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway because of the lower fuel transportation costs which the waterway provides to AEC's Lowman electric generating plant. The Black Warrior-Tombigbee Waterway (BWT), the Tenn-Tom Waterway, and the Port of Mobile are vital to our delivery of coal economically and efficiently to this plant, which is located on the Tombigbee River near Jackson, Alabama. During calendar year 1998, we received 938,483 tons of coal via the BWT which accounts for over 60 percent of total coal received.

Because delivered coal cost is such an important factor in our ability to maintain competitive rates to our member systems, AEC supports the Black Warrior-Tombigbee project and level funding for the Corps of Engineers' fiscal year 2000 budget. In addition, AEC supports the critical needs identified by the Corps which have been deferred over the past three years.

In addition to the dependency which AEC has upon the BWT, there are benefits to our region and our end-consumers as a direct result of a viable BWT waterway and the Port of Mobile. These systems provide an invaluable link between our region and the world markets. As such, they stimulate the region's economy, provide jobs, and help reduce the trade deficit.

SPECIFIC BENEFITS OF THE WARRIOR-TOMBIGBEE WATERWAY AND THE PORT OF MOBILE TO AEC

The amount of coal moved to AEC's Plant Lowman by barge on the BWT for the past six years is as follows:

Year	*Tons*
1993	866,731
1994	1,077,485
1995	874,044
1996	1,103,919
1997	1,052,575
1998	938,483
Total	5,913,237

The savings in transportation costs represented by the above tonnage exceeds $30 million compared to AEC's next viable option of delivery via rail.

AEC plans to continue to move the majority of its coal via the BWT in 1999 and beyond. We have utilized the Port of Mobile for transloading a small test shipment of foreign coal, and have made further plans to accept more of this coal for testing in 1999.

STATEMENT WITH REGARD TO APPROPRIATION AMOUNTS

AEC supports near level funding ($16 million) for Operation and Maintenance in the Corps of Engineers' Fiscal Year 2000 Budget. We view this as a minimum requirement in that this level of O&M funding is necessary to cover the minimum expected needs within the Mobile District for fiscal year 2000. In addition, there are vital improvements which would bring the waterway efficiency to a higher level, totaling $3,000,000.

AEC also supports the appropriation of adequate O&M funds of $20,200,000 for Mobile Harbor.

Lastly, AEC supports an amount of $250,000 for General Investigations, as identified by the Corps in cooperation with the Warrior-Tombigbee Waterway Association.

CONCLUSION

We appreciate the opportunity to submit a statement on behalf of our member owners in central and south Alabama and northwest Florida pertaining to the benefits of the BWT waterway and the Port of Mobile. AEC and its member-owners fully support the Corps of Engineers' 2000 budget request for $16 million in operations and maintenance funds for the BWT waterway, the appropriation of an additional $3 million in funds for deferred projects, as well as $250,000 for General Investigations, and $20.2 million for Mobile Harbor O&M. While we are well aware of budget constraints, we believe these projects should be funded at these levels to assure a viable transportation system. With the money that has already been spent in construction of the BWT transportation system, proper funding for operations and maintenance is, in our view, prudent management of what is undoubtedly a national asset.

PREPARED STATEMENT OF LYNN SHERRILL, VICE PRESIDENT, OPERATIONS, CROUNSE CORPORATION, PADUCAH, KY

Maintenance and improvements to the Warrior-Tombigbee Waterways and Mobile Harbor are a matter of vital interest to our Company. Crounse Corporation has, since 1990, barged approximately one million tons of coal per year from the Upper Ohio Valley to locations on the Black Warrior River and Mobile, Alabama area.

We have found the Warrior-Tombigbee Waterway to be our highest cost operating area, and can ill afford to have the system deteriorate below its present level, because of reduced maintenance funding.

PREPARED STATEMENT OF CHARLES STORY, VICE PRESIDENT GOVERNMENTAL & PUBLIC AFFAIRS, DEGUSSA-HULS, THEODORE, AL

Degussa-Huls Corporation is pleased to have the opportunity to express our support for the $16 million Corps of Engineers' Operations and Maintenance Budget for the Warrior-Tombigbee Waterway and for the $3 million additional funding necessary to complete badly needed projects which have been delayed due to the lack of funding. The Port here in Mobile is very crucial to the economic well being of our entire Community, and we also strongly support an appropriation of $20.2 million for the Mobile Harbor.

Our Company has invested over $1.5 billion in the Mobile Area, and employ over 1500 employees from this area. As such we are one of the largest employers in south Alabama. Our Company as well as many other companies in the area who are part of the Chemical Industry are heavily dependent on the Warrior-Tombigbee Waterway System and the Harbor facilities here in Mobile. Our industry each year moves a tremendous amount of raw materials and finished products through the Port and the Waterway System. The increased efficiency which we would experience as a result of these appropriations would directly benefit our Company and our industry, and lay the ground work for even more growth in an industry which has contributed greatly to the sound economy which we enjoy here in south Alabama.

Degussa-Huls which is German owned selected Mobile 25 years ago partly because of the good transportation infrastructure which we have here in the Port of Mobile. The Port and the Waterway System are a vital link in this infrastructure. We have had a number of expansions here in Mobile (in competition with other sites in Europe) which were made possible by transportation advantages that we enjoyed in this area. Maintaining and improving this infrastructure and its efficiency with adequate appropriations will provide significant benefits for the entire south Alabama Area.

We urge you to support these appropriations, and thank you for your consideration of our request.

LETTER FROM JOSEPH H. LANGJAHR

FOSS MARITIME,
Seattle, WA, February 18, 1999.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy & Water Development, U.S. Senate, Washington, DC.

DEAR CHAIRMAN DOMENICI: The purpose of this letter is to express our support of the Warrior-Tombigbee Waterway project and, in particular, our support of the Corps of Engineers O&M budget of $16.0 million for this waterway, together with additional critical needs.

Foss Maritime Company began providing marine transportation services in the Pacific Northwest in 1889. During the past 110 years, Foss Maritime has developed a complete waterborne tug and barge transportation system that currently operates throughout Puget Sound, Washington; Alaska; Columbia/Snake Rivers, Oregon; San Francisco and Southern California. We deploy over 200 tugs and barges in order to perform a multitude of commodity movements, vessel-related harbor services and international and coastwise ocean towing. During the past decade, Foss Maritime has invested more than $100 million in vessel conversions and new construction to rebuild and modernize its fleet of marine equipment. We employ about 1,300 people throughout our operating area.

Recently, Foss Maritime was selected by The Boeing Company to design, build and operate a roll-on, roll-off ship to transport Boeing-built Delta IV rocket boosters from Decatur, Alabama, to space vehicle launch sites at Cape Canaveral Air Station, Florida, and Vandenberg Air Force Base, California. The 310-foot ship, to be owned and operated by Foss Maritime or one of its subsidiaries, under Boeing time charter, will carry three common booster cores and associated containerized cargo. At a light operating draft of eight feet, the ship will be capable of navigating the Tennessee-Tombigbee Waterway and Warrior-Tombigbee Waterway from Boeing's rocket booster factory being built in Decatur.

This Foss Maritime ship is scheduled to enter Boeing service by July 1, 2000. We have awarded a contract to Halter Marine, Inc., Gulfport, Mississippi, to construct the ship, along with an option for a second vessel, and it is being built in Halter Marine's shipyard in Pascagoula, Mississippi.

The primary operating route of this ship will be through the Tennessee-Tombigbee Waterway and Warrior-Tombigbee Waterway from Decatur to Mobile,

Alabama; from Mobile through the Gulf of Mexico and the Atlantic to Cape Canaveral; and from Mobile through the Caribbean Sea, Panama Canal and the Pacific to Vandenberg. Therefore, maintenance of the Warrior-Tombigbee Waterway and strict compliance with regulated pool depths is absolutely essential to the success of this entire Boeing project.

Last year the amount appropriated to the Corps of Engineers for Warrior-Tombigbee Waterway Operations & Maintenance was $16.0 million. The Waterway will need at least level funding for fiscal year 2000. However, the Corps has additional capability for certain projects such as upland disposal programs, rock removal and stop log replacement. These are vital to the continuing improvements year to year which ultimately will bring the Waterway efficiency to an expected level. We encourage your committee to provide an additional $3.0 million in O&M capabilities for these projects.

Finally, Mobile Harbor is an important component of our project and we support the appropriation of funds in an amount of $20.2 million.

Thank you for the opportunity to present our views and our concerns to you and your committee on these vitally important projects.

Very truly yours,

JOSEPH H. LANGJAHR,
Vice President & General Counsel.

PREPARED STATEMENT OF ALLEN HENRY, PRESIDENT, HENRY MARINE SERVICE, INC., SPANISH FORT, ALABAMA

We join in the collective effort of the Warrior Tombigbee Waterway because of lower costs, energy efficiency, all are important to local, national, and international commerce.

Henry Marine Service, Inc. operates out of the Mobile, Alabama area offering support services to the larger inland barge lines serving the states of Alabama, Mississippi, Florida, and Louisiana. We employ approximately 25 employees on a full time basis in the repair service for towboats and barges. In addition, I own three towboats providing towing in the Mobile harbor for the inland towing companies requiring smaller towing vessels to deliver their barges dockside and shipside in the Mobile area.

Additionally, smaller tugboats normally service the barge lines by towing their barges to locations in the tri-state area where it is not possible to navigate with the larger towboats used by the major barges lines. This service requires me to employ about thirty pilots and deckhands full time, in addition to my shipyard employees.

The Warrior Tombigbee Waterway, Tennessee Tombigbee, and Alabama River are very important to the viability of my company. Therefore it is very important that the Corps of Engineers continue to receive maximum funding for the fiscal year 2000.

We cannot emphasis enough how important it is for the level of funding of 16 million dollars, additional O&M capabilities of 3 million dollars, and general investigation funding of .25 million dollars be approved for fiscal year 2000.

Also, we strongly endorse and support the appropriation of funding for the Mobile harbor in the amount of 20.2 million dollars in fiscal year 2000.

If these annual appropriations for funding of waterway projects do not continue, then companies like Henry Marine Service, Inc. will disappear

Thank you very much for your efforts.

PREPARED STATEMENT OF J. TIM WILK, HUNT CRUDE OIL SUPPLY CO., TUSCALOOSA, AL

Hunt Refining Company presently employs approximately 250 residents of West Alabama and has been an important participant in the local economy since 1946. Curtailment of our use of the Warrior-Tombigbee Waterway System (WTWA) would have a long-term impact on employment at Hunt Refining Company and ultimately, the surrounding counties.

The WTWA system and the Port of Mobile are critical to the operation of our Refinery in Tuscaloosa, Alabama. We barge over 40 percent of our crude oil and over 25 percent of our refined products using both the Port of Mobile and the WTWA system. We use the Port of Mobile as a starting point to pipeline or barge foreign and domestic crude north at the rate of approximately 12 million barrels per year.

Hunt Refining Company supports the Warrior-Tombigbee project and joins the collective effort to improve the efficiency and reliability of the WTWA system. We

are currently limited by draft restrictions most of the year, high river the other part of the year, and to a special combination of two-barge tows all year. Through improvements, we can avoid significant increased costs during periods when the river is above flood stage or at very low levels. Increased navigability of the waterway, increases our transporter choice, ultimately keeping costs competitive.

The corps of Engineer's 1999 Budget for the BWT Operations and Maintenance is $16.0 MM. We believe the BWT needs at least level funding to cover the minimum expected needs for fiscal year 2000. The Corps has several projects, which have been deferred over the last three years that can now get underway. These include the upland disposal programs, rock removal and stop log replacement. These deferred projects as well as funding for several studies will cost an additional $3.25 MM. We are asking for your support for a total of $19.25 MM for fiscal year 2000.

We further support the funds needed for the Mobile Harbor in the amount of $20.2 MM.

PREPARED STATEMENT OF JAMES M. DECOSMO, MANAGER OF LANDS, RESEARCH AND PROCUREMENT, SOUTHEAST TIMBERLANDS, KIMBERLY-CLARK, MOBILE, AL

Kimberly-Clark (K–C), began operations in Mobile following its merger with Scott Paper in December of 1995. Including the acquisition cost, K–C has invested over $2 billion in the Mobile Plant and support operations. These investments represent an average annual capital investment of $50 million in Mobile.

For the past sixteen years, Kimberly-Clark has continuously utilized the Warrior-Tombigbee Waterway, Coosa-Alabama River System, as well as the Port of Mobile. In 1983, the first year K–C shifted from truck and rail to river transportation, some 1.06 million tons of forest products were transported with two tugboats and forty barges. Due to the efficiencies and reliability of the Waterways, K–C transported in excess of 3.5 million tons of forest products in 1998, 1.0 million of which was exported to International Markets. To sustain marine operations at this level requires over 20 tugboats, 150 barges and over 250 jobs directly related to operations and maintenance.

For K–C to operate on the Waterway requires operating expenses in excess of $13.5 million. These operating expenses are required to support a $28 million capital investment in wholly owned woodyards and joint venture wood processing facilities.

With this investment in Kimberly Clark's Southern Operations and the dependence on the Waterways, it is critical that the river channels, locks & dams, bridges, harbors and all other elements of navigation be adequately maintained, upgraded and funded to meet the existing and future demands of the waterways, particularly the Warrior-Tombigbee Waterway.

In consideration of the value of the river system and the importance of operational reliability, Kimberly-Clark unanimously supports and recommends a minimum of $16.0 Million for the fiscal year 2000 Operations and Maintenance budget for the Warrior-Tombigbee Waterway and $20.20 Million for Mobile Harbor.

K–C is a multi-billion dollar packaged products company strategically focused on diapers, personal care products, consumer tissue and away-from-home products. To continue to be the market leader, all facilities and operations throughout the world must remain competitive, from the procurement and transportation of raw materials to the satisfaction of each and every customer.

The Mobile operation has been and is committed to being a leader in World markets. To maintain a position of leadership and a viable operation, all facets of manufacturing must continually improve. To remain a competitor in a highly competitive industry, it is imperative that the waterways continue to be adequately maintained and upgraded to meet the challenges tomorrow brings. The Warrior-Tombigbee and Coosa-Alabama River waterways are the "Main Artery" that support the Mobile Harbor, Kimberly-Clark's Southern Operations and the thousands of jobs directly and indirectly related to its business. These waterways and ports will play a significant role in K–C's future success.

With these considerations in mind, we ask that you give the requested budgets and appropriations your full support.

Thank you for your help, consideration and support in this matter.

PREPARED STATEMENT OF JOHN S. MCCLELLAND, JR., MIDSTREAM FUEL SERVICE, INC., MOBILE, AL

As a member of the Subcommittee on Energy & Water Development, your active support is requested for fiscal year 2000 projects designated by the Army Corps of

Engineers for the Port of Mobile and the Black Warrior-Tombigbee Waterway. The crucial projects designated by the Army Corps of Engineers for these strategic waterways are necessary to sustain normal operations and to provide for regular maintenance.

The Port of Mobile is a vital link for the Southeast region of our nation to trading partners both domestic and foreign. Multiplying the effectiveness of the Port of Mobile is the Black Warrior-Tombigbee Waterway which links the harbor to 16,000 miles of the inland waterway system. The efficiencies of these waterways will continue to enhance economic opportunity and prosperity in the Southeast region.

Our company, Midstream Fuel Service, Inc., with headquarters in Mobile, Alabama, is an ardent supporter of the efforts of the Army Corps of Engineers to operate and maintain these assets. Growth and maintenance of these waterways have allowed our company to grow from a one-boat, one-barge harbor operation to a dynamic petroleum supply and support company. We operate towboats, tank barges and marine terminals which all rely on these waterway systems to service the marine needs of our customers. Our service reaches deep into Alabama on the Black Warrior-Tombigbee Waterway, allowing our inland customers to ship bulk petroleum products in an efficient, cost-effective manner. In the Port of Mobile, we supply fuel to ships, tugs and inland vessels that are transiting the region. Vessels employed in offshore oil production use our Mobile harbor base for support services. The level of our commercial success has been and will continue to be highly dependent on the efficiency of these waterways.

For fiscal year 2000, the Army Corps of Engineers will need a level funding of $16 million for operation and maintenance of the Black Warrior-Tombigbee Waterway. An additional $3.0 million will be requested for improvement projects that have been deferred during the past three years but are ultimately needed. These projects include upland disposal programs, removals and stop log replacement. There is also a need for general investigations with required funding of $.25 million.

The fiscal year 2000 funding requirement for operation and maintenance of the Mobile Harbor is $20.2 million. Continued O&M funding for the Mobile Harbor is critical to the Port of Mobile and the Black Warrior-Tombigbee Waterway.

The Warrior-Tombigbee Waterway Association will present statements of support for the Army Corps of Engineer's funding proposal to your Subcommittee during the first week of March. Midstream Fuel Service, Inc. enthusiastically supports their testimony as representative of those who depend on the Warrior-Tombigbee Waterway and the Port of Mobile for our commercial success.

Thank you for the work you have done in the past to keep these waterways navigable. We look forward to continued successful navigation in the Port of Mobile and on the Warrior-Tombigbee Waterway.

PREPARED STATEMENT OF GEORGE E. DUFFY, PRESIDENT, NAVIOS SHIP AGENCIES, INC., MOBILE, AL

We request that you support the U.S. Army Corps of Engineers' Operations and Maintenance Budget for $19,000,000 and General Investigations funding of $.25 million for the Warrior-Tombigbee Rivers.

Our vessels and our principal's vessels carry 3.4 million tons of iron ore and 1.8 million tons of furnace coke per year with the majority bound for industries in the State of Alabama. The Port's ability to maintain its present draft has enabled us to remain competitive on the world market. The continued dredging of the Warrior-Tombigbee allows this cargo to go through the waterway system of the Tombigbee. The U.S. Army Corps of Engineers has done an outstanding job maintaining this system.

A large portion of this cargo is for steel operating in the Birmingham, Alabama area. These import raw materials enable the steel mills to supply steel for various supplies to this nation. Some of these cargo products from the steel mills are re-exported through the Port of Mobile, which helps to reduce our trade imbalance. The efficiency and reliability of waterways commerce is essential for us to provide the raw materials necessary for our principals to meet the demands of the various markets within the State of Alabama and the United States.

We have been in operation since 1957 utilizing the Port of Mobile, the Warrior-Tombigbee and the Black River systems. We realize the importance of tight budget control, yet the benefits on industry, commerce and trade as well as job return must be recognized. Therefore, we solicit your support. We join in the collective efforts of all those affiliated companies who realize the importance of maintaining this waterway system so that we may continue to bring in the necessary raw materials for our manufacturing industries within the State of Alabama. For these reasons, we

request you to support the $19,000,000 for the Operations and Maintenance programs for fiscal year 2000.

LETTER FROM M. DEAN WHITE

ORSOUTH MIDLAND ENTERPRISES,
ORSOUTH TRANSPORT CO.,
Mobile, AL, March 1, 1999.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy & Water Development,
U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: I am writing to express my support for the continued maintenance and improvement of the Black Warrior-Tombigbee Waterway System.

Orsouth Transport Co. is one of the largest regional carriers by water in the Warrior-Tombigbee System. Last year we transported approximately 2.0 million tons of commodities on this waterway, and an additional 2.8 million tons through the Port of Mobile, including coal, scrap metals, direct-reduced iron, and aggregates. These tonnages are significant to the economies of the states in that region, from the points of view of both producers and consumers. Barging is a very low-cost method of transportation, responsible for moving more than 15 percent of all of the United States total freight for less than 2 percent of the nations total transportation costs. This translates into savings for the consumer, such as lower rates for electricity.

Another important aspect of the Warrior-Tombigbee System is that it provides the only alternative to the Mississippi River to move product to the Gulf Coast. This was extremely important during the drought year of 1988, when the lower portion of the Ohio River was closed for an extended period, and the lower Mississippi River was severely restricted for approximately five months. The availability of the Warrior-Tombigbee System allowed us to continue to serve utility and industrial customers, and keep those customers from having to shut down operations because they could not receive raw material.

Orsouth Transport Co. fully supports and recommends appropriation of $16 million for operations and maintenance of the Black Warrior-Tombigbee System for fiscal year 2000. Furthermore, we recommend additional funding to permit the Corps of Engineers to proceed with some of the projects that have been deferred over the past three years, which total $3 million. These projects include upland disposal programs, rock removal, and stop log replacement. Another $.25 million is being requested for General Investigations, vital to long-term planning. All of these funds are necessary to assure that the Warrior-Tombigbee System remains an important part of the Inland Waterway System. Finally, we support an appropriation of funds in the amount of $20,200,000 for Mobile harbor. The Port of Mobile is an integral part of the waterway system, especially as an alternative origin to the Port of New Orleans. Improvement of the Mobile harbor will increase utilization of the Warrior-Tombigbee System overall, and generate significant additional monies for the states in this region. We request your support in reviewing and approving these project funding limits for fiscal year 2000.

Sincerely,

M. DEAN WHITE,
Port Captain.

PREPARED STATEMENT OF CHARLES A. HAUN, EXECUTIVE VICE PRESIDENT, PARKER TOWING COMPANY, INC., TUSCALOOSA, AL

My name is Charles A. Haun and I am Executive Vice President for Parker Towing Company of Tuscaloosa, Alabama.

We are a full service marine transportation company operating a fleet of boats and barges and twelve ports on the southern portion of the U.S. Inland Waterways System. We are involved in the transportation of all types of commodities including coal, coke, ores, stone, forest products, steel, and manufactured products. We have been in operation for over fifty years and our approximately 200 employees are entirely dependent upon the efficiency of the waterway.

Parker Towing Company endorses and supports fully the efforts of the Warrior-Tombigbee Development Association to improve the overall operation of this vital waterway system. The Warrior-Tombigbee System and the Port of Mobile are of great importance to our company and the industries we serve. Proper and adequate funding of the waterway project will ensure that more industries can rely on this energy efficient delivery system. The region's employment and economic well-being

could be adversely affected to a great degree should the efficiency of the waterway be degraded.

As a member of the Warrior-Tombigbee Development Association, Parker Towing Company emphatically supports an appropriation of $16 million for the Corps of Engineers for operation and maintenance of the Warrior-Tombigbee System for fiscal year 2000, additional capability funding of $3.0 million, and general investigations of $0.25 million, for a total of $19.25 million. In addition, we support the Corps' request for operation and maintenance funds for Mobile Harbor in the amount of $20.2 million.

PREPARED STATEMENT OF LAWRENCE L. MERRIHEW, SENIOR VICE PRESIDENT, REGIONS BANK, MOBILE, AL

The economies of Alabama and the U.S. Gulf Coast are greatly impacted by the Port of Mobile and the inland waterways serving these areas. The Black Warrior-Tombigbee Waterway is also a vital factor in this respect. It serves manufacturing, mining, and the agricultural areas, as well as industrial production facilities in western Alabama. The waterway has served as an economic stimulant for over 100 years and receives periodic improvement, bringing it to the point today, that it is a modern system linking vital areas of the economy.

There are so many vital materials that are shipped on the Black Warrior-Tombigbee Waterway that its overall impact is sometimes not adequately considered. For instance, most of the coal exported from Mobile is shipped down this very waterway. Therefore, it is important that the amount needed, as requested by the Corps of Engineers for Operations & Maintenance (O&M) of $16.0 million, be appropriated for fiscal year 2000. This level of funding is necessary to support the day to day O&M program, and to continue ongoing channel improvement projects that will maintain the waterway in its current state. In addition, there is a request for $3.0 million to continue projects that have been on hold for the past three years (upland disposal programs, rock removal, and stop log replacement). We desperately need your support for these projects also.

We also request support of the appropriation of adequate O&M funds for the Mobile Harbor in the amount of $20.2 million.

An efficient and reliable waterway system is important to all of us, and most certainly is a justifiable investment by the federal government. The cost benefit ration will be matched many times over by the local investment.

LETTER FROM JERRY L. STEWART

SOUTHERN COMPANY GENERATION,
Birmingham AL, February 19, 1999.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy & Water Development, U.S. Senate, Washington, DC.

DEAR CONGRESSMAN DOMENICI: On behalf of Alabama Power Company, Gulf Power Company, and Mississippi Power Company, I am writing to express our support for the Warrior-Tombigbee Development Association and its president in their efforts before your committee. Because of the importance of the Warrior-Tombigbee Waterway to local, national, and international trade, the Southern electric system joins with the Warrior-Tombigbee Development Association in an effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway.

Alabama Power Company, Gulf Power Company, and Mississippi Power Company have used the Warrior-Tombigbee to transport coal to their respective electrical generating plants at Demopolis, Alabama, West Jefferson, Alabama; Mobile, Alabama; Pensacola, Florida; Sneads, Florida and Biloxi, Mississippi. In 1997, through the use of contracted barge carriers, these companies moved over 10.3 million tons of coal by way of the Warrior-Tombigbee Waterway. All of this coal would have required a longer move down the Mississippi River through New Orleans. The Warrior-Tombigbee Waterway allows the barges to move down the Warrior-Tombigbee River to Mobile and other destinations. The significant importance of this capability to our system is obvious from a transportation flexibility standpoint. Additionally, the Port of Mobile is the hub of the Central Gulf Coast and the continued development of its facilities and support services is critical to the economy of the tri-state area served by the Southern electric system.

Alabama Power Company, Gulf Power Company, and Mississippi Power Company utilize water transportation because of the economic advantage to our millions of

customers. Any expenditures for maintenance or upgrading which improve the efficiency and reliability of the waterway will have a positive impact on our customers. At the same time, higher cost resulting from inefficiency or the unreliability of the Warrior-Tombigbee Waterway will have a direct and adverse effect upon our customers.

It is imperative that there be a continuous program for maintenance and upgrading of the Warrior-Tombigbee Waterway channels and locks. We support the proposed budget request for $16.0 million in Operations and Maintenance funds for the Black Warrior-Tombigbee River for the fiscal year 2000. Additionally, we support the earliest completion of the capital projects (upland disposal programs, rock removal an stop log replacement) that have been deferred over the past three years in the amount of $3.25 million, as well as the appropriation of funds for Mobile Harbor in the amount of $20.2 million.

Adequate funding of programs required to maintain the efficiency and reliability of our nation's waterways is critical to its superior economic health and welfare. I strongly urge and solicit your support.

Sincerely,

JERRY L. STEWART,
Vice President Fuel Services.

PREPARED STATEMENT OF CARLTON J. MELTON, REGIONAL VICE PRESIDENT, GULF & INLAND REGION, STEVEDORING SERVICES OF AMERICA, MOBILE, AL

Stevedoring Services of America (SSA), is a 50 year-old stevedoring and marine terminal operating company that utilizes the Warrior-Tombigbee Waterway and Port of Mobile, AL in our daily operations. We handle approximate annual tonnage, via the Tombigbee Waterway and Port of Mobile as follows: 1.7 million tons of forest products, 1.5 million tons of bulk cargo (coal) through Mobile and 270,000 tons of bulk and breakbulk products through the Port of Columbus, MS. This business results in direct employment of sixty (60) people and an additional 300,000 man hours per year for four (4) local International Longshoremen Association unions generating an annual total of over $12.5 million in wages and benefits.

SSA fully supports the collective effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway (BWT). The waterway is a vital national transportation artery providing access to low cost, energy efficient, environmentally safe barge transportation. Moreover it is critical to SSA's business, to maintaining international commerce at the Port of Mobile and growing our local, state and national economy. Maintaining and improving the efficiency and reliability of the waterway is essential to protect and grow SSA's business.

SSA's supports the position that the Corps' submitted budget for the BWT should be at least level funding ($16.0 million) for fiscal year 2000 and that the Corps has the additional capability ($3.0 million) for fiscal year 2000 to get underway those projects which have been deferred over the past three years (upland disposal programs, rock removal and stop log replacement). We also support $0.25 million for general investigations.

Maintaining the Mobile Harbor is critical to our business, and the Alabama State Docks. Therefore, we urge your support for appropriation of funds ($20,200,000) for maintaining and improving the Mobile Harbor.

We strongly urge you to support the aforementioned budget request. The BWT is an important segment of our national transportation infrastructure. After all, our nation's transportation infrastructure is what keeps America moving and competitive in the global economy.

We very respectfully appreciate your consideration of this matter.

PREPARED STATEMENT OF MICHAEL D. THOMPSON, PRESIDENT, THOMPSON POWER SYSTEMS, BIRMINGHAM, AL

We are pleased to express our support of the Warrior-Tombigbee Waterway and the Port of Mobile. These natural resources provide a vital economic link for many communities along the Birmingham and Mobile corridor. Thompson Power Systems has benefited from the strong growth of the Southeast's economy. Our marine business has grown and we expect growth to continue. The continued reliability of the Waterway and the Port of Mobile are paramount to our company's success and the long term expansion of our regional economy.

The Port of Mobile is the gateway to international markets for many U.S. products. Likewise, the Waterway network that serves the inland states provides effi-

cient transportation of bulk cargoes that fuel our heartland's economy. Thompson Power Systems joins in an industry-wide effort to improve the efficiency and maintain the reliability of the waterways and ports through which we provide our business. Therefore, we support the following appropriation of funds:

Warrior-Tombigbee Operations & Maintenance	$16,000,000
Study for General Investigations	250,000
Funds for Mobile Harbor	20,200,000
Corp of Engineers Deferred Projects	3,000,000

As noted, we encourage the Corps of Engineers to commence the projects that have been deferred. Projects such as the construction of upland disposal dikes and mooring cells are vital to the steady use of the waterways systems.

Thank you for your consideration of this issue which greatly impacts our company and region.

PREPARED STATEMENT OF KEITH H. JANSEN, DIRECTOR, RAW MATERIALS PLANNING PROCUREMENT DISTRIBUTION AND SALES, U.S. STEEL, PITTSBURGH, PA

USX Corporation is heavily involved in the transportation of raw materials for steel making throughout the United States. Due to the fact that transportation rates are such a large part of raw steel costs, and, imported steel has been given an unfair advantage, it is vital that the Federal Government maintains the transportation infrastructure of this country in preserving the ability of the steel industry to remain competitive. It is with this in mind, that we request the United States Senate fully support the Warrior-Tombigbee Waterway System. Water borne transportation is by far the lowest cost mode, as it affords USS Fairfield Works in Birmingham Alabama the opportunity to move raw materials inbound and steel outbound by water at a cost that assists in preserving the economic viability of that plant.

It is for this reason that we offer our support to the Corps of Engineers in their request of level funding ($16 million) for fiscal year 2000. Additionally we support the Corps for funding ($3.0 million) of those projects, which would enhance the present waterways capabilities and the maintenance of the Mobile deep water harbor ($20,200,000). Obviously the Warrior-Tombigbee is essential in the continued industrial development of the entire southeastern region and remains an integral transportation cog in the wheel of commercial success.

We do appreciate the support that you and your colleagues have provided in the past and look forward to your continued support in preserving a strong domestic economy.

PREPARED STATEMENT OF T. KEITH KING, P.E., PRESIDENT AND CEO, DAVID VOLKERT & ASSOCIATES, INC., MOBILE, AL

David Volkert & Associates, Inc. (Volkert) is an engineering/architectural/planning firm which employs 450 people and maintains Alabama offices Birmingham, and Gulf Shores. Volkert strongly supports funding for the Warrior-Tombigbee Waterway and the Port of Mobile for fiscal year 2000.

We believe the proposed $16 million for Operations and Maintenance funds is justified since this level funding amount is necessary to cover the known and reasonably expected needs for fiscal year 2000, support the day-to-day O&M program, and continue on-going channel improvement projects. In addition, we support an additional $3,000,000 needed by the Corps to continue on projects which have been deferred for the past three years (upland disposal programs, rock removal and stop log replacement). We also support appropriating $250,000 for general investigative studies, which ultimately will bring the waterway efficiency to the expected level.

Since the City of Mobile's largest industry is her Port and the City's present economy and future progress depends upon her Port, Volkert also supports the $20.2 million funding for Mobile Harbor.

Confidence in the Waterway and its efficiency and modernization are important in bringing much needed new industry to Mobile and to the State of Alabama. Lower operating costs to users of the Waterway and Port of Mobile are essential in obtaining a reasonable balance of the international export market allowing the U.S. to continue to reduce our trade deficit. Increases in shipping and commerce result in opportunities for many companies, similar to Volkert, to obtain business and offer meaningful employment to citizens of the State of Alabama and other parts of the U.S.

Volkert appreciates this opportunity to express our support of Chairman Charles A. Haun and President Sheldon L. Morgan, of the Warrior-Tombigbee Waterway Association, and the testimony to be given by them before the Appropriations Committee of the Senate and House. We are proud to join in the collective effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway and the Port of Mobile.

LETTER FROM GEORGE R. RICHMOND

JIM WALTER RESOURCES, INC.,
Brookwood, AL, February 26, 1999.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: I would like to thank you for the opportunity to make a statement to your Subcommittee. Please accept this letter as my statement.

Jim Walter Resources, Inc. currently mines 8 million clean tons of coal per year. Of that amount, nearly 60 percent of our production is exported. All of our export production goes through the Port of Mobile. Our payroll for 2,100 employees last year was in excess of $107,000,000 and taxes withheld and/or paid were in excess of $33,000,000. It is obvious from these facts and figures that this Company relies heavily on our port facilities and that they are of the utmost importance to this Company, its employees and the economy of the State of Alabama.

I strongly support the Corps of Engineers budget request for $16.0 Million in Operations and Maintenance funds for the Black Warrior-Tombigbee for fiscal year 2000, along with the request for $3.0 Million for the Corps to undertake projects which have been deferred over the past three years and $250,000 for general investigations. I also support the appropriation of funds for Mobile Harbor, in the amount of $20.2 Million. Our waterways and port facilities provide economic prosperity to Alabama that is worthy of your support. Further, I support the statements and testimony to be given by Mr. Sheldon L. Morgan, President of the Warrior-Tombigbee Waterway Association. I believe that the value of improved efficiency and reliability of the Warrior-Tombigbee Waterway and Port of Mobile cannot and must not underestimated.

The world coal business is at its most competitive level in history. News of any problems, especially transportation and delivery problems, is quickly spread by other coal producers around the world to the buyers to discourage purchases here. A blemish on our delivery record can have devastating, long-term effects from which we might never fully recover. Buyers lost today may never return tomorrow. important matter.

Again, thank you for this opportunity to give my comments on this very important matter.

Sincerely,

GEORGE R. RICHMOND,
President and Chief Operating Officer.

PREPARED STATEMENT OF J. CRAIG STEPAN, GENERAL MANAGER, WARRIOR & GULF NAVIGATION COMPANY, CHICKASAW, AL

I am J. Craig Stepan, General Manager of Warrior & Gulf Navigation Company. Our company is an active member of the Warrior-Tombigbee Waterway Association and wholly supports the testimony to be presented by Mr. Sheldon Morgan as President of the Association. I wish to take this opportunity to highlight the impact that the Black Warrior-Tombigbee Waterway and the Port of Mobile have on the success and development of our Company.

Warrior & Gulf is a barge line and terminal operator headquartered in Chickasaw, Alabama, and owns 20 towboats and 240 barges, moving approximately 9 million tons of bulk materials on the Black Warrior-Tombigbee River System. This makes WGN the dominant water carrier operating in the region. Additionally, we own and operate two (2) bulk and general cargo terminals at Port Birmingham and Mobile, Alabama, providing storage, transloading and intermodal services for truck, rail and water transportation. Our total employment is 235 people.

Warrior & Gulf has provided barge transportation on the Black Warrior-Tombigbee River Systems since 1940 for export and domestic coal, iron ore, coke, import and export steel products, export and domestic wood chips, and several other types of bulk commodities. An efficient and properly maintained waterway system

integrated with the Port of Mobile is vital to Warrior & Gulf and its customers. This waterway system has made the entire region world competitors through the reliable, efficient movement of raw materials and finished products both for domestic and overseas consumption. In order to encourage continued economic development along this great waterway we must continue in our efforts to ensure this viable low cost transportation alternative remains in place. The continued efficiency of this waterway is extremely critical to the viability of the industries it serves and helps to develop. This waterway system and harbor hold great opportunity for developing trade initiatives with Mexico, South America and the world.

Historically, our shoaling problems vary greatly from year to year dependent upon the length of our high water season (December-April) and the amount of flooding that occurs. This winter we have been placed on notice by the U.S. Corps of Engineers that normal spring and summer river operations will be jeopardized due to severe shoaling at Buena Vista, Little McGrews, St. Elmo, Jackson and East Bassetts. The full extent of the economic impact of this problem is difficult to estimate, but clearly all the river carriers and their customers will suffer a negative financial impact.

We have worked closely with the Corps of Engineers and wholeheartedly endorse their budget request of $16.0 million in O&M funds for the Black Warrior-Tombigbee system for fiscal year 2000 to ensure continued transportation operations.

An additional $3.0 million is required to fund necessary deferred projects including channel rock removal, upland disposal site management and stop log replacement. Beyond that $.250 million is required to fund a study essential to planning the effective long term use of the waterway.

Lastly, it goes without saying that the maintenance of the Mobile harbor is vital to our waterway and the entire southern region. We, therefore, support the appropriation of $20.2 million to adequately fund Mobile harbor's O&M needs.

Our company and its employees respectfully request your continued support and assistance as your subcommittee considers appropriation of funds for these very important issues concerning the Black Warrior-Tombigbee System, the Port of Mobile and those they serve.

PREPARED STATEMENT OF JACK E. RAVAN, DIRECTOR AND CHIEF EXECUTIVE OFFICER, ALABAMA STATE DOCKS DEPARTMENT, MOBILE, AL

The State of Alabama, as a result of the strategic location of the Port of Mobile on the Gulf of Mexico and its extensive inland waterway system, is one of the major maritime states within the continental United States. The State, primarily through the facilities of the Alabama State Docks in Mobile, conducts maritime trade with more than 125 nations worldwide. The Port of Mobile, which consistently ranks in the top 15 deep water Ports in the Untied States, annually services an equal proportion of domestic and foreign cargoes.

The Alabama State Docks, a state owned revenue based business, serves as the local cost-sharing partner of the Mobile Harbor Federal Project. A recent analysis of the impact of the State Docks on the State of Alabama identified that every county in the state benefited from the services provided by the Port of Mobile. The analysis identified approximately 120,000 employees statewide that benefit directly and indirectly from the State Docks. Wages received by these employees were estimated at over $3 billion. Therefore, it is easily understood why full and timely support by the U.S. Army Corps of Engineers in its navigation operations and maintenance programs for Mobile is critical to the state's economy.

For the past several years, our communications with your committee have portrayed a solid partnership with the Corps in maintaining a highly functional project. This has been possible not only because of the federal funding provided, but also because of the Port's willingness to modify operational procedures when less than full project dimensions exist. Our communications have also noted the risk of hurricanes to the project. Unfortunately, in the last eighteen (18) months, the Port has experienced two hurricanes. When combined with less than full dimensions at the time of the most recent storm, severe shoaling of the project resulted. The Port has been operating at a significantly reduced capacity for the last six months and recovery is not anticipated for the next four to six months. The last time such conditions existed was in 1979 when a more severe hurricane hit the Port. As a matter of history, it only took three months to restore the Port to full operation on that occasion.

The Administration's budget for fiscal year 2000 identifies $17.562 million for operation and maintenance of the Mobile Harbor Federal Project. The average annual expenditure for the past three fiscal years has been approximately $20.133 million.

The proposed budget will once again place the project in a state of risk in the event of another hurricane. Therefore, it is requested that $20,812,000 be appropriated for the Mobile Harbor Federal Project for fiscal year 2000. This amount also includes $750,000 in Construction General funds required to evaluate future operational expansion requirements.

As addressed earlier, approximately one half of the cargo transiting the Port of Mobile is domestic. This cargo flows through Mobile as a result of the existence of six waterway systems servicing Alabama, the southern United States and the states bordering the Gulf of Mexico. Again, the economic viability of this region and its ability to compete in both the domestic and world market place is dependent upon the Corps of Engineers navigation operation and maintenance programs. Therefore, we request that your committee support these waterway systems at the levels indicated.

Coosa-Alabama	$31,556,000.00
Tennessee-Cumberland	$38,320,000.00
Tennessee-Tombigbee	$23,900,000.00
Appalachicola-Chattahoochee-Flint	$7,510,000.00
Black Warrior-Tombigbee	$19,250,000 00
Gulf Intercoastal Waterway	([1])

[1] As requested by GICA.

Your consideration and support is greatly appreciated.

PREPARED STATEMENTS AND LETTERS SUPPORTING APPROPRIATIONS REQUEST FOR FISCAL YEAR 2000 FOR PROJECTS ON THE ALABAMA-COOSA RIVER SYSTEM

PREPARED STATEMENT OF RALPH O. CLEMENS, JR., PRESIDENT, COOSA-ALABAMA RIVER IMPROVEMENT ASSOCIATION, INC.

SUMMARY

Mr. Chairman & distinguished Committee members: This statement includes the following:

(A) A plea to recognize and maintain our Nation's inland waterways system as a vital part of the national transportation infrastructure;

(B) A request for support in the following areas:

(1) O&M funding for federal projects in the Coosa-Alabama Basin as well as Mobile Harbor;

(2) Funding for feasibility phase investigation of alternatives to improve the reliability of the navigation channel below Claiborne Dam on the Alabama River;

(3) Reopening the Coosa Navigation Project;

(4) Resisting any attempt to raise user fuel tax on the Inland River navigation industry;

(5) Supporting the Sturgeon Conservation Plan in the Mobile River Basin as developed by the Alabama-Tombigbee River Coalition and the Fish and Wildlife Service.

EXPANDED STATEMENT

Thank you for the opportunity to present to this Subcommittee my perspective on several topics relating to our Nation's waterways system in general, and to the Coosa-Alabama River Basin in particular. As President of the Coosa-Alabama River Improvement Association, I speak for a large and diverse group of private citizens and political and industrial organizations that sees the continued development of the Coosa-Alabama Waterway as an opportunity for economic growth in our region as well as the Nation.

Our membership reflects a broad range of callings and professions, including shippers and tow operators, businessmen, bankers and private individuals who have a stake in future economic development for their firms and successors to enjoy. Then there is a larger group of elected officials and their constituents typical of the twenty-three municipalities and nineteen counties along the waterway who are members of this association. Spurred by a desire to promote economic growth through enhanced waterway transportation, these members work diligently to develop our waterway into a productive part of the river infrastructure of the State and Nation.

We are concerned about the deteriorating waterway infrastructure throughout the nation. Our inland waterways are vital to this Nation's welfare. America's ports, navigable waterways, flood protection, water supply, environmental restoration, hydroelectric, and other water resources programs enhance economic development, na-

tional security, and general well being. These programs serve the national interest in countless ways, returning far more in public benefits than they cost. A top-notch navigation system able to meet the demands of both domestic and international commerce is a driving force behind the national economy, transporting annually almost 15 percent of the nation's commodities, one out of every eight tons. The waterways are vital to our export and import capability, linking our producers with consumers around the world. It is incumbent upon the Federal Government to maintain and improve this system of interstate commerce. Therefore, we ask Congress to appropriate enough funds for required maintenance and construction to keep the waterways the economic multiplier it is. The Civil Works budget in fiscal year 2000 must be approximately $4.7 billion to maintain the system and allow for modest growth. The Federal government must make this commitment to improve the water transportation network or risk facing serious economic consequences and jeopardizing tremendous public benefits.

Some think tanks are advocating turning the Corps of Engineers' Civil Works Program over to state or private managers. We urge caution and due deliberation in such a move. Having one agency responsible for maintaining water projects on the Alabama River, for example, provides benefits that can't be measured in dollars and cents. Security, responsiveness and historical knowledge are incalculable to users of the river. The Corps' experience is a public investment. The O&M funding appropriated annually is a public investment. Slashing that investment does not automatically translate into private prosperity.

We are concerned that any budget strategy that reduces funding for the operations and maintenance of inland and intracoastal waterways will have a detrimental effect on the economic growth and development of the river system. We cannot allow that to happen. In the Alabama-Coosa River Basin, we must be able to maintain the existing river projects and facilities that support the commercial navigation, hydropower and recreational activities so critical to our region's economy. The first priority then must be the O&M funding appropriated to the Corps of Engineers to maintain those projects. Budget requests for the individual projects follow:

Project	President's budget	Association's budget request
Alabama-Coosa River, AL [1](AL River incl Claiborne L&D)	$5,185,000	$5,185,000
Miller's Ferry L&D	5,560,000	5,560,000
Robert F. Henry L&D	6,183,000	6,183,000
Lake Allatoona, GA	6,328,000	6,328,000
Carters Lake, GA	8,150,000	8,150,000
Lower Alabama Navigation Study (AL River south of Claiborne) feasibility study	150,000	150,000
Totals	31,556,000	31,556,000

[1] Includes dredging from the mouth of the Alabama River through Claiborne L&D to Miller's Ferry. Coosa River not included.

We also support funding O&M for Mobile Harbor at $20,200,000, an increase of $3,038,000 over the President's Budget amount of $17,162,000. The $20.2 million represents an historical average of costs just to maintain the Harbor and does not include funding for new construction. We cannot allow Mobile Harbor infrastructure to deteriorate because not enough funds were appropriated.

To attract new business into the Alabama River Basin, we must improve the infrastructure of the river itself, specifically the navigational reliability below Claiborne Dam. Increased reliability is the only way prospective investors will entertain establishing an industry that uses river transportation. The Corps of Engineers currently maintains 65–70 percent reliability through training dikes, reservoir management, and dredging. Of these measures, dredging is the most effective, but we can do more.

The most affordable and most environmentally friendly solution to increasing navigation reliability on the Lower Alabama River is to improve the training dikes. (Training dikes are levees or barriers built out from river banks to direct the water flow into the navigation channel, thus aiding in scouring the bottom and decreasing dredging costs.) Mobile District has begun a feasibility study to determine the interest of the Federal Government in such a project. Without an improvement in the navigation reliability on the Lower Alabama River, we cannot hope to attract new river-related industry into the Basin. We ask Congress to appropriate $150,000, as

requested, to enable the Mobile District to continue the feasibility study already underway.

A major objective of our association is to complete a navigable waterway from Mobile to Rome, Georgia. The history of the Coosa River Project is well known by this committee, but the proposal reflects our emphasis on infrastructure investment and the creation of jobs and economic opportunity throughout our region. The Pre-design Engineering Surveys are complete, so one of the most time-consuming requirements of the project is done. We are well aware of the restrictive funding for such an undertaking in the current environment, but ask the Committee to recognize that a Coosa-Alabama waterway would be one of the largest and most rapid generators of jobs currently available. We owe it to the people of the Coosa-Alabama River Basin, the states of Alabama and Georgia, and the entire region to maintain the vision of completing this waterway.

Another mechanism to make the river system attractive to potential users is to keep the cost of shipping via waterways down. The President's Budget for fiscal year 2000 does not currently include a proposal to increase a user's fuel tax, but some in the administration think such a tax is a good idea. We have in the past listed some of the negative aspects of such a proposal. Suffice it to say here that an increase in user fuel tax will have detrimental effect in the short run on consumer prices and trade balance, and in the long run on the federal-private partnership and maintenance of the waterways system. As one of the most efficient modes of transportation this country possesses, the waterway system needs more incentives for investment, not obstacles and disincentives.

The last issue I wish to address is a plea based on our experiences over the past several years with attempts by the Fish and Wildlife Service to list the Alabama Sturgeon as endangered under the Endangered Species Act of 1973. As you know, in December of 1994, the Secretary of Interior, Mr. Babbitt, decided not to list the Alabama Sturgeon, citing a lack of scientific evidence that the fish was a separate and distinct species or even currently existed in the habitat scrutinized. Now, the Fish and Wildlife Service sees fit to again propose listing the fish, despite a clear alternative to saving the fish that has been underway for several years now, an alternative outside the confining restrictions of the Endangered Species Act.

The Fish and Wildlife Service, in cooperation with the Alabama-Tombigbee River Coalition, developed a Sturgeon Conservation Plan that has strong potential to propagate the Sturgeon population in the Mobile River Basin. The State of Alabama, charged with the execution of the Plan, currently has three sturgeons in a hatchery in Marion, Alabama, ready for propagation. Congress has appropriated over one million dollars to this effort so far. Listing the fish as an endangered species under the ESA means the sturgeon would have to compete with other listed species for money to complete a recovery plan, jeopardizing funding already available as well as the work done on the Conservation Plan to this point. We strongly support the Sturgeon Conservation Plan as an example of the compromise required in the environment-economic debate. We ask the Congress to fully fund and support the Sturgeon Conservation Plan as the best way to save sturgeon in the Mobile River Basin.

In summary, we request your support in the following areas:

(1) Sufficient funding of the US Army Corps of Engineers Civil Works budget to maintain and enhance the U.S. inland waterways system;

(2) O&M funding for the Coosa-Alabama Basins and Mobile Harbor;

(3) Funding for investigating the feasibility of improving the reliability of the navigation channel below Claiborne Dam on the Lower Alabama River;

(4) Reopening the Coosa Navigation Project;

(5) Resisting any attempt to raise user fuel tax on the Inland River navigation industry;

(6) Supporting the Sturgeon Conservation Plan as developed through the cooperative efforts of the Alabama-Tombigbee River Coalition and the Fish and Wildlife Service.

Thank you for allowing us to present our views and for your strong support of the Nation's waterways.

PREPARED STATEMENT OF PHILLIP A SANGUINOTTI, PRESIDENT, THE ANNISTON STAR, ANNISTON, AL

As a part of a collective effort to maintain and extend the Coosa-Alabama waterway, I wholeheartedly support the Coosa-Alabama River Improvement Association's funding request for fiscal year 2000.

I strongly believe in and support the regional effort to improve and extend the Coosa-Alabama Waterway. This would include improving the navigational reliability

below Claiborne Dam, maintaining and improving training works and dredging, which would enhance economic development of the river basin between Mobile and Montgomery.

Also, I believe that lowered freight rates would provide a better export market, thus helping the trade business. I also urge the Senate to support the Interstate Compacts to resolve the two-basin water disputes among Alabama, Georgia and Florida, as well as amend the Endangered Species Act to include reasonable, balanced measures between environmental concerns and economic development.

Any support you and your committee can give the Association will be greatly appreciated by everyone involved.

PREPARED STATEMENT OF OTHA LEE BIGGS, JUDGE OF PROBATE & PRESIDENT, MONROE COUNTY COMMISSION, MONROEVILLE, AL

The Monroe County Commission, Monroe County, Alabama, respectfully request support for the President's Budget for funding of River Projects in the Alabama-Coosa River Basin for fiscal year 2000, in the amount of $31.556 million as well as $20.2 million for Mobile Bay.

There is great economic need to improve and extend the Coosa-Alabama Waterway System from Rome, Georgia to the Port of Mobile. Included in the funding request is $150,000.00 for the second year of a feasibility study of ways to improve the navigational reliability below the Claiborne Lock & Dam which is the first Dam along the Alabama-Coosa River System and is located in Monroe County, Alabama. Unless navigational reliability is stabilized from below the Claiborne Lock & Dam to the Port of Mobile, the full and positive economic benefits cannot be realized in the Southeastern part of the United States. One mile from the Claiborne Lock & Dam is located the largest Pulp and Paper complex of its kind in the world and the efforts of your Senate Subcommittee on Appropriations for Energy and Water Development in the past toward the development of this great waterway system was instrumental in bringing this $1.5 billion investment to Monroe County, Alabama, as well as other major industries that have located in this river basin.

We again respectfully request approval of the Association's funding request for fiscal year 2000.

PREPARED STATEMENT OF SANDY SMITH, EXECUTIVE DIRECTOR, MONROEVILLE AREA CHAMBER OF COMMERCE, MONROEVILLE, AL

Our organization is in support of the Coosa-Alabama River Improvement Association's request for fiscal year 2000 funding.

We support the regional effort to improve and extend the Coosa-Alabama Waterway, and the need to improve the navigational ability below the Claiborne Dam.

Lower freight rates provide a better export market, thus helping our area manufacturers. In this regard, we also ask that you provide $150,000 in funding for a feasibility study by the Corps of Engineers on ways to improve navigation reliability below Claiborne Dam.

Please support our request! Thank you in advance.

PREPARED STATEMENT OF WILLIAM F. JOSEPH, JR., CHAIRMAN, MONTGOMERY COUNTY COMMISSION, MONTGOMERY, AL

The Montgomery County Commission has a vital interest in the development of the Coosa-Alabama River project which was originally authorized by the Congress in 1945. The benefits which accrue to the citizens of this region, and to the nation, fully justify the complete construction and operation of this economical waterway.

We fully support the testimony provided by the Coosa-Alabama River Improvement Association. For many years this group has represented us and they accurately reflect our feelings of support for this waterway project.

Of particular interest to us is funding to operate and maintain (O&M) water projects in the Alabama-Coosa River Basin.

Also, we feel that the requested appropriation to fund a feasibility study of ways to improve the navigation reliability below Claiborne Dam will enhance the economic development of river basin between Mobile and Montgomery. Additionally, we believe that the requested appropriation to continue the operation and maintenance of the entire system directly relates to lowered freight rates and improves the export market and creates a positive improvement on our nation's trade balance.

We urge your favorable consideration of the recommended appropriations for fiscal year 2000. Adequate funding as requested is necessary to insure that progress is made for further development of the system and to properly operate and maintain the existing portion. Similar information has been sent to Honorable Randall Packard, Chairman, House Subcommittee on Appropriations for Energy and Water Development, regarding this matter.

LETTER FROM JAMES T. JORDAN

J.T. JORDAN COTTON, INC.,
Centre, AL, March 15, 1999.

Hon. PETE V. DOMENICI,
Senate Subcommittee on Appropriations for Energy and Water Development,
U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: This letter is to let you know that I strongly support the Coosa-Alabama River Improvement Association's funding request for fiscal year 2000.

I also support the regional effort to improve and extend the Coosa-Alabama Waterway which needs to be much improved for navigational reliability below the Claiborne Dam. There is also a need to maintain and improve training works and dredging because the economic development of the river basin between Mobile and Montgomery depends on these improvements.

If freight rates are lowered, this will provide a better export market, thus helping the trade business.

I also support funding of $5,185 million for the Alabama-Coosa; $6,183 million for RF Henry; and $20.2 million for Mobile Bay.

Anything you can do to help the above will be very much appreciated.

Sincerely,

JAMES T. JORDAN,
Director, CARIA.

LETTER FROM MAYOR DAVID D. WHETSTONE, JR.

CITY OF PRATTVILLE,
Prattville, AL, March 15, 1999.

Hon. PETE V. DOMENICI,
Senate Subcommittee on Appropriations for Energy and Water Development,
U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: I write to support the fiscal year 2000 budget request for continued improvements to the Alabama-Coosa Waterway. I have had the pleasure to serve on the Coosa-Alabama River Improvement Association (CARIA) for a number of years and have personally seen the progress that has been made on this waterway, thanks to the support of your subcommittee and subsequent federal funding.

Based on the past improvement efforts, I would urge you and your subcommittee to allow the progress to continue with an appropriate allocation for fiscal year 2000. We need to improve the navigational reliability below Claiborne Dam and we need to maintain and improve training works and dredging.

As Mayor of one of the fastest-growing cities in Alabama, I know firsthand how important this river basin is to the continued economic development of our State from Mobile to Montgomery. With our City's industrial growth, we too are seeing an increased need for improved waterway transportation.

Thank you for your continued support of CARIA and for your subcommittee's consideration of the fiscal year 2000 funding request.

Sincerely,

DAVID D. WHETSTONE, JR.,
Mayor.

LETTER FROM W.O. PACE

AUTAUGA COUNTY COMMISSION,
Prattville, AL, March 15, 1999.

Hon. PETE V. DOMENICI,
Senate Subcommittee on Appropriations For Energy and Water Development,
U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: This letter is to inform you that the Autauga County Commission, Autauga County, Alabama, supports the U.S. Army Corps of Engineers request for funding fiscal year 2000 to operate and maintain water projects in the Alabama-Coosa River Basin. There is a definite need to improve navigation reliability on the lower Alabama River for economic development reasons, i.e., decreasing tonnage on the river because of the meandering of the river, sharp turns and low water below Claiborne Dam; also, there has been a dearth of industries seeking to relocate within the River Basin. Therefore, we need to improve the navigational reliability below Claiborne Dam and maintain and improve training works and dredging. Economic development between Montgomery and Mobile depends on these improvements. The Corps is able to maintain an authorized nine foot channel 65 to 70 percent of the time, but major problems occur during July through September.

Barge costs on the Alabama River are higher than other waterways. Shippers use barges in one direction only, but pay for travel both ways because there is no backhaul available and there is not enough industry in the Basin to warrant two-way shipping. Ninety four percent of tons moved on the Alabama River are downbound. For these reasons, shippers have found other modes of transportation or left the Basin altogether.

Adding to the costs the shippers have faced are delays caused by the shallow water depth. Also, after 1991, environmental attacks on sand and gravel businesses shipping by barge were so costly, a lot of these businesses closed. Lowered freight rates provide a better export market, thus helping the trade business. Waterways provide efficient transportation that tends to lower inflation. Congress must support the Interstate Compacts to resolve the two-basin water disputes among Alabama, Georgia, and Florida. Also, if Congress would amend the Endangered Species Act to include reasonable, balanced measures between environmental concerns and economic development instead of such stringent regulations, this would greatly improve economic development.

We would sincerely appreciate your help in this matter that is so vital to the State of Alabama.

Sincerely,

W.O. PACE,
Chairman, Autauga County Commission.

PREPARED STATEMENT OF JAMES D. WALLACE, PRESIDENT, SELMA AND DALLAS COUNTY CHAMBER OF COMMERCE, SELMA, AL

It is my privilege to represent a rural city and county in Alabama which has suffered through many economic nightmares not of their own making. So, it is incumbent on me to always seek our projects which we believe will be helpful in pulling this area out of its economic dilemma and into the mainstream of development.

Our people are a wonderful, dedicated hardworking lot, but they need to have the same opportunities as many of the much more developed areas of these United States.

One of our hopeful signs through the years has been the proposed development of our waterways not only for industrial tonnage, but also for outdoor recreation and the clean economic dollars it brings into a community.

The proposals supported by the Coosa-Alabama River Improvement Association are aligned with our thoughts on what will be in the best interest of the slow, but continued improvement to our waterways. This has been a painfully slow, but ongoing process and we are hopeful that Congress will continue to give fiscal support to this area.

The Coosa-Alabama System forms a corridor from Georgia through Alabama, ending up in Mobile Bay. One part of the system is dependent on the other so all the pieces of the puzzle are in need of funding support.

We applaud you for supporting us in the past and are hopeful you will continue to do so.

PREPARED STATEMENT OF CARL MORGAN, PRESIDENT, ECONOMIC DEVELOPMENT AUTHORITY, SELMA, AL

We at the Selma and Dallas County Economic Development Authority as well as representatives from the city of Selma, Alabama, wish to convey our support of the funding request for fiscal year 2000. It is imperative to the economy of Alabama that every effort is made to improve and extend the Coosa-Alabama Waterway. Enhancing the navigational reliability of the waterway below the Claiborne Dam and maintenance of the training works and dredging is also vital to the economic development of the river basin between Mobile and Montgomery.

Alabama's waterways have always been of the utmost importance. Cahaba, the first capital of the state, was located between two rivers and as a result industries who enjoyed this advantage thrived. Although over one-hundred and fifty years have passed and steamboats no longer traverse the rivers as they once did, Alabama's waterways remain crucial to economic development today.

Within the last six months, businesses which could supply more than 2,500 jobs to the residents of Dallas County have visited the community. One major criterion has continued to be river access in relation to any sites under consideration. Several of our existing industries utilize the Alabama River on a daily basis and would not be able to continue to produce without this resource. For this reason, we are asking you to help our residents by voting to approve the funds requested and as noted below:

Alabama-Coosa	$5.185
Miller's Ferry	5.560
RF Henry	6.183
Allatoona	6.328
Carter's Lake	8.150
Feasibility study of Lower AL River	0.150
Total	31.556

In addition, we support funding $20.2 million for Mobile Bay.

Obviously, increased user fees and taxes stifle waterway commercial development. Without a doubt, lowered freight rates provide a better export market. Ultimately, well-maintained waterways provide efficient transportation which then lowers inflation.

We need this legislation in order to help the citizens of Alabama and especially river towns such as Selma survive.

Thank you for your attention to this matter.

PREPARED STATEMENT OF DONALD G. WALDON, ADMINISTRATOR, TENNESSEE-TOMBIGBEE WATERWAY DEVELOPMENT AUTHORITY, COLUMBUS, MS

We greatly appreciate the opportunity to submit our recommendations concerning the funding needs for the Tennessee-Tombigbee Waterway and related projects in fiscal year 2000 for your consideration.

The Tennessee-Tombigbee Waterway Development Authority is an interstate compact comprised of the States of Alabama, Kentucky, Mississippi, and Tennessee. Governor Paul Patton of Kentucky is chairman of the compact, which promotes and markets the waterway and it's economic and trade potential to the region and the nation.

TENNESSEE-TOMBIGBEE WATERWAY FUNDING

We are very concerned about the continued deterioration of the waterway caused by under funding during the past few years. Over $8 million of essential and critical repairs to the waterway will be indefinitely postponed beyond fiscal year 2000 unless the Congress restores the cutback in its funding as proposed by the Administration. The following table briefly demonstrates the recent decline in funds and shows that amount needed to adequately maintain the waterway.

TENN-TOM FUNDING HISTORY

	Millions
1997	$22.4
1998	19.5
1999	20.2
2000 Request	19.9
2000 Recommendation	23.9

The Authority's recommendation of $23.9 million will fund some $4 million of important O&M work that will not be accomplished if the President's budget is approved. It is most imperative that these additional funds are provided to ensure the continued safe and efficient operation of the project. The requested increase in funds will address the following needs:

—$1,500,000 for additional dredging and spoil containment to ensure unimpeded commercial navigation.

—$850,000 to help correct a potentially unsafe navigation condition at Bevill Lock.

—$800,000 of additional funds provided to the Alabama and Mississippi conservation agencies that are needed to better manage some 140,000 acres of federally owned wildlife mitigation lands.

—$750,000 thousand for urgently needed repairs to structures along the 234-mile waterway.

The Corps of Engineers has already undertaken measures to reduce operating costs of the waterway. For example, some campgrounds and other recreation facilities are now closed earlier in the season because of lack of operating funds. It is a travesty to curtail public access to these waterway attractions. About $50 million have been invested in these facilities that are very popular with the public, attracting some 6 million visitors annually. The Tenn-Tom is the 4th best Corps project in the nation for generating income from recreational use and funding cuts are hurting receipts. Regrettably, those revenues collected from recreational users are deposited in the Treasury and not provided directly to the waterway to help finance its operations.

Unless the Congress addresses this growing problem of indefinitely deferred maintenance and repairs of the Tenn-Tom, the physical integrity of the waterway will continue to erode and its ability to generate expected economic benefits will greatly diminish. The Congress has invested nearly $2 billion in the waterway and non-federal interests have committed an additional $4 billion in port facilities, industries, and other capital investments on the assumption the federal government will fulfill its responsibilities to maintain the project. It would be "penny wise and pound foolish" not to do so.

The $500-million Boeing rocket plant now under construction at Decatur, AL, must have a dependable and adequately maintained navigation channel to ship its rockets for launching. Starting in 2000, the rockets will be transported on a specially built ship to launching sites in Florida and California via the Tenn-Tom. Boeing officials have begun to question the reliability of the waterway because of its under funding. The plant will employ some 2,000 workers.

We, therefore, respectfully request that you and your committee approve $23.9 million for the operation and maintenance of the Tennessee-Tombigbee Waterway, a budget that will help correct the malign neglect of the past that has hurt the waterway's performance.

KENTUCKY LOCK

The Authority recommends that $15 million be appropriated in fiscal year 2000 for the continued construction of a new lock at Kentucky Dam on the Tennessee River. This project is one of the most critically needed improvements to the nation's waterway system. The recommended funding is necessary to ensure the new lock's completion by 2008 before the existing lock is closed for an extended period and commerce is halted.

The existing 60-year old lock is a bottleneck to commerce, costing shippers and industries millions of dollars in additional transportation costs. The average delay to transit the antiquated lock is more than 6 hours. Over 43 million tons of U.S. products and commodities pass through this part of the nation's inland waterway system each year. The new lock will return $2.50 in economic benefits (mainly savings in transportation costs) for each dollar spent. This is an excellent investment for the future economy of the nation.

CHICKAMAUGA LOCK

We request that $3 million be provided to the Corps of Engineers to continue major repairs to the Chickamauga lock and Dam on the Tennessee River near Chattanooga. This project is over 50 years old and has serious structural problems. The Corps began repairs to the project this year that when completed will extend the physical life of the lock and dam to about 2010. Without these repairs, the lock will permanently close to traffic due to safety precautions in 2005.

Permanent closure of the lock to commerce would landlock east Tennessee, seriously crippling several major industries that are dependent on barge transportation

and hurting that region's economy. According to the U.S. Department of Energy, closing Chickamauga will also have significant adverse impacts on national missions conducted at its Oak Ridge, Tn. facilities. These repairs will extend the life of the antiquated lock until the Congress can decide whether to replace it or close the waterway.

In that regard, we recommend that the Corps be given the necessary funds to expeditiously conduct a study of the feasibility of replacing this out-moded structure with a new project.

OTHER PROGRAMS

In closing, the Authority supports the proposed budget of $7 million for TVA's management of the Land Between the Lakes recreation area. We also support those funds requested for the Appalahian Regional Commission, an agency that greatly influences our region's economy and quality of life.

Thank you for your careful consideration of our requests for the continued funding of these most important projects and programs.

PREPARED STATEMENT OF JAMES H. HODGES, GOVERNOR, STATE OF SOUTH CAROLINA, COLUMBIA, SC

Mr. Chairman and distinguished Members of the Committee; on behalf of the citizens of the Palmetto State, thank you for the opportunity to submit for the record comments regarding the fiscal year 2000 Water and Energy Appropriations Bill.

I'm extremely proud to report to you that the historical, positive partnership South Carolina enjoys with the Federal Government and particularly the U.S. Army Corps of Engineers (USAGE), is as strong as ever, and if possible, growing stronger. We appreciate your support of our efforts to maximize the value of South Carolina's natural resources, upon which our state's economic well-being is so very dependent.

Our lakes and reservoirs are critical to hydroelectric power production; intracoastal waterways and ports are key economic development components; and beaches and shoreline essential to recreation and tourism. Protection of the natural environment is key to South Carolina's varied ecosystems and habitats, and integral to its unspoiled beauty.

At the outset, I wish to express our gratitude for this Committee's interest in, and support of, our prior years' testimonies. With your help, South Carolina is moving forward on major USACE projects having national implications, such as the deepening and widening of Charleston Harbor and the protection of our famous Myrtle Beach Grand Strand area, one of America's most popular vacation destinations. While there certainly remains work to be done, I am enthusiastically encouraged with our "partnership's" measurable progress and tangible results.

Sharing in the nation's current economic prosperity, South Carolina is moving ahead with progressive economic development, job creation, and environmental protection. We are a leader in the South in terms of economic growth, and are below the national average in unemployment rate. We are, however, a small state and our relative prosperity is very dependent upon funding such as this Appropriations Bill. It's obvious that its contents, and the actions of this Committee, have widespread implications for the state as a whole.

With regard to the fiscal year 2000 Energy and Water Appropriation Bill specifically, I note with pleasure the relative 'health' of this Bill as compared to recent years' submissions, particularly funding for the Corps of Engineers. My comments for the record reflect input from, and the concerns of, the principal State Agencies that work most closely with the USACE Charleston District Office; namely the SC State Ports Authority; the SC Department of Natural Resources; and the SC Department of Health and Environmental Control/Office of Ocean and Coastal Resource Management. Attached to my testimony as "Supporting Documents" are individual descriptions of the approved and on-going, USACE projects throughout South Carolina.

In commenting on this legislation, it's my intention to convey to this Committee the value of our partnership, and highlight those areas both where we can further the Administration's goals, and where we need Federal assistance sustaining critical project/program implementation. I'm confident through our mutual support South Carolina will effectively cross the "Bridge to the 21st Century".

SOUTH CAROLINA'S HARBORS AND PORTS

Our significant harbor and port assets continue to be the fuel of our economic engine. The great Port of Charleston, a national asset, is now in the execution phase

of a fully funded, $138.7 million deepening and widening project; a project whose reality is the product of this Committee's commitment and the state of South Carolina's significant investment. The benefits to be realized will transcend the obvious as creative collateral activities such as using the dredge material to build berms for fish habitat, are pursued; a Win-Win for economists and environmentalists alike. Likewise, our smaller, but equally important, ports of Georgetown and Port Royal are principal players in the industrial shipping arena. Dredging and dike maintenance projects are critical to the effectiveness of these waterways, and South Carolina stands ready to support any project requirements necessary to utilize existing USACE capabilities should additional Federal funds be identified. I'll elaborate on this area later.

I would like to comment on the three principle appropriation accounts within the USACE (Civil Works) fiscal year 2000 budget proposal that have direct impact on South Carolina and its quality of life: General Investigations (Studies); Construction General; and Operations and Maintenance (O&M).

STUDIES

We are appreciative of budgeting provided for general investigations related to Congaree, Santee, Cooper, and Yadkin-Pee Dee rivers, which are essential to overall water resources evaluation. There are, however, two additional reconnaissance studies in need of Committee support: the Broad River Basin, NC & SC; and the Charleston Harbor Extension (Please note: the Charleston Harbor Extension study will require a Committee Resolution for study authorization). The only funding required is $100,000 to initiate each study, and the definitive insights gained are certainly worth the minimal cost. Study descriptions are provided in the Supporting Documents.

In a related issue, there are growing concerns with regard to contamination of sediments in the greater Charleston Harbor and Estuary. In a cooperative effort, the University of South Carolina and the SC Department of Natural Resources have approached the USACE Charleston District Office about conducting such a study in an effort to pro-act to the obvious hazard associated with dredging and spoil disposal of contaminated sediments. The SC Legislative Delegation has keen interest in this initiative, and I am fully supportive of any solution that can be implemented to assist in bringing such a study to fruition. Your support would be greatly appreciated.

CONSTRUCTION GENERAL

As alluded to earlier, we are pleased to finally have our major Charleston Harbor Deepening/Widening project funded and underway, and to be nearing completion of the Myrtle Beach Storm Damage Reduction project. Adequate funding is also in place to carry out USACE Continuing Authorities Program (CAP) projects. This essential, cost shared program, has been, and continues to be, well managed and implemented under USAGE Charleston District Office cognizance, as is considered by state planners to be invaluable to effective resource planning.

Also funded within the Construction account is the Aquatic Plant Control (APC) Program. Control of noxious aquatic plants continues to be a matter of serious concern to South Carolina. Productivity of our waterways and hydro-electric dams are essential to our economy. Millions of dollars have been spent to date to research, eradicate, and control destructive weeds in our lakes and reservoirs, and we have made measurable progress. The downside is that in order to secure our gains, continued control activities must take place or re-growth will occur and we'll be back to "square one". Unfortunately, despite this Committee's adding funds to the Aquatic Plant Control Program last year, all of it was funneled into research and none made available to states for control activities. Again this year there are no funds in the Administration's budget for APC, and I respectfully request you reexamine this "pay me now or pay me later" scenario, and specify $250,000 for South Carolina in order to keep this serious problem at bay. Details can be found in the Supporting Documents.

OPERATION & MAINTENANCE (O&M)

Nowhere are there greater implications for funding than in the O&M account. Maintenance of the nation's navigable waterways and existing infrastructure is critical to the economic viability and safety of both the State and its citizens. There are shortfalls in the O&M area that I would like to highlight and seek your support in alleviating.

Dredging and Diking are critical to the overall navigability of our waterways. Murrells Inlet is home to an active commercial fishing fleet and several marinas

housing significant numbers of commercial and private recreational vessels. Current navigability is being compromised due to shoaling and sediment overflow from the upstream deposition basin. Inaccessibility of this channel will result in virtual collapse of local economic livelihood. This O&M project calls for maintaining .6 miles of the entrance channel; three miles of inner channel; one turning basin; deposition basin; and two stone jetties, but received zero funds this year. There has not been dredging activity since 1988 and there is an immediate need in order to keep the channel at the required depth of 12 feet. USAGE capabilities are consistent with the estimated $1.48 million project cost, and can support this critical activity.

While Georgetown Harbor has current maintenance funds allocated, additional funds are necessary to control harbor depth, which is not an activity currently funded. Passage of larger ships is important to the harbor's viability and failing to dredge this year will denigrate this harbor's capability to support commercial shipping. An estimated $2.8 million is necessary to restore Georgetown harbor to navigable depth.

As mentioned earlier, dikes along the Atlantic Intracoastal Waterway are in serious disrepair. Existing O&M funds are inadequate to accomplish the needed dike repair necessary to ensure adequate dredge disposal areas in the near future. $1.5 million is necessary to execute minimum dike repair and undertake systematic erosion control.

Mr. Chairman, in closing, we in South Carolina recognize that despite the current positive economic climate and budget surpluses, resources are not unlimited and priorities must be established. But South Carolina also occupies a unique position in our national interest. Key military installations, coastal geography, interstate trade routes, and international commerce are all dynamics at work within our boarders. We consider ourselves good stewards of taxpayer resources and a responsible partner in the prudent expenditure of valuable funds. I urge you to favorably consider our reasonable requests for fiscal assistance, and furthermore, to think of your commitment as an investment, not an expense.

We look forward to continuing our partnership in the collective pursuit of excellence for our deserving constituents.

PREPARED STATEMENT OF CYRUS M. JOLLIVETTE, VICE PRESIDENT FOR GOVERNMENT RELATIONS, UNIVERSITY OF MIAMI

Mr. Chairman and Members of the Subcommittee: I am privileged to have the opportunity to submit this statement on behalf of Rosenstiel School of Marine and Atmospheric Science at the University of Miami in Coral Gables, Florida.

Respectfully, the University, joined by the City of Miami Beach, Florida seeks your support for the establishment of a demonstration project in Miami Beach which could arrest the continuing problem of coastal erosion, particularly in the cities of Miami Beach, Surfside, and Bal Harbour, Florida. This demonstration project would focus on the 12 miles of sandy beaches between Bakers Haulover Inlet and Government Cut.

By the mid-seventies, this beach segment had severely eroded, leaving only a small area of dry beach during low water. To prevent loss of land and to prevent damage to existing structures from storm surge, many of the adjacent properties had to be protected by sea walls and revetments. Because of the lack of sufficient dry beach, tourism declined, which has adverse effects on the economy of the region.

To remedy some of these problems, in 1975, the U.S. Army Corps of Engineers (ACOE), in partnership with Miami-Dade County, initiated the Miami-Dade County Beach Erosion Control and Hurricane Surge Project. At that time, Miami-Dade County and the ACOE entered into a 50-year contract for the joint management of Miami-Dade's sandy beaches. During the period 1979–1982, the ACOE constructed a hurricane dune and nourished the beaches between Bakers Haulover Inlet and Government Cut. A total of 60 million cubic yards of sand was placed on the beach thereby increasing its width to 300 feet. The implementation of the beach nourishment has had a tremendously positive effect on the economy of the region.

In judging the performance of the project, it should be realized that beach nourishment is a repeat process and, based on experience with other beaches, should be carried on the average of every 5 years. The Miami Beach Nourishment, has a considerable better track record. Only after some 15 years were there areas that needed to be renourished. However at this time, 20 years after the start of the original nourishment, the beach as a whole has eroded to an extent that a large scale renourishment seems unavoidable unless a return to the situation in the mid 1970s is accepted. The major problem is where to find sand in sufficient quantities to re-

supply the beaches, as the near-shore deposits of sand which have been the source for the nourishment project have been exhausted.

The erosion along the beaches between Bakers Haulover Inlet and Government Cut is not uniform. Since the implementation of the nourishment during the period 1979–1982, the northern two-third has steadily eroded whereas the southern one-third has accreted. Furthermore, in the erosional part there are "hot spots" where the erosion is much more severe than in others. The reason for this situation is not directly obvious and has to do with the local off-shore bathymetry, wave climate, and sediment characteristics. In addition, Bakers Haulover Inlet plays an important role in the erosion along the beaches of Bal Harbor and Surfside. The present shoreline is irregular in plain view—rather than a smooth curve between the two inlets—and is characterized by indentations and protrusions.

Although there is some transfer of sand across the inlets, to a first approximation the area between the two inlets can be considered a self-contained littoral cell. The seaward boundary of that cell is not known and the big question is how much sand is lost to the offshore. The remaining sand is redistributed in the cell by waves. From a recent study, it is known that sand eroded from the northern two thirds of beach can be traced to the southern one-third of the beach. Also, bathymetric surveys show that the beach does not conform to the straight design slope of 1:40. The actual beach slope is gentler and the underwater beach shows a bar. This leads to a loss of dry beach.

As suggested earlier, the causes of the irregular appearance of the shoreline, the presence of erosional "hot spots" and the shape of the beach profile are related to offshore bathymetry, wave climate, and the characteristics of the beach sand. Therefore, to identify the cause(s) of erosion, to explain the presence of the erosional "hot spots" and to predict the anticipated beach profile, information is needed on bathymetry, wave climate, and sediment characteristics.

None of this information is in sufficient detail and will require measurements, the results of which would be interpreted using computer models. Deep-water waves will be carried inshore to calculate the wave characteristics at breaking. From this information, long-shore currents, sediment transport and changes in bathymetry, including the position of the shoreline will be calculated. The measurements will allow construction of an improved sediment budget. For this effort, the beach would be divided into compartments, both in the long-shore and cross-shore direction. The principle of conservation of sand would be applied to each compartment, i.e., the rate of change of the sediment volume in each compartment would equal the volume of sediment in minus the volume of sediment leaving the compartment. Comparison with observed changes in bathymetry, including changes in beach profile, should identify the causes of erosion and erosional "hot spots" as well as the shape of the beach profile.

The City of Miami Beach remains committed to identifying outside sources of sand and expediting the evaluation of the environmental, physical and economic viability of the potential sources, to ensure that sufficient quantities of beach-quality sand are available to fulfill future needs. However it is realized that continuing to pump sand to the beaches without addressing the underlying causes of erosion, will lead to an endless cycle of needing more, increasingly expensive sand.

Another possible solution is to transfer sand from the southern accretional part to the northern erosional part of the beach. Recycling will reduce the dependence on outside sources of sand.

Although presently beach nourishment is the accepted way to combat erosion, the lack of sand sources requires us to rethink the process. It could well be that for Miami Beach a combination of beach nourishment and hard structures (e.g., offshore breakwaters) is a more desirable solution. The hard structures would reduce the sand losses and more importantly when located properly, would concentrate the sand that has eroded from the beaches in places where it can be retrieved by dredges.

The measurements and subsequent analysis referred to in the previous section should help to optimize the use of outside sand sources and the recycling technique and provide the necessary knowledge to properly design combined measures of nourishment and hard structures.

To arrive at a solution to the erosion problem, the City of Miami Beach in cooperation with the University of Miami is suggesting a two-prong approach consisting of the development of a long-term beach management plan and the implementation of two demonstration projects.

Combating beach erosion takes a regional (the beach area between the two inlets) rather than a local ("hot spots") approach. The first order of business in establishing a beach management plan is to identify the causes of the beach erosion and to determine whether there exists an equilibrium shoreline position and equilibrium beach

profile. After that the questions of how, where and when to combat erosion can be addressed. This includes the question whether hard structures should be included. An important item in arriving at answers to these questions is the development of an improved sediment budget. In view of the necessary field measurements, the development of the beach management plan is expected to take 5 years.

Mr. Chairman, the University of Miami is pleased to be an active partner of the City of Miami Beach, Florida in an effort to provide an efficient, cost-effective remedy for the continuing coastal erosion problems along the southeast Atlantic Coast. We are convinced that the results of this proposed demonstration project will make an important contribution to gaining a permanent solution to the problem.

To accomplish this important program the University of Miami seeks $2 million from the Energy and Water Development Appropriations Subcommittee through the U.S. Army Corps of Engineers. Your support would be appreciated, Mr. Chairman. My colleagues and I at the University of Miami thank you for the opportunity to present these views for your consideration.

PREPARED STATEMENT OF VOLUSIA COUNTY, FLORIDA

On behalf of our citizens and fishermen, Volusia County, Florida, is requesting that the Subcommittee appropriate $1,000,000 in fiscal year 2000 from the U.S. Army Corps of Engineers (COE) Construction account to fund, in part an 1000 foot oceanward extension of the South Jetty of the Ponce DeLeon Inlet. This funding is essential to protect the Inlet, along with the existing North Jetty and its landward extension funded by this committee in fiscal year 1999. A more detailed case history and description of the situation and project follow below.

The Ponce DeLeon Inlet is located on the east coast of Florida, about 10 miles south of the City of Daytona Beach in Volusia County. The Inlet is a natural harbor connecting the Atlantic Ocean with the Halifax River and the Indian River North. The Ponce DeLeon Inlet provides the sole ocean access to all of Volusia County. Fishing parties and shrimp and commercial fisherman bound for New Smyrna Beach or Daytona Beach use the Inlet, as well as others entering for anchorage. Nearby fisheries enhanced by the County's artificial reef program attract both commercial and sport fisherman. Head boat operators also provide trips to view marine life and space shuttle launches from Cape Canaveral. In addition, there is a U.S. Coast Guard Lifeboat Station on the east shore of the Indian River less than a mile south of the Inlet.

Unfortunately, the Inlet is highly unstable and, despite numerous navigation projects, continues to threaten safe passage for the charter boat operators and commercial fisherman who rely on the access it provides for their livelihood. Recreational boaters and Coast Guard operations are also at risk passing through this unstable inlet. The shoaling of the channels in the Inlet so restricts dependable navigation that the Coast Guard no longer marks the north channel in order to discourage its use. The Coast Guard continues to move the south and entrance channel markers and provides warnings that local knowledge and extreme caution must be used in navigating the inlet. More seriously, the Coast Guard search and rescue data for fiscal years 1981—1995 show that 20 deaths have resulted from vessels capsizing in the Inlet, the direct result of the Inlet's instability. 147 vessels capsized and 496 vessels ran aground in the Inlet during the same period.

The Federal interest in navigation through the Ponce DeLeon Inlet dates back to 1884 and continues to the present. The existing navigation project was authorized by the Rivers and Harbors Act of 1965. The construction authorized by that Act, including ocean jetties on the north and south sides of the Inlet, was completed in July 1972. It became evident soon after completion of the authorized project that the project did not bring stability to the Inlet. A strong northeaster in February 1973 created a breach between the western end of the North Jetty and the sand spit the Jetty was connected to inside the Inlet. The breach allowed schoaling to occur that was serious enough to close boat yards and require almost $2 million worth of repairs, including extending the western end of the North Jetty.

Under the existing maintenance agreement entered into upon completion of the construction, the COE periodically performs maintenance on the Inlet. Maintenance projects have included several dredging efforts, adding stone sections to the south side of the north jetty, extending the westward end of the North Jetty for the second time, and closing the North Jetty weir. The COE's last maintenance was dredging, completed on the entrance channel in January, 1990.

In fiscal year 1998, the COE received a $3,500,000 appropriation for emergency maintenance on the North Jetty. Migration of the entrance channel undermined the North Jetty, seriously threatening its structural integrity. The fiscal year 1998

funds will be used to construct a granite rock scour apron for the 500 to 600 feet of where the Jetty is undermined.

In the current fiscal year, the COE received $4,034,000 from the Operations and Maintenance account to extend the North Jetty of the Inlet landward by 800 feet. This maintenance project is underway and intended to be completed as soon as possible to prevent the erosion that will cause outflanking of the North Jetty. Continued outflanking of the west end of the North Jetty could create a new inlet for the Halifax and Indian Rivers resulting in major changes to the Ponce DeLeon Inlet. The resultant shoaling of both the north and south channels, as well as changes to the entrance channel, would make passage through the inlet extremely dangerous and unpredictable.

Volusia County is requesting that the COE receive the South Jetty construction funds in anticipation of the project's authorization in the next Water Resources Development Act (WRDA). S. 507, as reported by the Senate Environment and Public Works Committee includes a contingent authorization for the South Jetty project, estimated to cost $5,454,000, of which $2,988,000 allocated to as the federal cost. We understand that the South Jetty project is included in the WRDA language the House Transportation and Infrastructure Committee is currently drafting. We also understand that the Jacksonville District Engineer and the Atlanta Division Engineer have forwarded a positive recommendation to COE headquarters on the project. The COE anticipates that the construction of the jetty extensions will help stabilize the Inlet and reduce future maintenance costs.

The Ponce DeLeon Inlet presents a serious engineering challenge; the success of which is measured in terms of human life and vessel damage. The existing project has failed to stabilize the Inlet. Extending the North Jetty was the first step toward correcting the failure and meeting the challenge. Funding the beginning phase of the 1000 foot oceanward extension of the South Jetty in fiscal year 2000 is the next critical step toward providing safe passage for the commercial and recreational boaters in Volusia County. In addition, providing these funds at this time is likely to prevent the need to a much more substantial maintenance project in the near future.

Thank you for your consideration of this request.

PREPARED STATEMENT OF THE SEMINOLE TRIBE OF FLORIDA

The Seminole Tribe of Florida is pleased to submit this statement regarding the fiscal year 2000 budget for the Army Corps of Engineers (COE). The Tribe asks that Congress provide $21.1 million in the COE's construction budget for critical projects in the Florida Everglades, as authorized in section 528 of the Water Resources Development Act (WRDA) of 1996. The Tribe's Everglades restoration project on our Big Cypress reservation is a highly ranked critical project that the Tribe and the COE have worked cooperatively on for over two years. The Tribe's critical project includes a complex water conservation plan and a canal that transverses the Reservation. The Tribe has invested a significant amount of funds to support the conceptual planning and design of this project, as well as for the environmental analysis required by federal law. The Tribe firmly believes that the federal government should provide the funds authorized by WRDA and relied upon by local sponsors, including the Seminole Tribe, for Everglades restoration projects that will benefit federal lands and the highly sensitive and nationally-valued Everglades ecosystem.

The Tribe's critical project is a part of the Tribe's Everglades Restoration Initiative, which includes the design and construction of a comprehensive water conservation system. This project is designed to improve the water quality and natural hydropatterns in the Big Cypress Basin. This project will contribute to the overall success of both the federal and the state governments' multi-agency effort to preserve and restore the delicate ecosystem of the Florida Everglades. In recognition of this contribution, the Seminole Tribe's Restoration Initiative has been endorsed by the South Florida Ecosystem Restoration Task Force and has been found to be consistent with the recommendations of the Governor's Commission for a Sustainable South Florida.

THE SEMINOLE TRIBE OF FLORIDA

The Seminole Tribe lives in the Florida Everglades. The Big Cypress Reservation is located in the western basins, directly north of the Big Cypress National Preserve. The Everglades provide many Seminole Tribal members with their livelihood. Our traditional Seminole cultural, religious, and recreational activities, as well as commercial endeavors, are dependent on a healthy Everglades ecosystem. In fact,

the Tribe's identity is so closely linked to the land that Tribal members believe that if the land dies, so will the Tribe.

During the Seminole Wars of the 19th Century, our Tribe found protection in the hostile Everglades. But for this harsh environment filled with sawgrass and alligators, the Seminole Tribe of Florida would not exist today. Once in the Everglades, we learned how to use the natural system for support without harm to the environment that sustained us. For example, our native dwelling, the chickee, is made of cypress logs and palmetto fronds and protects its inhabitants from the sun and rain, while allowing maximum circulation for cooling. When a chickee has outlived its useful life, the cypress and palmetto return to the earth to nourish the soil.

In response to social challenges within the Tribe, we looked to our Tribal elders for guidance. Our elders taught us to look to the land, for when the land was ill, the Tribe would soon be ill as well. When we looked at the land, we saw the Everglades in decline and recognized that we had to help mitigate the impacts of man on this natural system. At the same time, we acknowledged that this land must sustain our people, and thereby our culture. The clear message we heard from our elders and the land was that we must design a way of life to preserve the land and the Tribe. Tribal members must be able to work and sustain themselves. We need to protect the land and the animals, but we must also protect our Tribal farmers and ranchers.

Recognizing the needs of our land and our people, the Tribe, along with our consultants, designed a plan to mitigate the harm to the land and water systems within the Reservation while ensuring a sustainable future for the Seminole Tribe of Florida. The restoration plan will allow Tribal members to continue their farming and ranching activities while improving water quality and restoring natural hydroperiod to large portions of the native lands on the Reservation and ultimately, positively effecting the Big Cypress National Preserve and Everglades National Park.

The Seminole Tribe's project addresses the environmental degradation wrought by decades of federal flood control construction and polluted urban and agricultural runoff. The interrupted sheet flow and hydroperiod have stressed native species and encouraged the spread of exotic species. Nutrient-laden runoff has supported the rapid spread of cattails, which choke out the periphyton algae mat and sawgrass necessary for the success of the wet/dry cycle that supports the wildlife of the Everglades.

The Seminole Tribe designed an Everglades Restoration project to allow the Tribe to sustain ourselves while reducing impacts on the Everglades. The Seminole Tribe is committed to improving the water quality and flows on the Big Cypress Reservation. We have already committed significant resources to the design of this project and to our water quality data collection and monitoring system. We are willing to continue our efforts and to commit more resources, for our cultural survival is at stake.

SEMINOLE TRIBE'S BIG CYPRESS CRITICAL PROJECT

The Tribe has developed a conceptual water conservation plan that will enable us to meet new water quality standards essential to the cleanup of our part of the Everglades ecosystem and to plan for the storage and conveyance of our water rights. The Tribe's Everglades Restoration Initiative is designed to mitigate the degradation the Everglades has suffered through decades of flood control projects and urban and agricultural use and ultimately to restore the nation's largest wetlands to a healthy state.

The Seminole Tribe critical project provides for the design and construction of water control, management, and treatment facilities on the western half of the Big Cypress reservation. The project elements include conveyance systems, including major canal bypass structures, irrigation storage cells, and water resources areas. This project will enable the Tribe to meet proposed numeric target for low phosphorus concentrations that is being used for design purposes by state and federal authorities, as well as to convey and store irrigation water and improve flood control. It will also provide an important public benefit: a new system to convey excess water from the western basins to the Big Cypress National Preserve, where water is vitally needed for rehydration and restoration of lands within the Preserve.

CONCLUSION

Improving the water quality of the basins feeding into the Big Cypress National Preserve and the Everglades National Park is vital to restoring the Everglades for future generations. By granting this appropriation request, the federal government will be taking a substantive step towards improving the quality of the surface water that flows over the Big Cypress Reservation and on into the delicate Everglades eco-

system. Such responsible action with regard to the Big Cypress Reservation, which is federal land held in trust for the Tribe, will send a clear message that the federal government is committed to Everglades restoration.

The Seminole Tribe is ready, willing, and able to begin work immediately. Doing so will require substantial commitments from the Tribe, including the dedication of over 2,400 acres of land for water management improvements included in the critical project. However, if the Tribe is to move forward with its contribution to the restoration of the South Florida ecosystem, a substantially higher level of federal financial assistance will be needed as well.

The Tribe has demonstrated its economic commitment to the Everglades Restoration effort; the Tribe is asking the federal government to also participate in that effort. This effort benefits not just The Seminole Tribe, but all Floridians who depend on a reliable supply of clean, fresh water flowing out of the Everglades, and all Americans whose lives are enriched by this unique national treasure.

Thank you for the opportunity to present the request of the Seminole Tribe of Florida. The Tribe will provide additional information upon request.

PREPARED STATEMENT OF THE CITY OF MIAMI BEACH, FLORIDA

The City of Miami Beach appreciates the opportunity to submit for the record (1) testimony on an innovative new beach erosion control initiative, and (2) testimony in support of the request by Miami-Dade County for beach renourishment funds.

COASTAL EROSION PREVENTION INITIATIVE

The City of Miami Beach, Florida, in conjunction with the University of Miami seeks your support for the establishment of a demonstration project in Miami Beach which could arrest the continuing problem of coastal erosion, particularly in the cities of Miami Beach, Surfside, and Bal Harbour, Florida. This demonstration project would focus on the 12 miles of sandy beaches between Bakers Haulover Inlet and Government Cut Inlet.

By the mid-seventies, this beach segment had severely eroded, leaving only a small area of dry beach during low water. To prevent loss of land and to prevent damage to existing structures from storm surge, many of the adjacent properties had to be protected by sea walls and revetments. Because of the lack of sufficient dry beach, tourism declined, which has adverse effects on the economy of the region.

To remedy some of these problems, in 1975, the U.S. Army Corps of Engineers (ACOE), in partnership with Miami-Dade County, initiated the Miami-Dade County Beach Erosion Control and Hurricane Surge Protection Project. At that time, Miami-Dade County and the ACOE entered into a 50-year contract for the joint management of Miami-Dade's sandy beaches. During the period 1979–1982, the ACOE constructed a hurricane dune and nourished the beaches between Bakers Haulover Inlet and Government Cut. A total of 20 million cubic yards of sand was placed on the beach thereby increasing its width to 300 feet. The implementation of the beach nourishment has had a tremendously positive effect on the economy of the region.

In judging the performance of the project, it should be realized that beach nourishment is a repeat process and, based on experience with other beaches, should be carried on the average of every 5 years. While Miami Beach has had a better track record, the beach as a whole has eroded to an extent that a large scale renourishment seems unavoidable, in spite of the completion of three renourishment efforts over the past 15 years. The major problem is where to find sand in sufficient quantities to re-supply the beaches, as the near-shore deposits of sand which have been the source for the nourishment project have been exhausted.

The erosion along the beaches between Bakers Haulover Inlet and Government Cut is not uniform. Since the implementation of the nourishment during the period 1979–1982, the northern two-third has steadily eroded whereas the southern one-third has accreted. Furthermore, there are "hot spot areas" where the erosion is much more severe than in others. The reason for this situation is not directly obvious and has to do with the local off-shore bathymetry, wave climate, and sediment characteristics. In addition, Bakers Haulover Inlet plays an important role in the erosion along the beaches of Bal Harbor and Surfside. The present shoreline is irregular in plain view—rather than a smooth curve between the two inlets—and is characterized by indentations and protrusions.

Although there is some transfer of sand across the inlets, to a first approximation the area between the two inlets can be considered a self-contained littoral cell. The seaward boundary of that cell is not known and the big question is how much sand is lost to the offshore. The remaining sand is redistributed in the cell by waves.

From a recent study, it is known that sand eroded from the northern two thirds of beach can be traced to the southern one-third of the beach. Also, bathymetric surveys show that the beach does not conform to the straight design slope of 1:40. The actual beach slope is gentler and the underwater beach shows a bar. This leads to a loss of dry beach.

As suggested earlier, the causes of the irregular appearance of the shoreline, the presence of erosional "hot spots" and the shape of the beach profile are related to offshore bathymetry, wave climate, and the characteristics of the beach sand. Therefore, to identify the cause(s) of erosion, to explain the presence of the erosional "hot spots" and to predict the anticipated beach profile, information is needed on bathymetry, wave climate, and sediment characteristics.

None of this information is in sufficient detail and will require measurements, the results of which would be interpreted using computer models. Deep-water waves will be carried inshore to calculate the wave characteristics at breaking. From this information, long-shore currents, sediment transport and changes in bathymetry, including the position of the shoreline will be calculated. The measurements will allow construction of an improved sediment budget. For this effort, the beach would be divided into compartments, both in the long-shore and cross-shore direction. The principle of conservation of sand would be applied to each compartment, i.e., the rate of change of the sediment volume in each compartment would equal the volume of sediment in minus the volume of sediment leaving the compartment. Comparison with observed changes in bathymetry, including changes in beach profile, should identify the causes of erosion and erosional "hot spots" as well as the shape of the beach profile.

To arrive at a solution to the erosion problem, the City of Miami Beach in cooperation with the University of Miami is suggesting a two-prong approach consisting of the development of a long-term beach management plan and the implementation of a demonstration project.

Combating beach erosion takes a regional (the beach area between the two inlets) rather than a local approach. The first order of business in establishing a beach management plan is to identify the causes of the beach erosion and to determine whether there exists an equilibrium shoreline position and equilibrium beach profile. After that the questions of how, where and when to combat erosion can be addressed. This includes the question whether hard structures should be included. An important item in arriving at answers to these questions is the development of an improved sediment budget. In view of the necessary field measurements, the development of the beach management plan is expected to take 5 years.

The City of Miami Beach remains committed to identifying outside sources of sand and expediting the evaluation of the environmental, physical and economic viability of the potential sources, to ensure that sufficient quantities of beach-quality sand are available to fulfill future needs. However it is realized that continuing to pump sand to the beaches without addressing the underlying causes of erosion, will lead to an endless cycle of needing more, increasingly expensive sand.

Another possible solution to be investigated is to transfer sand from the southern accretional part to the northern erosional part of the beach. Recycling will reduce the dependence on outside sources of sand.

Although presently beach nourishment is the accepted way to combat erosion, the lack of sand sources requires us to rethink the process. It could well be that for Miami Beach a combination of beach nourishment and hard structures (e.g., offshore breakwaters) is a more desirable solution. The hard structures would reduce the sand losses and more importantly when located properly, would concentrate the sand that has eroded from the beaches in places where it can be retrieved by dredges.

The measurements and subsequent analysis referred to in the previous section should help to optimize the use of outside sand sources and the recycling technique and provide the necessary knowledge to properly design combined measures of nourishment and hard structures.

Mr. Chairman, the City of Miami Beach is pleased to be an active partner with the University of Miami in an effort to provide an efficient, cost-effective remedy for the continuing coastal erosion problems along the southeast Atlantic Coast. We are convinced that the results of this proposed demonstration project will make an important contribution to gaining a permanent solution to the problem.

To accomplish this important program the City of Miami Beach seeks $2 million from the Energy and Water Development Appropriations Subcommittee through the U.S. Army Corps of Engineers.

SUPPORT FOR MIAMI-DADE CONSTRUCTION REQUEST

The City of Miami Beach would first like to thank the members of the subcommittee for all their efforts in the past to provide support for the State of Florida's beaches and in particular, those of Miami Beach.

Beaches are Florida's number one tourist "attraction." Last year, beach tourism generated more than $16 billion dollars for Florida's economy and more tourists visited Miami Beach than visited the three largest national parks combined.

In addition to their vital economic importance, beaches are the front line defense for multi-billion dollar coastal infrastructure during hurricanes and storms. When beaches are allowed to erode away, the likelihood that the Federal government will be stuck with astronomical storm recovery costs is significantly increased. The Army Corps of Engineers estimated that more than 70 percent of the damage caused to upland properties in Panama City Beach by Hurricane Opal could have been prevented if their pending beach renourishment project had been completed before the storm.

The Florida Department of Environmental Protection estimates that at least 276 miles (35 percent) of Florida's 787 miles of sandy beaches are currently at a critical state of erosion. This includes the entire six miles of Miami Beach. As a result of the continuing erosion process and more dramatically, recent intense storms which have caused tremendous damage to almost all of the dry beach and sand dune throughout the middle segment of Miami Beach. Two years ago, most of the Middle Beach dune cross-overs were declared safety hazards and closed, as the footings of the boardwalk itself were in immediate jeopardy of being undercut by the encroaching tides. If emergency measures, costing approximately $400,000 had not been taken by the City, there would have been considerable risk of coastal flooding west of the dune line in residential sections of Miami Beach. As you can see, this example points to the commitment we as a beach community have to our beaches, but federal assistance remains crucial. While we are thankful of the substantial commitment made by the subcommittee in the fiscal year 1999 Energy and Water Conference Report, there is still much work to be done. Our beaches must be maintained not only to ensure that our residents and coastal properties are afforded the best storm protection possible, but also to ensure that beach tourism, our number one industry, is protected and nurtured.

In 1987, the Army Corps of Engineers and Metropolitan Dade County entered into a fifty year agreement to jointly manage restore and maintain Dade County's sandy beaches. Since then, Metropolitan Dade County has been responsible for coordinating and funding the local share of the cost for the periodic renourishment of our beaches.

In order to ensure that adequate funding will continue to be available, the City of Miami Beach supports and endorses the legislative priorities and appropriation requests of Metropolitan Dade County, as they relate to the restoration and maintenance of Dade County's sandy beaches. Specifically, the City respectfully adds their strong support for the efforts of Miami-Dade County and wholeheartedly supports their fiscal year 2000 request for $7.3 million in beach renourishment funds.

Your support would be appreciated, Mr. Chairman. The City of Miami Beach thanks you for the opportunity to present these views for your consideration.

OHIO RIVER VALLEY INLAND NAVIGATION PROJECTS

PREPARED STATEMENT OF R. BARRY PALMER, EXECUTIVE DIRECTOR, DINAMO

Mr. Chairman and Members of the Subcommittee: I am Barry Palmer, Executive Director of DINAMO, the Association for the Development of Inland Navigation in America's Ohio Valley. DINAMO is a multi-state, membership based association of business and industry, labor, and state government leaders from throughout the Ohio Valley, whose singular purpose is to expedite the modernization of the lock and dam infrastructure on the Ohio River Navigation System. Largely through the leadership of this subcommittee and the professional efforts of the US Army Corps of Engineers, we in the Ohio Valley are beginning to see the results of 18 years of continuous hard work in improving our river infrastructure.

Lock and dam modernization at Robert C. Byrd Locks and Dam, Grays Landing Locks and Dam, Point Marion Locks, and Winfield Locks are largely complete. These projects were authorized for construction in the Water Resources Development Act of 1986. The immediate problems really are focused on completing in a timely manner lock and dam modernization projects authorized by the Congress in subsequent water resources development acts. Substantial problems remain for adequate funding of improvements at the Olmsted Locks and Dams, Ohio River, IL/KY;

Lower Monongahela River Locks and Dams 2, 3 & 4, PA; McAlpine Locks and Dam, Ohio River, IN/KY; Marmet Lock, Kanawha River, WV; and for the Kentucky Locks, Tennessee River, KY. The construction schedules for all of these projects have been severely constrained, and we are requesting increased funding for these construction projects at an "efficient construction rate." Following is a listing of the projects and an efficient funding level determined by the US Army Corps of Engineers to advance these projects, in order to complete construction by 2008 or earlier:

RECOMMENDATIONS FOR FISCAL YEAR 1999

1. For the Robert C. Byrd Locks and Dam modification project, formerly the Gallipolis Locks and Dam on the Ohio River, OH/WV, about $7,150,000 for continued construction.

2. For the Winfield Lock Replacement on the Kanawha River, WV, $1,400,000 for continued construction of the lock and relocations related to environmental mitigation.

3. For the Olmsted Locks and Dam, replacing Locks and Dams 52 and 53 on the Lower Ohio River, IL/KY, $56,100,000 for continued construction of the twin 110 foot × 1,200 foot locks and design of the new gated dam.

4. For improvements to Monongahela River Locks and Dams 2, 3 & 4, PA, $53,00,000 for continued construction of Dam 2, for relocations related to the construction project, and continued design of Lock 4.

5. For the McAlpine Lock Project on the Ohio River, IN/KY, $10,800,000 to continue design of the new 110 foot × 1,200 foot lock addition and for continued construction of the new 110 foot × 1,200 foot lock.

6. For the Marmet Lock Replacement on the Kanawha River, WV, $11,350,000 for real estate acquisition and for continuing Plans and Specifications on the main construction contracts.

7. For the Kentucky Lock Addition on the Tennessee River, KY, $15,000,000 to continue design on the new highway and bridge work and for relocation and construction of the TVA tower.

8. For the Ohio River Mainstem Study, including studies related to modifications of John T. Myers, Greenup, Emsworth, Dashields, and Montgomery Locks and Dams, $9,600,000. This level of funding is needed to complete for WRDA 2000 and WRDA 2002, respectively, the studies leading to interim feasibility reports (construction authorization documents) for additional capacity at these five lock and dam locations. Also the Corps of Engineers needs additional funding to complete the Ohio River Main Stem Study to determine where additional improvements may be needed in future years on the Ohio River Navigation System.

For the five projects identified in Points 3–7, the fiscal year 2000 Civil Works Budget of the US Army Corps of Engineers allocates only $70,584,000, when the "efficient" construction level for fiscal year 2000 identified by the Corps is $146,250,000. This difference is that an additional $75 million for these five projects is needed in fiscal year 2000. Attached is a chart outlining fiscal year 1998 and fiscal year 1999 appropriations, fiscal year 2000 budget requests by the Administration, and fiscal year 2000 efficient funding levels for Ohio Valley lock and dam modernization projects. The information related to efficient funding levels was provided to DINAMO by the Commander, Great Lakes and Ohio River Division, US Army Corps of Engineers.

Completion dates for the Lower Mon project have been delayed 7 years from 2003 to 2010. For McAlpine Lock the completion date has been delayed five years from 2002 to 2007. The current completion date for the Marmet Lock project is 2009, but this project with adequate funding could be completed two years ahead of current schedule and fully operational in 2006. For the Kentucky Lock addition, we have seen three different construction schedules. Two completion date schedules would complete this project in 2012 or in 2017. In fact if the Kentucky Lock project was on an "efficient," or "optimum" schedule, the project could be completed by 2008.

All of these construction projects, in addition to the Olmsted Locks and Dam, could be completed by 2008 or earlier. Also, monies from the Inland Waterways Trust Fund could finance 50 percent of the costs of these projects while keeping the Trust Fund in the black. Additionally it should be noted that there are about $340 million in the Inland Waterways Trust Fund. The real challenge then is to complete these lock and dam construction projects by 2008 or earlier by putting them on an "efficient" construction schedule.

Delaying the construction of these vitally needed infrastructure investments is a terribly inefficient practice. Inefficient construction schedules cost people a lot of money. A recent study by the Institute for Water Resources concluded that $1.02 billion of cumulative benefits (transportation savings) for the aforementioned five

lock and dam modernization projects on the Ohio River Navigation System and the Inner Harbor project in New Orleans harbor on the Lower Mississippi River have been lost forever. The benefits foregone represent the cumulative annual loss of transportation cost savings associated with postponing the completion of these projects from their "optimum," or "efficient" schedule. In addition, this study concludes that $682 million of future benefits that will be foregone based on fiscal year 1999 schedules could be recovered if funding is provided to accelerate design and construction activities in accordance with "efficient" schedules.

Expenditures for lock and dam modernization are an investment in the physical infrastructure of this nation. The Corps of Engineers construction budget of $1.24 billion for fiscal year 2000 is about $300 million less than the $1.52 billion Congress provided for fiscal year 1999. Mr. Chairman, we have great confidence in the Corps of Engineers and urge your support for a funding level more in line with the real water resources development needs of the nation. For lock and dam modernization on America's inland navigation system, targeted construction funding ought to be at a level of about $250–300 million annually. Last year Congress provided about $4.1 billion for the Corps of Engineers program and about $125 million for lock and dam modernization on America's inland navigation system. It is reasonable that funding for the Corps program should be increased to levels closer to $4.4 billion. With this kind of increased funding, as amply supported in both the House and Senate appropriations committee report language last year, it is clear that a national lock and dam modernization program could be sustained at a level commensurate with the needs for improving the nation's inland navigation system.

We thank you for the opportunity to present this request and our thoughts on these matters.

FISCAL YEAR 2000 FUNDING OF OHIO VALLEY LOCK AND DAM MODERNIZATION PROJECTS

	Fiscal year—			Funding at Efficient Level of Construction
	1998 Energy & Water Development Appropriation Act	1999 Energy & Water Development Appropriation Act	2000 Budget Request	
Construction:				
Robert C. Byrd Locks & Dam, Ohio River, OH/WV	$5,356,000	$8,000,000	$7,150,000	$7,150,000
Grays Landing Locks and Dam, Monongahela River, PA	2,900,000	.....	.....	.....
Point Marion Locks & Dam	.....	.....	.....	.....
Winfield Locks & Dam	8,500,000	4,500,000	1,400,000	1,400,000
Olmsted Locks & Dam [1]	98,400,000	54,500,000	28,634,000	56,100,000
Locks & Dams 2, 3, & 4 [1]	18,200,000	26,500,000	21,600,000	53,000,000
McAlpine Locks & Dam, Ohio River, IN/KY [1]	6,720,000	5,300,000	2,800,000	10,800,000
Marmet Locks & Dam [1]	1,830,000	6,500,000	9,800,000	11,350,000
Kentucky Lock Addition, Tennessee River, KY [1]	4,000,000	8,500,000	7,750,000	15,000,000
London Locks & Dam [2]	1,000,000	.....	600,000	600,000
Surveys: Ohio River Main Stem Study (John T. Myers/Newburgh)	8,800,000	10,150,000	7,157,000	9,600,000
Totals	155,746,000	123,950,000	86,891,000	165,000,000

[1] Targeted priorities by DINAMO.
[2] Major rehabilitation of London L/D would require a "new construction start," included in the fiscal year 2000 budget.

PREPARED STATEMENT OF JOSEPH E. LEMA, VICE PRESIDENT, MANUFACTURERS AND SERVICES DIVISION, NATIONAL MINING ASSOCIATION

The National Mining Association (NMA) urges inclusion of funding in the fiscal year 2000 budget for construction and rehabilitation of inland waterways navigation lockage facilities at selected sites on the Ohio, Monongahela, Kanawha, and Tennessee Rivers, and for expeditious completion of the ongoing Ohio River Main Stem Study being performed by the U.S. Army Corps of Engineers.

NMA member companies produce two-thirds of the coal mined in the United States and most of the other nonfuel metallic and nonmetallic minerals. Producers of coal and many other nonfuel minerals rely on safe, efficient, and competitive in-

land barge transportation services for intermodal rail/barge, truck/barge, and conveyor/barge shipments to utility plants, agriculture, construction, and metals production sites, and port terminals on the Gulf of Mexico from which mining commodities are shipped in coastal commerce and international trade.

NAVIGATION PROGRAM

The Ohio River from Pittsburgh to its juncture with the Mississippi River at Cairo, Illinois, and the interconnecting Monongahela, Kanawha, and Tennessee Rivers are a major component of the nation's bulk freight transportation network which links commercial centers in the east and the midwest and, through its connections with the Tennessee River and the Mississippi River, most of mid-America from the upper east and midwest to the Gulf of Mexico. Added to their proven effectiveness in carrying bulk commodities, barge operations are fuel efficient and free of conflicts with other ground transportation modes, thereby reducing emissions which otherwise would be encountered if trucks were to be utilized in place of barges resulting in higher levels of traffic congestion. One typical barge tow on the Ohio River can accommodate two trainloads of coal, and can handle freight tonnage which would require 900 truck movements, clearly showing the economic and environmental advantages of barges.

Underscoring the importance of moving forward swiftly with construction and rehabilitation projects to replace obsolete facilities and to increase lockage capacities on the Ohio, Monongahela, Kanawha, and Tennessee Rivers is the breakup of Consolidated Rail Corporation (Conrail) in 1999 by the purchase of Conrail's trackage by two mega-rail-carriers in the east, thereby reducing from three to two the number of major, line-haul railroads providing service in the east. Railroad restructuring in the east through consolidation of line-haul trackage makes the effectiveness of the inland waterways particularly strategic and critical as fiscal year 2000 begins.

From year to year, and currently, NMA has applied a systems approach toward analyzing inland waterways problems and needs in our appearance before this Subcommittee, NMA's involvement with the Inland Waterways Users Board, our communications with representatives of the U.S. Army Corps of Engineers, and NMA's participation in meetings with shippers, carriers, terminal operators, and others such as the Marine Transportation System (MTS) Task Force organized under the leadership of the Secretary of Transportation to develop an MTS Strategy for our nation. In continuation of NMA's systems approach employed for many years of concerted effort in support of assuring the viability of the inland waterways system through funding approved by this Subcommittee, a process which has demonstrated important benefits by virtue of budget approvals by this Subcommittee since the mid-1980's, NMA urges the Subcommittee to approve the budget items presented below for funding in fiscal year 2000.

Budget Item [1]	Description
Ohio River Main Stem Systems Study (KY, IL, IN, PA, WV and OH), with priorities for John T. Myers, Newburgh, Cannelton, Emsworth, Dashields and Montgomery sites.	Complete feasibility level engineering designs and NEPA studies for priority lockage improvements, and expedite similar activity for other sites.
Marmet Locks and Dam on the Kanawha River (WV)	Construction to replace obsolete structure and increase lockage capacity.
Locks and Dams, 2, 3 and 4 on the Monongahela River (PA).	Construction to replace three obsolete L&D's with two L&D's.
Kentucky Lock and Dam on the Tennessee River (KY)	Construction to add a 1,200-ft × 110-ft lock chamber.
Olmsted Locks and Dam on the Ohio River (IL & KY)	Construction to replace obsolete L&D's 52 & 53 at new L&D site.
McAlpine Locks and Dam on the Ohio River (IN & KY)	Construction of a new, second 1,200-ft X 110-ft lock chamber.
John T. Myers Locks and Dam on the Ohio River (IN & KY)	Preconstruction engineering and design for addition of a second 1,200-ft × 110-ft lock chamber.
Greenup Locks and Dam on the Ohio River (KY & OH)	Preconstruction engineering and design for addition of a second 1,200-ft × 110-ft lock chamber.
London Locks and Dam on the Kanawha River (WV)	Major rehabilitation of aging structure.

[1] Except for the John T. Myers and the Greenup Locks and Dams, each of the budget items presented above presently are authorized. The two sites yet to be authorized justifiably warrant addition of second 1,200-ft × 110-ft lock chambers to accommodate existing traffic.

These fiscal year 2000 budget recommendations for navigation project construction and rehabilitation arise from a systems approach to identification of problems and needs on the Ohio River System summarized by the following points:

—Locks and Dams 2, 3 and 4 on the Monongahela River near Pittsburgh typically are transited by commercial barge tows requiring passage through each of those

sites as they navigate that segment of the River, which can be accomplished better by the removal of Lock and Dam 3 and uniformly upgrading obsolete Locks and Dams 2 and 4.

—The Marmet Locks and Dam on Kanawha River should have a new 800-ft × 110-ft lock to match the new lock built at the Winfield Locks and Dam downstream near Charleston to effectively accommodate barge tows which originate in the Marmet pool and must transit Marmet before arriving at the Winfield site as barge tows flow toward the Ohio River.

—Locks and Dams on the Lower Ohio River below Huntington should have twin 1,200-ft × 110-ft locks to accommodate heavy barge traffic characterized by towboats pushing 15 jumbo barges that require such lock chambers to transit sites in a single pass without breaking up the tow. In addition, the second chamber becomes especially critical at times when lock closures are required for repair and maintenance operations, leaving a single lock in service. For the past 10 years, barge tonnage on the Ohio River has increased at an average annual rate of two percent, reflecting a 22 percent increase in 1996 over 1986, a rate which is expected to continue especially in line with growth in the demand for electricity fueled by coal.

—The Kentucky Lock and Dam should have a new 1,200-ft × 110-ft lock chamber to handle a modern 15-barge tow from the Lower Ohio River which must transit the site to proceed on the Tennessee River just above Paducah in proximity to the junction of the Lower Ohio River and the Tennessee River, matching Ohio River locks.

—The first three locks and dams on the Upper Ohio River below Pittsburgh are obsolete, aged and deteriorated, requiring modernization through replacement and/or major rehabilitation.

—The London Locks and Dam on the Kanawha River above the Marmet Locks and Dam is aged and deteriorated, requiring early major rehabilitation.

—The Ohio River Main Stem Study underway for several years should be expedited at least to the point where interim reports on engineering feasibility of improvements at key lock and dam sites will be issued in fiscal year 2000, and accompanying preconstruction engineering and design work can be initiated for priority construction and rehabilitation projects during fiscal year 2000 and the years 2000 to 2003.

The Ohio River System is a principal corridor for distributing coal and other commodities via intermodal truck-barge and rail-barge routes in eastern and midwestern states. The corridor is especially expansive by virtue of the Ohio River's connections with other rivers, in particular the Monongahela, Kanawha, Big Sandy, Green, Cumberland, Tennessee and Mississippi Rivers, furnishing continuity of barge traffic to the southern states and the Gulf of Mexico. Table 1 shows how barge freight has been growing on selected rivers in the Ohio River System from 1987 to 1996.

TABLE 1.—BARGE FREIGHT TRAFFIC [1]

[Millions of tons]

River	Coal		All Commodities	
	1987	1996	1987	1996
Ohio River Mainstem [2]	115	134	197	237
Kanawha River	12	16	19	25
Monongahela River	29	33	33	37
Tennessee River	20	18	42	46

[1] Source: Estimated Waterborne Commerce Statistics for Calendar Year 1996, U.S. Army Corps of Engineers, October 1997.

[2] Includes traffic utilizing all, or part, of the Ohio River. Much Ohio River barge freight traffic originates or terminates on other rivers in the Ohio River Basin, including those shown.

The inland waterways, in particular, the Ohio River and its Ohio River Basin tributaries and its waterways connections to points outside of the Basin, contribute to many key objectives. They:

—provide that "shippers and consumers realize over $2.2 billion annually in savings as a result of using the waterways of the Ohio River System over more costly modes of transportation" Commerce on the Ohio River and Its Tributaries, Ohio River Navigation System Report, 1996, U.S. Army Corps of Engineers;

—are responsive to energy and environmental goals, e.g., "as a consequence of being less energy intensive than other modes, on a ton-mile basis water transport also produces less air pollution,—and is usually quieter." "The less energy used, the less air pollution produced." Environmental Advantages of Inland Barge Transportation, August 1994, U.S. Department of Transportation, Maritime Administration; and,

—"enhance our Nation's status in relation to international commerce, i.e., our ability to compete in the global economy is contingent upon our ability to efficiently transport raw and finished products and commodities." "We have the best, most efficient waterways system in the world." Inland Waterways Users Board Eleventh Annual Report to the Secretary of the Army and the United States Congress, August 1997.

The replacement of Locks and Dams 52 and 53 with new twin 1,200 foot × 110 foot locks at a new site located between the Ohio River junctions with the Mississippi River and the Tennessee River will reduce the number of controlling lock and dam sites on the Ohio River to 20. This will furnish a significant improvement for barge traffic in the river segment just above the mouth of the Ohio River. Barge tows utilized for moving Ohio River commerce perform most efficiently when they consist of 15 barges lashed together with three-barge widths and five-barge lengths in tows pushed by towboats. Lock chambers 1,200 feet long by 110 feet wide are required in order to accommodate such barge tows, enabling single passes by the barge tows through each of the sites.

Barge traffic passing through eight lock and dam projects between Huntington, West Virginia and Paducah, Kentucky is exceptionally heavy. Of those eight sites, Smithland now has twin lock chambers which are 1,200 feet by 110 feet and McAlpine is scheduled for similar locks to be built under previous project authorization. It is timely to schedule construction projects at the remaining six sites in the Lower Ohio River, specifically at the J.T. Myers, Newburgh, Cannelton, Markland, Meldahl, and Greenup sites, which each have 1,200-foot main chambers and 600-foot auxiliary chambers, whereas twin 1,200-foot by 110-foot lock chambers are justified in order to accommodate existing and projected barge traffic. NMA urges the Subcommittee to consider these needs as high priorities for funding navigation construction in fiscal year 2000.

ENVIRONMENTAL RESTORATION PROGRAM

The NMA is proud of its leadership in initiatives to restore ecosystems degraded by mines abandoned prior to the passage of the Surface Mining and Reclamation Act. With respect to hardrock mining, NMA recently signed a memorandum of understanding with the Western Governors Association for the Abandoned Mine Lands Initiative which provides an effective framework for partnership for environmental restoration between the industry and the states. NMA is pleased that the Corps of Engineers is partnering with the Office of Surface Mining, other Federal agencies, state agencies, and universities to restore streams that have been impacted by acid drainage from abandoned mines. The Corps has responded enthusiastically to this mission with the broad authority for aquatic ecosystem restoration granted by Section 206 of the Water Resources Development Act of 1996 and other project specific authorities. Corps partnerships are already working in the Appalachian region and new partnerships are forming with state governments for restoration of streams in several western states. In H.R. 4060, the fiscal year 1999 Appropriations bill (Public Law 105–245), the Subcommittee recognized the expertise and capability of the "the Corps to participate meaningfully in acid drainage remediation efforts." Further, the Subcommittee directed the Corps of Engineers to assume a participatory role in the National Mine Land Reclamation Center . . . "using available funds and to the extent authorized by law." Since the enactment of this funding measure, the Corps has not complied with this directive. The NMA urges the Subcommittee to pursue this issue with the Corps and request a status report on its effort to participate in the Acid Drainage Technology Initiative.

MISSISSIPPI AND LOUISIANA WATER RESOURCE PROJECTS

PREPARED STATEMENT OF DONALD T. BOLLINGER, CHAIRMAN, LOUISIANA GOVERNOR'S TASK FORCE ON MARITIME INDUSTRY

1. *Mississippi River Ship Channel, Gulf to Baton Rouge, LA (construction general).*—Recommend Corps be funded to full capability in fiscal year 2000 to perform required work on the saltwater intrusion mitigation plan and complete design studies for potential phase III 55-foot channel.

2. *Mississippi River, Baton Rouge to the Gulf, maintenance dredging.*—Recommend approval of President's fiscal year 2000 Budget of $64,430,000 under O&M General to construct new anchorages and maintain new and existing anchorages.

3. *Mississippi River Gulf Outlet (MRGO), LA, maintenance dredging.*—President's fiscal year 2000 Budget is $14,989,000 under O&M General. Recommend that Corps be funded increased capability for bank stabilization.

4. *Inner Harbor Navigation Canal (IHNC) Lock, LA.*—President's fiscal year 2000 Budget only includes $13,000,000 in construction funds for the IHNC New Ship Lock. Recommend that Corps be funded to full capability to continue lock construction and fully fund the community impact mitigation plan.

5. *Mississippi River Outlets at Venice, LA.*—Recommend approval of the President's fiscal year 2000 Budget of $2,743,000 under O&M General.

6. *Intracoastal Waterway Locks, LA.*—Recommend approval of the President's fiscal year 2000 budget of $700,000 in GI funds to continue the feasibility study and to develop plans for replacement of Bayou Sorrel Lock on the GIWW, Morgan City-to-Port Allen alternate route.

7. *Gulf Intracoastal Waterway, LA and TX.*—President's fiscal year 2000 budget is $12,506,000 under O&M General. Recommend that Corps be funded increased capability for a new crane at the IHNC Lock and the construction of two miter gates for the Port Allen lock.

8. *Calcasieu Lock, LA.*—Recommend approval of President's fiscal year 2000 budget of $541,000 in GI funds to continue the feasibility phase of the study to replace Calcasieu Lock on the GIWW.

9. *Calcasieu River and Pass, LA.*—President's fiscal year 2000 Budget is $7,560,000 under O&M General. Recommend the Corps be funded increased capability to provide additional advanced dredging maintenance; to provide rockwork at Dugas Landing; to fully fund contracts to dredge the bar channel and miles 5–14; and to renovate disposal areas.

10. *J. Bennett Johnston Waterway, Mississippi River to Shreveport, LA.*—President's fiscal year 2000 Budget is $21,113,000 in Construction General and $8,781,000 for O&M General. Recommend that Corps be funded to full capability to complete work already under way.

As Chairman of the Louisiana Governor's Task Force on Maritime Industry, I hereby submit testimony to the Senate Subcommittee on Energy and Water Development on behalf of the ports on the lower Mississippi River, the J. Bennett Johnston Waterway and the Calcasieu River waterway and the maritime interests related thereto of the State of Louisiana relative to Congressional appropriations for fiscal year 2000.

The U.S. Army Corps of Engineers reports that in 1997 a total of 420.7 million tons of foreign and domestic waterborne commerce moved through the consolidated deepwater ports of Louisiana situated on the lower Mississippi River between Baton Rouge and the Gulf of Mexico. The deepening of this 232-mile stretch of the River to 45 feet has been a major factor in tonnage growth at these ports. Thanks to the efforts of Congress and the New Orleans District of the Corps, Louisiana's ports and the domestic markets they serve can compete more effectively in an increasingly global marketplace. Ninety-one percent of America's foreign merchandise trade by volume (two-thirds by value) moves in ships, and more than 20 percent of the nation's foreign waterborne commerce passes through Louisiana's ports. Given the role foreign trade plays in sustaining our nation's growth, maintaining the competitive posture of Louisiana's ports is essential to our economic well-being.

In terms of transportation services and global access, Louisiana ports enjoy a distinct competitive advantage. Hundreds of barge lines accommodate America's waterborne commerce on the lower Mississippi River. The high level of barge traffic on the river is indicated by the passage of more than 236,000 barges through the Port of New Orleans annually. In 1997, 2,371 ocean-going vessels operated by more than 80 steamship lines serving U.S. trade with more than 150 countries called at the Port of New Orleans. The Port's trading partners include: Latin America (34.8 percent); Asia (27.5 percent); Europe (26.6 percent); Africa (9.5 percent) and North America (1.6 percent). During the same year, more than 5,900 vessels called at Louisiana's lower Mississippi River deepwater ports.

While the foreign markets of Louisiana's lower Mississippi River ports are worldwide, their domestic market consists primarily of mid-America. This heartland region currently produces 60 percent of the nation's agricultural products, one half of all of its manufactured goods and 90 percent of its machinery and transportation equipment.

The considerable transportation assets of Louisiana's lower Mississippi River ports enable them to play a vital role in the international commerce of this nation. In 1997, the region's ports and port facilities handled 212 million tons of foreign wa-

terborne commerce. Valued at $38.9 billion, this cargo accounted for 18 percent of the nation's international waterborne trade and 23.9 percent of all U.S. exports. Bulk cargo, primarily consisting of tremendous grain and animal feed exports and petroleum imports, made up approximately 92 percent of this volume. More than 41 million tons of grain from 17 states, representing 50.9 percent of all U.S. grain exports, accessed the world market via the 10 grain elevators and midstream transfer capabilities on the lower Mississippi River. This same port complex received 82.2 million short tons of petroleum and petroleum products, approximately 16 percent of U.S. waterborne imports of petroleum products.

In 1997, public and private facilities located within the jurisdiction of the Board of Commissioners of the Port of New Orleans, the fourth largest port in the United States, handled a total of 74 million tons of international cargo worth $18.7 billion (included in lower Mississippi River statistics). General cargo totaled 10.3 million tons. Although statistically dwarfed by bulk cargo volumes, the movement of general cargo is of special significance to the local economy because it produces greater benefits. On a per ton basis, general cargo generates spending within the community more than three times higher than bulk cargo. Major general cargo commodities handled at the Port include: iron and steel products; coffee; forest products; copper; aluminum products; and natural rubber.

Fostering the continued growth of lower Mississippi River ports is essential to assure the competitiveness of our nation's exports in the global marketplace and, consequently, the health of our national economy. Assuring deep water access to ports has been a priority of our trading partners around the world. Moreover, an evolving maritime industry seeking greater economies of scale continues to support construction of larger vessels with increased draft requirements. Because it facilitated the provision of deepwater port access, passage of the Water Resources Development Act of 1986, played a most significant role in assuring the competitiveness of ports on the lower Mississippi river and throughout the U.S.

By December, 1994, the Corps completed dredging of the 45-foot channel from the Gulf of Mexico to Baton Rouge, LA (Mile 233 AHP). Unfortunately, mitigation features associated with the first phase of the channel deepening project, completed in 1988, have yet to be accomplished. The absence of funding for this vitally important project in the President's fiscal year 2000 Budget was most disappointing. We urge the inclusion of funding and support for this effort in the budget, which will include part of approximately $15 million in payments to the State of Louisiana for construction of a pipeline and pumping stations to deliver potable fresh water to communities affected by saltwater intrusion. We further urge that the Corps be provided funding to proceed with design studies for Phase III which will allow deepening of the river to the 55-foot authorized depth.

Along with the Port of New Orleans, the Port of South Louisiana, the nation's largest port with 183.6 million tons of foreign and domestic cargo in 1997, and the Port of Baton Rouge, the nation's sixth largest port with 84 million tons of foreign and domestic cargo in 1997, and other lower Mississippi River ports are dependent upon timely and adequate dredging of Southwest Pass to provide deep draft access to the Gulf of Mexico. Based on past experience—spring thaws bringing higher river stages and higher siltation rates—we strongly urge full funding of the President's fiscal year 2000 Budget amount of $64,430,000 under O&M General for maintenance of the 45-foot project channel. Funding includes monies for both dredging and repairs to foreshore dikes; repairs to lateral dikes; and jetty repairs. Revetment construction has reduced the number and size of deep draft anchorages. To mitigate this loss, we recommend that the Corps be authorized under the O&M General appropriation to construct new anchorages and maintain new and existing anchorages to accommodate increased ship traffic.

Maintenance of adequate depths and channel widths in the Mississippi River Gulf Outlet Channel (MRGO) is also of great concern. This channel provides deep draft access to the Port of New Orleans' principal container terminals and generates an annual economic impact of nearly $800 million. In 1997, 530 general cargo vessels calling on the MRGO Tidewater facilities accounted for 26.6 percent of the general cargo tonnage handled over public facilities at the Port of New Orleans and 85.1 percent of Louisiana's containerized cargo.

Because of the MRGO's demonstrated vulnerability to coastal storm activity, annual channel maintenance dredging and bank stabilization are essential to assure unimpeded vessel operations. In 1998, heavy shoaling related to Hurricane Georges resulted in the imposition of a draft restriction from the project depth of 36 feet to 25 feet. The President's fiscal year 2000 Budget amount is $14,989,000 under O&M General. We, however, strongly recommend that the Corps be funded increased capability for north and south bank stabilization projects.

The Inner Harbor Navigation Canal (IHNC) Lock is a critical link in the Gulf Intracoastal Waterway (GIWW), and provides a connection between the Port of New Orleans' Mississippi River and IHNC terminals. In 1998, the Corps approved a plan for replacement of this obsolete facility. The Corps estimates that the lock replacement project will have a cost-benefit ratio of 1.7 to one and will provide $110 million annually in transportation cost savings. In addition to minimizing adverse impacts to adjacent neighborhoods, the project includes a $33 million Community Impact Mitigation Program. The President's fiscal year 2000 Budget amount of $13,000,000 for the IHNC New Ship Lock will pay for continued engineering and design work, construction, and partial funding of the mitigation program. We, therefore, recommend that the Corps be funded to full capability to enable construction and mitigation program implementation. In particular, we recommend that the mitigation program be fully funded.

The operation and maintenance of the Mississippi River Outlets at Venice, La. are essential to providing safe offshore support access to energy-related industries. In 1997, these channels accommodated cargo movements exceeding 3.5 million tons. In addition to routine traffic, Baptiste Collette Bayou is used by shallow draft vessels as an alternate route between the MRGO, GIWW and the Mississippi River. The President's fiscal year 2000 Budget amount is $2,743,000 under O&M General.

More than 84.9 million tons of cargo transverse the GIWW in the New Orleans District annually. The President's fiscal year 2000 Budget for Gulf Intracoastal Waterway, Louisiana and Texas is $12,506,000 under O&M General. In addition, we recommend that the Corps be funded increased O&M capability for a new crane at the IHNC lock, two miter gates at the Port Allen lock and continued maintenance of the Louisiana and Texas sections of the GIWW.

To assure the efficient flow of commerce on the GIWW, approval is urged for the President's budget of $700,000 in fiscal year 2000 GI funds to continue the feasibility study to develop plans for replacing Bayou Sorrel Lock, Morgan City-to-Port Allen alternate route. Also we recommend approval of the President's budget of $541,000 in GI funds to continue the feasibility phase of the study to replace Calcasieu Lock.

The Port of Lake Charles, Louisiana, is served by the Calcasieu River, which is often below project depth and width. This Port is one of Louisiana's major deepwater ports, benefiting the economy of the state and the nation. In 1997, the Port handled 33.1 million tons of import cargo and 16.7 million tons of export cargo. The Port and private facilities along this waterway provide thousands of jobs for the Lake Charles area. In 1997, 945 ships and 6,834 barges used the Calcasieu River waterway. The Port area's growth and continued success depends on the provision of a reliable and safe channel at full project dimensions. Project deficiencies necessitate one-way traffic for many ships, which results in delays and disrupted cargo operations that are costly and inefficient to industry. We request the Corps be funded increased capability to provide additional advanced dredging maintenance and rockwork at Dugas Landing. In addition, we request full funding of contracts to dredge the bar channel, dredge miles 5–14, and renovate disposal areas.

One additional project warrants consideration. The J. Bennett Johnston Waterway, Mississippi River to Shreveport, La. Project provides 236 miles of navigation improvements, 225 miles of channel stabilization works and various recreational facilities. Project completion will stimulate economic growth along the Red River Basin and increase cargo flows through the deep draft ports on the lower Mississippi River. The President's fiscal year 2000 Budget includes $21,113,000 in Construction General for substantial project completion and $8,781,000 for Operations and Maintenance. We recommend that the Corps be funded to full capability for this project.

The need and impetus to reduce the Federal budget is certainly acknowledged; however, reduced funding on any of the above projects will result in decreased maintenance levels which will escalate deterioration and, ultimately, prevent them from functioning at their full authorized purpose. Reduction in the serviceability of these projects will cause severe economic impacts not only to this region, but to the nation as a whole that will far outweigh savings from reduced maintenance expenditures. Therefore, we reiterate our strong recommendation that the above projects be funded to their full capability.

Supporting statements from Mr. J. Ron Brinson, President and CEO of the Port of New Orleans; Mr. Gary P. LaGrange, Executive Director of the Port of South Louisiana, Mr. Roger Richard, Executive Director of the Greater Baton Rouge Port Commission, Mr. Glenwood Wiseman, Executive Director of the Lake Charles Harbor and Terminal District, Mr. Benny Rousselle, President of Plaquemines Parish, Mr. Channing Hayden, President of the Steamship Association of Louisiana; Capt. John Levine, President of the Associated Branch Pilots and Capt. Mark

Delesdernier, President of the Crescent River Port Pilots Association are attached. Please make these statements along with my statement part of the record. Supplemental graphics relating to my statement have been furnished separately for staff background use. Thank you for the opportunity to comment to the subcommittee on these vital projects.

Congressional Appropriations for Fiscal Year 2000 for Ports on the Lower Mississippi River, J. Bennett Johnston Waterway and Calcasieu River Waterway

Project	*Amount in fiscal year 2000 budget President's fiscal year 2000 budget*
Mississippi River Ship Channel Gulf to Baton Rouge, LA. (Construction General)	
Mississippi River, Baton Rouge to the Gulf, Maintenance Dredging, & Stabilization (O&M General)	64,430,000
Mississippi River-Gulf Outlet (MR-GO), LA. (O&M General)	14,989,000
Inner Harbor Navigation Canal Lock LA. (Construction General)	13,000,000
Mississippi River Outlets at Venice, LA. (O&M General)	2,743,000
Intracoastal Waterway Locks (GI Funds)	700,000
Gulf Intracoastal Waterway LA. & TX. (O&M General)	12,506,000
Calcasieu Lock, LA. (GI Funds)	541,000
Calcasieu River and Pass, LA. (O&M General)	7,560,000
J. Bennett Johnston Waterway:	
(Construction General)	21,113,000
(O&M General)	8,781,000
Total J. Bennett Johnston Waterway	29,894,000
Total	146,363,000

Lower Mississippi River—Foreign Waterborne Commerce

[Calendar Years: 1985–1997]

	Percent
1997	18.0
1996	16.6
1995	18.6
1994	17.8
1993	18.1
1992	18.2
1991	16.6
1990	17.6
1989	16.9
1988	15.9
1987	18.2
1986	15.1
1985	14.8

Source: U.S. Department of Commerce.

LOWER MISSISSIPPI RIVER [1]

[Calendar year 1997]

World Area	Dollar value	Tonnage
Europe	26.2	20.9
Asia	31.6	34.8
Africa	10.5	12.4
N. America	0.6	0.7
Latin America	31.1	31.2

[1] Foreign Waterborne Commerce.

Lower Mississippi River

[In millions of dollars]

Principal Countries	*Dollar value*
Japan	3,345
Saudi Arabia	2,852
Venezuela	2,429
Mexico	1,995
Netherlands	1,640
All others	26,666
Total	38,927

[Thousands of short tons]

Principal countries	*Tonnage*
Saudi Arabia	23,975
Japan	19,951
Venezuela	18,380
Mexico	15,160
Colombia	8,580
All others	126,019
Total	212,065

LOWER MISSISSIPPI RIVER [1]—PRINCIPAL COMMODITIES—CALENDAR YEAR 1997

[STONS]

Petroleum & Petroleum Products	82,186,500
Iron & Steel	9,594,101
Metalliferous Ores	7,168,299
Fertilizers	6,648,718
Nonmetallic Mineral Manuf	2,033,539
Coal, Coke & Briquettes	1,518,558
Chemicals	1,128,575
All Others	3,572,351
IMPORTS TOTAL	113,850,641
Cereal & Cereal Products	41,340,365
Oilseeds & Oleaginous Fruit	20,102,971
Animal Feeds	13,727,175
Coal, Coke & Briquettes	7,820,702
Petroleum & Petroleum Prods	7,019,284
Chemicals	2,203,473
Vegetable Fats & Oils	1,704,335
All Others	4,296,467
EXPORTS TOTAL	98,214,772

[1] FOREIGN WATERBORNE COMMERCE.

Source: U.S. Department of Commerce.

MISSISSIPPI RIVER GULF OUTLET FACTS AND COMPARISONS—CALENDAR YEAR 1997

Responsible for 2.7 million tons of international general cargo.

Represents 26.6 percent of general cargo handled over public facilities at the Port of New Orleans.

Responsible for 85.1 percent of all container cargo in the State of Louisiana.

Represents approximately 22.3 percent of the Port of New Orleans' vessel calls.

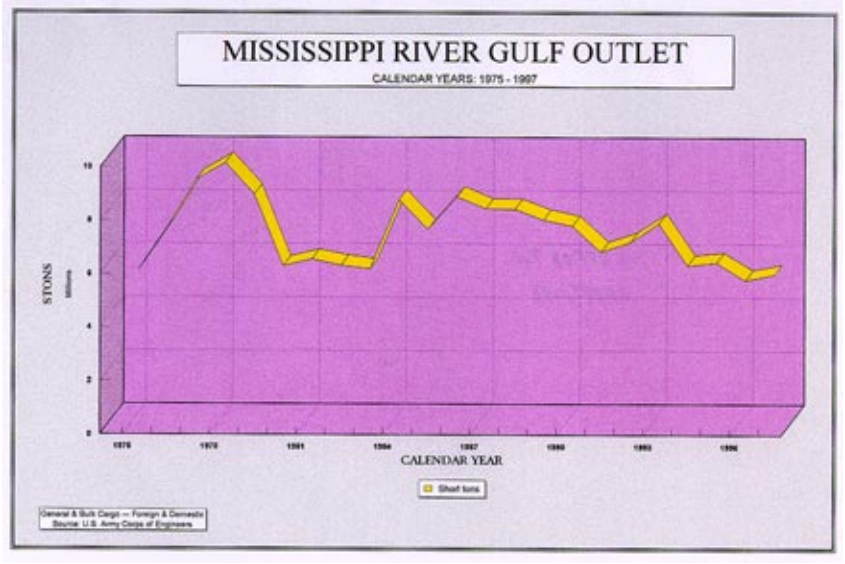
Cargo handled at public facilities via the MR–GO had an estimated economic impact of $793 million to the State of Louisiana.

The economic activity resulting from the MR–GO supported an estimated 12,075 jobs in the New Orleans metropolitan area.

Sources: Port of New Orleans UNO Economic Impact Study.

Calendar year	*STONS*
1975	5,386,800
1976	6,970,600
1977	8,780,700

Calendar year	*STONS*
1978	9,411,100
1979	8,227,200
1980	5,541,500
1981	5,794,800
1982	5,571,800
1983	5,435,000
1984	8,034,500
1985	6,916,000
1986	8,145,000
1987	7,703,000
1988	7,687,000
1989	7,289,000
1990	7,059,000
1991	6,094,000
1992	6,444,000
1993	7,160,000
1994	5,586,000
1995	5,700,000
1996	5,042,000
1997	5,253,000



MISSISSIPPI RIVER GULF OUTLET

[1997 Commodity profile]

	Percent
Food & Farm Prods	17.2
Petro/Petro Prods	2.2
Crude Mat'ls	36.9
Cola	0.2
Chemical	18.9
All others	0.2
Primary Mfgr Goods	16.9
Mfr Equipment	7.6

Note: Foreign Waterborne Commerce

Source: U.S. Army Corps of Engrs & Port of New Orleans.

PREPARED STATEMENT OF CHANNING F. HAYDEN, JR., PRESIDENT, STEAMSHIP ASSOCIATION OF LOUISIANA

Summary of testimony of Channing F. Hayden, Jr., President of the Steamship Association of Louisiana (formerly known as the New Orleans Steamship Association), for the record of the Senate Energy and Water Development Subcommittee on fiscal year 2000 Appropriations in reference to projects of public interest that affect Louisiana's deep-water ports.

1. *MISSISSIPPI RIVER SHIP CHANNEL. GULF TO BATON ROUGE, LOUISIANA (CONSTRUCTION GENERAL).*—We recommend continuation of the work on the saltwater intrusion mitigation plan and the design studies for Phase III of the 55-foot channel. Funding to full capability in fiscal year 2000 is necessary for this required work.

2. *MAINTENANCE DREDGING OF THE MISSISSIPPI RIVER FROM BATON ROUGE TO THE GULF OF MEXICO.*—We urge approval of the $64,430,000 in the President's fiscal year 2000 budget under O&M General.

3. *MISSISSIPPI RIVER-GULF OUTLET MAINTENANCE DREDGING AND BANK STABILIZATION.*—In addition to the $14,989,000 in the President's fiscal year 2000 budget under O&M General, we urge that the Corps be funded an increased capability in fiscal year 2000 to maintain this channel, which includes bank stabilization on both banks and jetty maintenance.

4. *NEW INNER HARBOR NAVIGATION CANAL SHIP LOCK.*—Recognizing that only $13,000,000 is included in the President's fiscal year 2000 budget for construc-

tion funds, we urge that the Corps be funded to full capability in fiscal year 2000 for this project, which is essential to advance the engineering, design, and construction and to continue the community impact mitigation plan.

5. *CALCASIEU RIVER AND PASS. LOUISIANA.*—We urge approval of the $7,560,000 in the President's fiscal year 2000 budget under O&M General and recommend that the Corps be funded an increased capability in fiscal year 2000 to provide additional advance maintenance dredging, to maintain rock protection at Dugas Landing Embankment, as well as fully fund contracts to dredge the bar channel, to dredge Miles 5–14, and to renovate disposal areas.

6. *J. BENNETT JOHNSTON WATERWAY, MISSISSIPPI RIVER TO SHREVEPORT, LOUISIANA.*—Recognizing that $21,113,000 is in the President's fiscal year 2000 budget to substantially complete this vital project and $8,781,000 for O&M in fiscal year 2000, we urge that the Corps be funded to full capability for fiscal year 2000. This project will result in stimulating economic growth along the Red River Basin and increase cargo movements through Louisiana ports. Funding is essential to complete the work already under way.

7. *THE PRESIDENT'S PROPOSED HARBOR SERVICE FEE.*—We do not support the President's proposed fees to replace the Harbor Maintenance Tax. The strength of our nation's transportation system is its foreign and domestic waterborne commerce. It benefits the entire nation through the revenue and jobs it provides the country. Therefore, the maintenance of our nation's ports should be handled through the general fund and not by placing another tax burden on this vital industry, which serves the country well.

Testimony of Channing F. Hayden, Jr., President of the Steamship Association of Louisiana (formerly known as the New Orleans Steamship Association), for the record of Senate Energy and Water Development Subcommittee on fiscal year 2000 Appropriations in reference to projects of public interest affecting Louisiana's deep-water ports.

Mr. Chairman: I am President of the Steamship Association of Louisiana. Our Association represents ship owners, operators, agents, and stevedores that represent the majority of the approximately 9,000 deep-draft vessels in waterborne commerce that call Louisiana's deep-water ports each year. We are dedicated to the safe and efficient movement of maritime commerce through the state's deep-water ports. We endorse the testimony of Mr. Donald T. Bollinger, Chairman of the Governor's Task Force on Maritime Industry, and the statements of the other organizations attached to his testimony.

Channel stabilization and maintenance dredging in Southwest Pass (SWP) are critical to keep project draft. Project draft ensures the Mississippi River's deep-water ports will handle the country's foreign and domestic waterborne commerce in the most cost-effective way possible.

For years we have urged this Committee to provide funds to maintain project draft at SWP. You have responded, and your wisdom has benefitted the entire American heartland served by the Mississippi River system. SWP was greatly restricted throughout the 1970s. From 1970 to 1975, the channel was at less than project draft 46 percent of the time. In 1973 and 1974, the channel was below the 40-foot project draft 70 percent of the time. During some periods, drafts were limited to 31 feet. Fortunately, those conditions heave not recurred because of a combination of factors: Your help, and the constant vigilance of the Pilots, the Corps, and the maritime community. The years 1990 through 1997 show a tremendous improvement in channel stability. We have only been below project draft 3 percent of the time for vessels under 100,000 deadweight tons and 8 percent of the time for vessels 100,000 deadweight tons or greater. The funding you provided was money well spent. The repairs to the jetties and dikes and the Corps' ability to rapidly respond to shoaling have been instrumental in maintaining project dimensions. However, the lack of available hopper dredges is jeopardizing the stability of the channel.

To enhance the safe and efficient movement of ships and cargo, we recommend mining sediment from the Pilottown Anchorage to create and enhance wetlands. Each 800,000 cubic yards of dredged material creates 115 acres of wetlands and enhances 256 more. In the process, much-needed Pilottown Anchorage at fog-prone Head of Passes would be dredged to accommodate the increasing number of deeply-ladened ships attracted by the 45-foot channel. Dredging Pilottown Anchorage would also mitigate anchorage space lost in this area to the proposed environmentally beneficial West Bay Diversion Project, which we fully support.

The Pilots have taken advantage of tidal flows and other factors to recommend the maximum draft possible consistent with safe navigation. This stability represents additional sales and increased competitiveness for U.S. products on the world market. Industry's partnership with you has kept Mississippi River ports com-

petitive and attractive to vessels. Twelve inches to a large vessel with a loading capacity of 250 tons per inch is an additional 3,000 tons of cargo. As of this writing, freight rates for grain moving from the Mississippi River to the Far East and Europe are ranging from $15.30 per ton to $10.28 a ton. Using the average, $12.79, each foot of draft represents an additional $38,370 in vessel revenue, or $191,850 for the five additional feet over the old 40-foot project draft.

The funds we request for maintenance dredging and other works are essential for the Corps to maintain a reliable channel and respond rapidly to potential problems. This builds the confidence of the bulk trade in a reliable Mississippi River draft, which is critically important. Much of Louisiana's bulk trade is export agricultural products and coal. These commodities are neither captive to Louisiana nor the United States if they can be shipped from competing countries at a consistently lower cost.

The deeper the channel, the more important channel stabilization is. Adequate channel stabilization work minimizes the maintenance cost of the deeper channel—a cost-effective investment. The faster the project is stabilized, the faster and greater the benefits of reduced O&M costs will be realized. Also, we recommend that the Corps conduct research on prototype dredging techniques. Experimental dredging would not replace routine dredging but would permit, for example, testing dustpan dredges in SWP and the water injection dredges at the crossings above New Orleans.

Funds are also needed for dustpan dredges to work the crossings above New Orleans. These crossings control the draft to eight of our ten major grain elevators, plus many mid-stream and other bulk cargo facilities. This area caters to the bulk trade and must have a stable channel depth consistent with the depth at SWP. Only two dredges in the world are available to maintain the deep-draft crossings between New Orleans and Baton Rouge. There are times when a high river is followed by a rapid drop in the river's stage. In such cases, the dustpan dredges may not be available, or both dredges may not be capable of restoring the 12 crossings within a reasonable time. When this happens, hopper dredges are used to assist in the work.

The Corps is studying the makeup of their "minimum fleet"—the number of dredges the Corps owns and operates. Corps-owned dredges working the lower Mississippi River are the hopper dredges WHEELER, MACFARLAND, and ESSAYONS, and the dustpan dredge JADWIN. The WHEELER and MACFARLAND, and from time to time the ESSAYONS, provide much-needed capacity and immediate response to keep SWP open, especially when the river is abnormally high. The action by Congress to reduce the government hopper fleet has drastically diminished the Corps' ability to maintain reliable project dimensions and adversely affect our country's standing in world bulk markets. We urge Congress to reconsider its decision to place the WHEELER on stand-by status. Even when the WHEELER is available, the combined Corps/private fleet does not have enough Mississippi River-qualified hopper dredges to meet peak dredging requirements. The Corps' Minimum Dredge Fleet studies, we feel, neither justify a reduction in the fleet nor the lay-up/stand-by status of the WHEELER or any other Corps-owned dredge. The Corps' records show there was a shortage of hopper dredges for the 1997 highwater season, and this year is no different. Two hoppers were needed to begin work in SWP, but none were available. The Corps, through a test program, has employed two dustpan dredges to try to keep the channel open. This is not efficient because the silt is only moved to the edge or side of the channel and can fall back into the waterway. In fact, the situation became so difficult that ships were taking about eight hours to transit a two-mile reach at the jetty end of SWP. Normally it takes about two and one-half hours to transit the entire 20 miles of the SWP. This serious situation resulted in the WHEELER being released from Mobile to work the troubled SWP area. Besides the Mississippi River ports, this shortage of dredges also impacts many of our nation's deep-draft ports and is particularly disruptive to the Port of Lake Charles, Louisiana, where dredging suffers practically every year.

For all of the above reasons, we request full funding for the mitigation features of the O&M General, 45-foot Mississippi River project.

In December 1994, the Corps completed the 45-foot deep channel to Baton Rouge. Proper maintenance now provides uniform drafts for all the ports on the lower Mississippi River. This makes U.S. exports through Louisiana more competitive, and adequate federal maintenance funds to keep the channel open must be available. In addition, the Corps needs authorization to construct and maintain anchorages to improve safety. Over the years, revetment work and changes in the river itself have caused serious negative impacts on our anchorages. Therefore, we encourage full funding capability in fiscal year 2000 to complete the reconnaissance study of navi-

gation needs on the Mississippi River and its outlets between Baton Rouge and the Gulf.

We also support Phase III of the Mississippi River channel deepening project and urge that the Corps be funded to proceed with design studies for the 55-foot channel, Baton Rouge to the Gulf of Mexico.

The growth of the Port of New Orleans depends, in large measure, on the Port's container and other facilities on the Mississippi River-Gulf Outlet (MR–GO). The funds you provided in past fiscal years have allowed the Corps to improve the channel considerably. However, the channel width has remained limited primarily because of erosion. For safety reasons in this narrow channel, one-way traffic restrictions apply to vessels with a draft of 30 feet or more, causing delays to the tightly-scheduled container traffic using the MR–GO. These specialty vessels serving the Port's facilities are becoming larger. This channel, with less than stable full project dimensions, causes problems for larger vessels, reducing our ability to grow with the trade. Hurricane Georges compounded the MR–GO problems by causing severe shoaling in the channel restricting the project depth of 36 feet to as low as 25 feet. Restoration has been ongoing for over five months. Initially the lack of available hopper dredges curtailed work. The highest wages under the International Longshoreman's Association's contract ($24 per straight-time hour) is paid for work at the MR–GO container facilities. Anything that threatens the MR–GO jeopardizes these high-paying jobs, which are held mostly by minority workers.

To improve safety on the MR–GO and protect Louisiana's container trade (and the well-paying, minority employment it produces), we request that the Corps be funded to an increased capability for the MR–GO in fiscal year 2000. This will allow annual maintenance dredging, north and south bank stabilization, and jetty maintenance, which is essential to provide the stability needed for vessel and port operations.

With facilities located on both the MR–GO and the Mississippi River, an adequate route between the two is essential for efficient transit between these facilities. The shortest route is the inadequate, antiquated Inner Harbor Navigation Canal (IHNC) Lock built in the 1920s with a width of 75 feet and limited depth of 30 feet. Its maximum capacity has long been exceeded. The average waiting time for passage through the Lock has increased from 8½ hours in 1985 to about 12 hours at present; however, we understand that waiting time can be more than a day in some instances. A much larger ship lock is necessary to accommodate today's traffic.

The replacement project for the IHNC Lock is important to the ports on the lower Mississippi River and to the nation's commerce since it is on the corridor for east/west barge traffic. The President's fiscal year 2000 budget of $13,000,000 is not sufficient. Without full funding, the project will be delayed and increase the overall cost of the project. We urge Congress to provide the Corps' full fiscal year 2000 capability for this important project to insure its completion. Delays are unthinkable since the new lock is long overdue.

The Port of Lake Charles, Louisiana, is served by the Calcasieu River, which is often below project depth and width. This is another of Louisiana's major deep-water ports that benefits the economy of the state and the nation. According to the Port's rough figures, their import and export tonnage is up from 49.8 million tons in 1997 to over 50.1 million tons for 1998. The public and private facilities along this waterway provide thousands of jobs for the Lake Charles area. In 1998 there were 1,150 ships and 6,999 barges that used the waterway. While cargo tonnage and barge traffic is only up slightly, it should be noted that ship traffic up from 945 in 1997 to 1,150 in 1998, a 21.69 percent increase. Part of this increase in ship traffic is due to ships calling with less cargo because of the channel deficiencies. This channel, because of its project deficiencies, requires one-way traffic for many ships, causing delays that disrupt cargo operations. This is costly and inefficient for industry. Last year, because of channel deficiencies, we know at least one major tanker service that calls at one of the area's major refineries reduced their operating draft by two feet in order to meet their company's safety and environmental policy requirement. This draft reduction reduces the delivery capacity to the facility, causing a less efficient plant operation and increasing the operating costs of the ships serving the plant. In just this one specific case, over the course of a year, the ship and refinery costs will increase by $4.7 million. The added costs have the potential of eventually causing a shift of the cargo currently destined for Lake Charles to other ports. This will reduce jobs in the area and disrupt the economy of the community. The Port area's growth and continued success depends on a reliable and safe channel that should be at full project. We request funding to the full capability of the Corps to maintain this channel at its project dimensions.

The J. Bennett Johnston Waterway, Mississippi River to Shreveport, Louisiana, Project is directly related to our deep-water ports. The continuation and completion of this work will stimulate the economy all along the Red River Basin with jobs and

additional international trade. This stimulated trade will service the Port of Shreveport and the ports on the lower Mississippi River, providing needed growth and benefitting the states of Louisiana, Texas, Oklahoma, and Arkansas, which are served through the Shreveport distribution center. Therefore, we strongly recommend that the Corps be funded to full capability for fiscal year 2000.

The proposed Harbor Service Fee (HSF) in the President's budget, which would replace the Harbor Maintenance Tax, is ill-advised. What it fails to recognize is that there is no equitable way in which the cost can be spread fairly among the shipping community. Whether the HSF is to the cargo or to the ship, the fee will change trade patterns and even jeopardize our trading position in the world market. The proposal will disrupt jobs and the economies of port areas. It will circumvent the normal, healthy competition among U.S. ports. Ships carrying low-valued cargo, primarily bulk cargoes, operate on a very low profit margin; therefore, cargoes like grain and coal can least afford the tax. The end result could well be that the U.S. could lose its ability to compete in the world market for the export of these cargoes. This impact on bulk trade will be particularly detrimental to Louisiana because of the high volume of such cargoes that move through our state. We encourage Congress to fund the maintenance of our nation's ports through the general fund. After all, it is our nation (the people) that benefit from a strong U.S. position in world trade, not the shipping industry. If our nation is to remain competitive in the world market, we must maintain and improve our waterways and deliver U.S. goods at the lowest possible price to foreign markets.

Thank you for allowing the Association to submit testimony on the Corps' funding needs.

PREPARED STATEMENT OF J. RON BRINSON, PRESIDENT AND CHIEF EXECUTIVE OFFICER, PORT OF NEW ORLEANS, NEW ORLEANS, LA

The Port of New Orleans is located at the terminus of the most extensively developed waterway system in the world, the 14,500 mile inland waterway system of the United States. The Port, via the Mississippi River and the Mississippi River Gulf Outlet, serves as the gateway between America's heartland and the global marketplace.

We fully support the March 26, 1999 statement of the Louisiana Governor's Task Force on Maritime Industry on behalf of the ports and related maritime interests on the lower Mississippi River, J. Bennett Johnston Waterway and the Calcasieu River Waterway.

We greatly appreciate the outstanding support and cooperation received over many years from you and your subcommittee.

PREPARED STATEMENT OF GARY P. LAGRANGE, EXECUTIVE DIRECTOR/CEO, PORT OF SOUTH LOUISIANA, LAPLACE, LA

The South Louisiana Port Commission very much appreciates being given the opportunity to submit this statement and supportive material to signify its endorsement of the statement of Mr. Donald T. Bollinger, Chairman of the Louisiana Governor's Task Force on Maritime Industry.

The Port of South Louisiana is comprised of nearly 54 miles of Mississippi River north of New Orleans and south of Baton Rouge, with more than fifty private and public docks and wharves. The Port of South Louisiana is the largest tonnage port in the United States and third largest in the world, handling more than 216 million short tons of cargo during 1998. Of this total tonnage, more than 100 million tons are shipped in international trade by deep water vessel and 116 million tons are shipped in domestic trade by vessels and barges. Each year more than 100,000 barges transport cargo at the Port of South Louisiana and more than 4,000 ships call at the public and private wharves of our Port.

A recent study by Dr. Tim Ryan of the University of New Orleans indicates that nearly 20 per cent of the domestic gross product of the State of Louisiana is dependent upon the maritime industry and one of twelve jobs is created from the economic activity of the maritime industry. Attached you will find statistics which have been developed from the records of the South Louisiana Port Commission.

The Port of South Louisiana strongly urges the Congress to fund all of the following projects.

1. Mississippi River Ship Channel, Gulf to Baton Rouge, LA (Construction General)

2. Mississippi River, Baton Rouge to the Gulf, Maintenance Dredging and GI Funds For Navigation Study

3. Mississippi River-Gulf Outlet (MR–GO), LA., Maintenance Dredging
4. Inner Harbor Navigation Canal (IHNC) Lock, LA
5. Mississippi River Outlets at Venice, LA
6. Intracoastal Waterway Locks, LA
7. Gulf Intracoastal Waterway, LA and TX
8. Calcasieu Lock, LA
9. Calcasieu River & Pass, LA
10. J. Bennett Johnston Waterway, Mississippi River to Shreveport

The Port of South Louisiana strongly believes that the funding and completion of the above maritime projects will enhance the ability of the ports in the region to be competitive in the global economy and will enhance the ability of domestic industry and agriculture to compete in the export of its products.

If we can provide any further information, please feel free to call upon me.

PREPARED STATEMENT OF ROGER P. RICHARD, EXECUTIVE DIRECTOR, PORT OF GREATER BATON ROUGE, PORT ALLEN, LA

The Port of Greater Baton Rouge respectfully requests that your committee give favorable consideration to the following projects.

1. *Mississippi River Ship Channel—Gulf to Baton Rouge, Louisiana*.—We support full funding in fiscal year 1998–99 to the Corps of Engineers General Construction Budget. This will allow for the completion of the saltwater intrusion mitigation plan and the design studies for the fifty-five foot channel.

2. *Mississippi River—Baton Rouge to the Gulf—Maintenance Dredging and GI funds for navigation study*.—We support maximum funding for maintenance dredging on this stretch of the river and for the navigation improvement study to reduce long term maintenance cost.

3. *Intracoastal Waterway Locks, LA*.—Recommend approval of the President's fiscal year 2000 budget of $700,000 in GI funds to continue the feasibility study and to develop plans for replacement of Bayou Sorrel Lock on the GIWW, Morgan City to Port Allen alternate route.

As stated in previous correspondence, these two projects are vital not only to the Port of Greater Baton Rouge but to the entire nation. The great Mississippi River is the premier national waterway, providing accessibility to and from foreign countries for the transportation of goods and services used by countless numbers of U.S. companies and individual citizens. The channel must be properly designed and maintained for the benefit of all ports.

We also earnestly request your support for funding of the other projects included in testimony prepared and submitted by Mr. Donald T. Bollinger. A summary of Mr. Bollinger's statement is attached. These projects are also extremely important to the overall viability of the Mississippi River system and its tributaries. We must properly maintain our waterway infrastructure if we are to increase trade and have the confidence of our trading partners around the world. Your cooperation and support of these important projects for the Mississippi River are greatly appreciated.

PREPARED STATEMENT OF GLENWOOD W. WISEMAN, EXECUTIVE DIRECTOR, LAKE CHARLES HARBOR & TERMINAL DISTRICT, LAKE CHARLES, LA

The Lake Charles Harbor and Terminal District respectfully requests favorable consideration from you and your committee for the following projects.

1. *Calcasieu River and Pass, Louisiana*.—The District supports full funding for the O&M general and supports additional funding for advanced maintenance dredging, disposal area renovations and bank stabilizing rock.

This project is vital not only to the Port of Lake Charles, but to many parts of the nation. The Calcasieu River provides a route for oil and gas to enter the country's 15th largest port and ultimately be distributed to the Midwest and Northeast areas. The Port also provides a route for exports such as bagged grains, wood and paper products, dry bulk materials and other commodities which originate from as far as the Pacific Northwest.

The District also requests support for funding of the other projects included in the testimony of Mr. Donald Bollinger. These projects are extremely important to Louisiana ports as well as the nation.

Your assistance with these matters are most appreciated.

PREPARED STATEMENT OF BENNY ROUSSELLE, PLAQUEMINES PARISH GOVERNMENT, BELLE CHASSE, LA

In my official capacity as Parish President of Plaquemines Parish Louisiana, I am herein requesting the following appropriations be made for fiscal year 2000:

1. *MISSISSIPPI RIVER SHIP CHANNEL, GULF TO BATON ROUGE, LOUISIANA (CONSTRUCTION GENERAL)*.—We recommend that the Corps be funded to full capability in fiscal year 2000 to perform required work on the saltwater intrusion mitigation plan.

2. *MISSISSIPPI RIVER, BATON ROUGE TO THE GULF, MAINTENANCE DREDGING*.—We recommend that approval of the President's fiscal year 2000 Budget of $64,430,000 under O&M General.

3. *MISSISSIPPI RIVER OUTLETS AT VENICE, LOUISIANA*.—The President's fiscal year 2000 Budget is $2,743,000 under O&M General. Recommend that Corps be funded increased capability for repair of jetty-breakwater at Baptiste Collette.

We would certainly appreciate your consideration and all the assistance you can give us in those projects.

PREPARED STATEMENT OF JOHN L. LEVINE, JR., PRESIDENT, ASSOCIATED BRANCH PILOTS, METAIRIE, LA

The Associated Branch Pilots is an Association of Pilots that have been guiding oceangoing vessels into the entrances of the Mississippi River system for over 125 years. We are called Bar Pilots because we guide the ships past the constantly shifting and shoaling sand bars in the area.

Southwest Pass of the Mississippi River is the main entrance for deep draft oceangoing vessels entering the Lower Mississippi River System. It is the shallowest stretch of the Lower Mississippi River System and the area that requires the greatest effort by the Corps of Engineers to maintain project depth.

In 1998, the Associated Branch Pilots made 12,697 transits on oceangoing vessels through Southwest Pass. Of these ships, 3,252 were of 50,000 deadweight tons or greater and 475 had a draft in excess of 40 feet.

This number of heavily laden vessels calling on the Lower Mississippi River System is a direct result of the completion by the Corps of Engineers of the deepening of the channel from 40 feet to 45 feet.

This first phase has proven to be extremely well designed and well maintained by the fact that the maximum draft recommended by my Association for vessels using Southwest Pass has been 45 feet or greater, except for periods of extremely high water that caused shoaling that overwhelmed the dredging efforts. This is in stark contrast to the late 1970's and early 1980's when we often had to recommend drafts less than the project depth due to shoaling.

To the world shipping community, this means that calling at ports on the Mississippi River system will be more profitable because larger ships can enter and carry greater amounts of cargo.

This is beneficial to the entire United States because it makes the large quantities of petroleum, agricultural, and manufactured products shipped from the Mississippi Valley more desirable due to increased profitability.

I would also like to comment briefly on the East-West navigation channels near Venice, Louisiana. Tiger Pass and Baptiste Collette provide a shorter, more direct route to Breton Sound and the Gulf of Mexico for offshore supply boats and small tugs and barges. These channels not only represent a savings in time and money for these vessels, but reduce the traffic in the main shipping channel, the Mississippi River and its passes, which is one of the most congested waterways in the country.

The dredging and maintaining of South Pass would contribute to the safety of the overall waterway and, in my opinion, be of greater value than the much

The Associated Branch Pilots also pilot vessels in the Mississippi River Gulf Outlet, a man-made tidewater channel 75 miles long, stretching from the Gulf of Mexico to an intersection of the Intercoastal Waterway in New Orleans.

This channel leads to the Main Container Terminals for the Port of New Orleans, the Roll On, Roll Off Terminal, the Port of New Orleans Bulk Handling Plant, and additional General Cargo Docks. For the Port of New Orleans to remain competitive in the ever growing container trade, the continued maintenance of this channel is crucial. In 1998, 542 ships called on the port using the Mississippi River Gulf Outlet.

Much is being said pro and con concerning the Mississippi River Gulf Outlet. There is, admittedly, an erosion problem in the Mississippi River Gulf Outlet, but any curtailment of shipping traffic in the channel without regard to the long term

effect upon the Port of New Orleans would be disastrous. I strongly support approval of funding for both the maintenance dredging/jetty repair project and the erosion/rip rap study for the Mississippi River Gulf Outlet.

I would also like to make a brief statement on behalf of the Mississippi Valley Coal Export Council. Over 62 million tons of coal have been exported using the Mississippi River System during the past five years. Coal miners, tugboat captains, barge owners, shippers and many other coal related workers have benefited by using the consistent and efficient Mississippi River System. This also represents a significant contribution towards the trade balance between the United States and other industrialized nations.

Funding of the Corps of Engineers' projects in the Lower Mississippi River System has proven to be money well spent. It has increased exports and imports that have benefited the entire United States. I urge your support of the funding requested to enable the Corps to continue to maintain and improve the most efficient and productive waterway system in the country.

PREPARED STATEMENT OF CAPT. MARK DELESDERNIER, JR., PRESIDENT, CRESCENT RIVER PORT PILOTS' ASSOCIATION, BELLE CHASSE, LA

Mr. Chairman: I have served as President of the largest pilot association in the United States for the past seventeen (17) years. The Crescent River Port Pilots furnish pilots for ships destined to the Port of Baton Rouge, Port of South Louisiana, Port of New Orleans, Port of St. Bernard, and the Port of Plaquemines.

The Crescent River Port Pilots piloted and shifted over seventeen thousand (17,000) ships during 1998. We pilot deep draft vessels on more than one hundred (100) miles on the lower Mississippi River and thirty five (35) miles on the Mississippi River Gulf Outlet.

The lower end of our route on the Mississippi River has a shoaling problem starting with the high water season each year. The shoaling requires daily attention by the United States Army Corps of Engineers to maintain project depth.

Heavy laden vessels call on the lower Mississippi River system as a direct result of the completion by the Corps of Engineers of the deepening of the channel from forty feet (40) to forty five (45) feet.

For several years now, we have had extraordinary success in keeping the river dredges to project depth. This success is a direct result of an experienced and vigilant Corps of Engineers that, through experience, is able to timely bid in dredges to avoid extra dredging cost by waiting to long to start maintenance dredging.

Channel stability sends a positive message to the world's shipping community that schedule cargo for deep draft vessels months in advance is reliable. This makes the port call on the Mississippi River very profitable since the ships can lift greater tonnage.

Keeping project depth is beneficial to twenty seven states that are directly tied to the Mississippi River Port Complex.

Additionally I would like to comment on the east and west navigation channels near Venice, Louisiana. Baptiste Collette and Tiger Pass provide a shorter and more direct route to Breton Sound and West Delta in the Gulf of Mexico for oil field support vessels.

The Crescent River Port Pilots also pilot ships in the Mississippi River Gulf Outlet. A man-made channel approximately 75 miles long starting in Breton Sound in the Gulf of Mexico and ending in New Orleans where it intersects with the Intercoastal Waterway.

The Mississippi River Gulf Outlet feeds the main container terminals in the Port of New Orleans. Additional docks such as Bulk Terminal and general cargo facilities depend on this channel which handled approximately 700 ship calls last year.

The Mississippi River Gulf Outlet has been a controversial channel since its inception, but being an integral part of the Port of New Orleans, it would be a disaster if it is not kept at project width and depth. The Crescent River Pilots strongly support approval of funding for both the maintenance dredging, jetty repair projects.

Funding of the United States Army Corps of Engineers projects in the lower Mississippi River system which includes the Mississippi River Gulf Outlet, Tiger Pass, Baptiste Collette and Southwest Pass has proven to be money well spent.

I urge your support of the funding requested to allow the Corps of Engineers to continue to maintain and improve the most productive waterway system in the world.

Mr. Chairman, thanks for allowing me the opportunity to submit my comments to your subcommittee.

PREPARED STATEMENT OF GOV. M.J. "MIKE" FOSTER, JR., ON BEHALF OF THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, OFFICE OF PUBLIC WORKS AND INTERMODAL TRANSPORTATION

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT

The Louisiana Department of Transportation and Development, Office of Public Works and Intermodal Transportation, is the agency designated to represent the State of Louisiana in the planning and orderly development of its water resources. This statement is presented on behalf of the State of Louisiana and contains recommendations for fiscal year 2000 appropriations for work in Louisiana under the Mississippi River and Tributaries Project.

Louisiana contains the terminus of the Mississippi River, which has the third largest drainage basin in the world, exceeded only by the watersheds of the Amazon and Congo Rivers. The Mississippi River drains 41 percent, or 1¼ million square miles, of the contiguous United States and parts of two Canadian provinces. All of the runoff from major river basins, such as the Missouri and Upper Mississippi, the Ohio including the Tennessee and others, and the Arkansas and White, flow into the Lower Mississippi, which empties into the Gulf of Mexico through Louisiana.

The jurisdiction of levee boards in Louisiana includes one-third of the State's total area. However, the importance of this one-third of the State can be seen by the fact that it contains nearly 75 percent of the State's population and about 90 percent of the State's disposable personal income. Traditionally, the levee district areas are water rich and have fallen heir to industrial development that ranks high in the nation. It has been estimated that about 60 percent of the State's agricultural products come from levee district areas. So you can see why Louisiana and its twenty levee districts are so interested in seeing the completion of the Mississippi River and Tributaries Project.

In making the following recommendations regarding construction, studies, and some selected operation and maintenance items, the State of Louisiana would hope that Congress and the Administration will honor their prior commitments to infrastructure development and fund our requests.

The following Louisiana projects are those for which we are requesting an increase to the President's budget request. For those Louisiana projects not listed we agree with the President's budget request. See the attached "Summary of Recommended Appropriations" for a complete listing.

Operation and Maintenance	*Request*
Atchafalaya Basin	$19,125,000
Old River	8,110,000
Bonnet Carre	1,068,000
Bayou Rapides Drainage Structure and Pumping Plant (Lower Red River, South Bank Levees)	2,950,000
Atchafalaya Basin Floodway System	1,702,000

The operation and maintenance of completed works are essential to achieving the full benefits of the projects. In times of budget constraints it is essential that operation and maintenance not be delayed which would hamper the effectiveness of the projects and cause more expensive maintenance at a later date. Specifically, there are six levee slides at five locations along the West Atchafalaya Basin Protection Levee which require immediate attention. We are requesting an additional $4.2 million to be designated for this purpose in the Atchafalaya Basin O&M account.

The Bayou Rapides Drainage Structure and Pumping Plant Project is authorized under the Lower Red River, South Bank Levees of the Mississippi River and Tributaries Project. This project is considered major maintenance and additional funds of $2.95 million are urgently needed to construct this project. We urge your support for funding and request that specific language be included in the appropriations bill to earmark the funds and direct the Secretary of the Army to construct this project.

All the above listed projects have reached a point where delayed maintenance is now essential and we urge you to fund these projects in the amounts requested.

MISSISSIPPI RIVER LEVEES (LA ONLY)—Request: $17,320,000

The Mississippi River and Tributaries Project above Louisiana is about 90 percent complete, but to a much lesser extent in Louisiana. Because of the improvements upstream, increased flows are a major problem in Louisiana where the project is lagging behind the construction in the upper valley. We request funds for levee enlargement work within the Fifth Louisiana Levee District where there is a deficiency of 4 to 7 feet on mainline Mississippi River levees. It is also requested that Federal funds be provided to purchase rights-of-way for this critical work as the

Levee District is in an economically depressed area and does not have a tax base capable of producing the funds necessary for both maintenance and rights-of-way.

LOUISIANA STATE PENITENTIARY LEVEE—Request: $9,000,000

The Louisiana State Penitentiary Levee is the only section of Mississippi River levee in Louisiana that is not currently constructed to Federal standards. It was authorized under the Mississippi River and Tributaries Project in 1986 and re-authorized in 1990. We urge your support in funding this project and request that specific language be included in the appropriations bill to direct the Secretary of the Army to construct this project before an emergency situation arises during a major river flood. We also request authorization for credit for work accomplished by non-Federal interests.

ATCHAFALAYA BASIN—Request: $27,750,000

This project is a main stem component of the flood control plan for the Mississippi River and Tributaries Project. The Mississippi River can safely carry only one-half of the project flood, or 1,500,000 cubic feet per second, below Old River; the other 1,500,000 cubic feet per second must be discharged through the Atchafalaya Basin. The levees which must confine this flow to the basin are now deficient because they have settled below original design grade due to consolidation of the underlying soils, and the design has been revised upward. This places the lives and welfare of approximately 650,000 people and their property and improvements in 13 parishes in the immediate vicinity of the Atchafalaya Floodway in jeopardy each flood year. The tax assessment records indicate the value of potential flood losses to be approximately $8 billion, not including public improvements. Over the past half century, we have supported the Mississippi River and Tributaries Project and have agreed that construction of flood protection works should start upstream and progress downstream. As a result, the Mississippi River and Tributaries Project is now more than 90 percent complete in sites upstream from Louisiana, while the levees in the Atchafalaya Basin can contain approximately only 90 percent of the project flood. Work on this project has been underway since 1928 and isn't scheduled for completion until the year 2031—a date that continually keeps moving further into the future. With the reduced budgets being enacted, Louisiana may never realize the full benefits of this project before the dreaded project flood occurs. We urge your support for funding this effort to the full capability of the Corps.

CHANNEL IMPROVEMENT (LA ONLY)—Request: $23,604,000

Channel improvements and stabilization provide protection of the levees and the development behind them, as well as preventing unsatisfactory alignment where the river's bank is unstable. We are requesting an additional $2,500,000 for the Vicksburg District for fiscal year 2000 to keep the program moving forward. The funds we are requesting will provide for the dredging and revetment work necessary to accommodate increased flows caused by upstream improvements.

TENSAS BASIN, RED RIVER BACKWATER AREA (Sicily Island Area Levee Project)—Request: $9,930,000

The funds for fiscal year 2000 are to be used to continue construction of levee Items 2A and 2B, complete the HaHa Pumping Plant, Item 1E, levee Item 3B and Fool River pumping plant. An additional $1 million is requested to advance the award of Item 1C and 1D and acquisition of lands.

ATCHAFALAYA BASIN FLOODWAY SYSTEM—Request: $8,000,000

The project consists of acquiring real estate interests, excluding minerals, in the lower floodway for flood control, environmental protection, and public access purposes. The timing of the acquisition of land necessitates the increased funding request.

MISSISSIPPI DELTA REGION PROJECT, DAVIS POND—Request: $11,884,000

Davis Pond Freshwater Diversion Project is necessary to aid in the fight against coastal erosion and land loss. The State of Louisiana's commitment to this project is demonstrated by our agreement to provide 25 percent of the cost of construction, as well as operation and maintenance, of the Davis Pond structure despite Congressional project authorization at 100 percent Federal cost.

LOCAL CONTRIBUTIONS FOR FLOOD CONTROL IMPROVEMENTS

Historically, Louisiana has always done its part in cooperation with the Federal agencies concerned with flood control. The Louisiana State Board of Engineers, the forerunner of the Department of Transportation and Development, Office of Public Works and Intermodal Transportation, was created in 1879, the same year as the

Mississippi River Commission, to coordinate the planning and construction of the required flood control facilities to protect the State. Since that time, local expenditures for flood control have exceeded $730,000,000. This amount adjusted to 1979 dollars represents expenditures in excess of $5.3 billion. Nearly one-half of the potential flooded area of the Lower Mississippi River Valley lies in Louisiana. Local expenditures for flood control have increased with the growth of the valley. This record not only meets, but exceeds any National Water Policy local participation requirement ever put into practice.

CONCLUSION

The Mississippi River and Tributaries Project has been underway since 1928 and isn't scheduled for completion until the year 2031—a date that continually keeps moving further into the future. We understand the need for budget constraints, but the President's budget request of $280,000,000 for the total MR&T Project is not adequate. We endorse the recommendation of the Mississippi Valley Flood Control Association in their request for a minimum of $335,000,000 MR&T budget for funding to the full capability of the Corps throughout the whole valley.

The State of Louisiana, Department of Transportation and Development, Office of Public Works and Intermodal Transportation, in particular, wishes to commend the Appropriations Subcommittees on Energy and Water Development, and express our appreciation for the foresight and understanding exhibited for water resources projects which are vital to the national interest. We solicit your further consideration of the recommendations presented herein.

MISSISSIPPI RIVER AND TRIBUTARIES SUMMARY OF RECOMMENDED APPROPRIATIONS FOR FISCAL YEAR 2000

Louisiana projects	Budget request	Louisiana request
Operation and Maintenance:		
Mississippi River Levees (LA only)	$2,092,000	$2,092,000
Atchafalaya Basin	10,560,000	19,125,000
Channel Improvement (LA only)	31,291,000	31,291,000
Old River Control Structure	4,027,000	8,110,000
Bonnet Carre Spillway	1,068,000	1,068,000
Lower Red River, SOL—Bayou Rapides Drainage Structure & Pumping Plant		2,950,000
Tensas Basin:		
Boeuf & Tensas Rivers, (LA only)	1,406,000	1,406,000
Red River Backwater Area	2,927,000	2,927,000
Atchafalaya Basin, Floodway System, LA	644,000	1,702,000
Baton Rouge Harbor—Devil Swamp, LA	157,000	157,000
Bayou Cocodrie and Tributaries	101,000	101,000
Mississippi Delta Region, Caernarvon, LA	436,000	436,000
Lower Red River—South Bank Levees	84,000	84,000
Construction:		
Mississippi River Levees (LA only)	13,020,000	17,320,000
Louisiana State Penitentiary Levee	3,000,000	9,000,000
Atchafalaya Basin	19,750,000	23,750,000
Channel Improvements (LA only)	21,104,000	23,604,000
Tensas Basin, Red River Backwater Area	8,903,000	9,930,000
Atchafalaya Basin, Floodway System	7,500,000	8,000,000
Mississippi Delta Region, Davis Pond	10,400,000	11,884,000
Mississippi & Louisiana Estuarine Area (Bonnet Carre)	100,000	100,000
General Investigations:		
Morganza to the Gulf of Mexico	700,000	700,000
Alexandria to the Gulf of Mexico	700,000	700,000
Donaldsonville to the Gulf of Mexico	250,000	250,000

NOTE: The projects listed above are only those in Louisiana and directly affecting the State. We realize that there are other projects in these areas. We endorse the recommendations of the Mississippi Valley Flood Control Association.

PREPARED STATEMENT OF M.V. WILLIAMS, PRESIDENT, WEST TENNESSEE TRIBUTARIES ASSOCIATION, FRIENDSHIP, TN AND CHAIRMAN, EXECUTIVE COMMITTEE, MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION

Mr. Chairman and distinguished members of the Committee, my name is M.V. Williams and my home is in Friendship, Tennessee between the Middle and South Forks of the Forked Deer River. I am the President of the West Tennessee Tributaries Association. It is also my pleasure to serve as Chairman of the Executive Committee of the Mississippi Valley Flood Control Association with headquarters in Memphis, Tennessee. This statement on behalf of the Association presents their views on fiscal year 2000 Budget for the Mississippi River and Tributaries Project. I will present several items of general interest to all our Membership. Other Members of the Association will present statements that will concern specific items of interest.

Since there are new members of the Sub-Committee I will briefly discuss the Mississippi Valley Flood Control Association which is an Agency composed almost entirely of public bodies having local responsibility for flood control, drainage, bank stabilization and navigation improvements in parts of Iowa, Illinois, Kentucky, Mississippi, Tennessee, Arkansas, Missouri and Louisiana. Our members are public officials who for the most part are elected by the people. The Association represents practically all of the levee and drainage districts, municipalities, port and harbor commissions and other state agencies in the Mississippi Valley, extending from Burlington, Iowa to the Gulf of Mexico. These organizations and agencies are political subdivisions of the various states in which they are organized and function. We provide an agency through which the people of the Mississippi Valley may speak and act jointly on all flood control, navigation, bank stabilization and major drainage problems. We have appeared before the Sub-Committee and served the people in the Mississippi Valley for well over sixty years.

Our Association is comprised of a very large group of individuals who are businessmen, property owners, conservationists, farmers, attorneys, doctors, wildlife enthusiasts, engineers, accountants, environmentalists, civil servants and elected officials from all political parties.

Our Objectives simply stated are:

To seek Congressional authorization for, and adequate annual appropriations for the early completion of all flood control projects necessary for the protection of the Lower Mississippi Valley against the maximum probable flood.

To secure prompt initiation of, and early completion of existing project for the stabilization of the banks of the Lower Mississippi River, in order to assure the integrity of the Main River Levee System; to provide increased flood discharge capacity, permanency of location for harbor facilities and industrial sites, and to obtain deeper and more reliable navigation channels.

To support channel and major drainage improvements throughout the Lower Mississippi Valley to provide protection against headwater flooding, and to provide adequate outlets for local and state drainage projects.

To cooperate in every proper way with the Department of the Army, the Chief of Engineers of the United States Army, the Mississippi River Commission and other agencies to hasten the accomplishment of flood control in the Mississippi Valley.

We submit this testimony this year in support of the Mississippi River and Tributaries Project which was established by the Flood Control Act of 1928.

Our Executive Committee is composed of business and professional men. They are men of wide experience in business, professional and civic life. They are mature in their judgment and responsible in their actions. It, therefore, has been no easy task for that Committee to arrive at an asking figure based on urgent needs and yet tempered in the light of the grave fiscal problems which face the Federal Government. I say these things to emphasize that our asking was not arrived at by whim and fancy.

We have closely examined the President's Budget Request for fiscal year 2000 and find that it is completely inadequate for the Mississippi River and Tributaries Project. The $280,000,000 that the President has requested is the same amount that was requested last year, fortunately for the Nation the Congress in it's wisdom increased that amount. We request that this Committee strongly consider a minimum appropriation for fiscal year 2000 for the Mississippi River and Tributaries Project of $335,000,000.

In requesting that such moneys be appropriated for flood control and navigation works of the Lower Mississippi Valley, we are not unmindful of the fact that in these critical times our Nation is being called upon to rectify an economic condition that needs immediate attention. We feel that we are justified in urging appropria-

tions for our project for the reason that the assets and resources of this great nation must not be neglected during these times. We know of no other appropriation which contributes as much to national wealth and resources as flood control and navigation for the major rivers of this country. Millions of acres which were overflow lands decades ago are now highly productive and contributing to our national wealth. These lands by reason of their geographic location are the most fertile of the nation. They produce an abundance of food and fiber for the general welfare and prosperity of the country. The inland waterways of the nation provide the cheapest and in some cases the only method to move bulk commodities that are also absolutely essential to the general welfare and prosperity of the country. Moneys appropriated by Congress for flood control and navigation has and will augment our national resources and improve our economic well-being. The appropriations made by Congress for the Mississippi River and Tributaries project are investments in this nation's future.

In closing let me reemphasize that federal works projects with proven merit such as the Mississippi River and Tributaries Project represent a sound federal investment which will return to the tax payers of this country generous dividends. Such federal investments contribute to the economic well being of the Nation by reducing unemployment; adding to the stability and economic growth of agriculture and industry; and providing a flood free environment for the welfare of the people of the Mississippi Valley.

We reaffirm the position we have always held that the physical geography of the Mississippi River is such that flood control interests do not stop at the main river but extend upstream along the adjacent tributary streams and valleys. The Flood Control plan on the Mississippi River therefore cannot be considered adequate or complete until the flood control plans for these valleys, authorized as a part of the Mississippi River and Tributaries project, are completed.

Under our Constitutional form of Government the Citizens as the final authority and for whose protection and welfare our Government exists, are entitled to the best protection from Floods our Nation is capable of devising. We would respectfully request that this committee consider that during it's deliberations of the Corps of Engineer's fiscal year 2000 Appropriations.

We have attached a sheet to this statement that reflects the President's Budget Request and the Mississippi Valley Flood Control Association's request for Appropriations for the Mississippi River and Tributaries Project for fiscal year 2000.

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION FISCAL YEAR 2000 CIVIL WORKS BUDGET-MISSISSIPPI RIVER AND TRIBUTARIES APPROPRIATIONS

Project and State	Budget request	MVFCA request
Surveys, continuation of planning and engineering & advance engineering & design:		
Mississippi River, Alexander Co., IL & Scott Co., MO	$30,000	$30,000
Memphis Metro Area, TN & MS	675,000	675,000
Reelfoot Lake, TN	318,000	318,000
Wolf River, Memphis, TN	525,000	525,000
Bayou Meto Basin, AR	1,767,000	1,767,000
Morganza, LA to the Gulf of Mexico	700,000	700,000
Alexandria, LA to the Gulf of Mexico	700,000	700,000
Donaldsonville LA to the Gulf of Mexico	250,000	250,000
Collection & Study of Basic Data	365,000	365,000
Subtotal—Surveys, continuation of planning & engineering & advance engineering & design	5,330,000	5,330,000
Construction:		
St. John's Bayou-New Madrid Floodway, MO	7,800,000	9,800,000
Eight Mile Creek, AR	700,000	700,000
Helena & Vicinity, AR	2,190,000	2,190,000
Grand Prairie Region, AR	21,900,000	21,900,000
West Tennessee Tributaries, TN	2,398,000	2,398,000
Nonconnah Creek, TN	2,500,000	2,500,000
St. Francis Basin, MO & AR	4,350,000	4,350,000
Yazoo Basin, MS	24,279,000	40,985,000

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION FISCAL YEAR 2000 CIVIL WORKS BUDGET-MISSISSIPPI RIVER AND TRIBUTARIES APPROPRIATIONS—Continued

Project and State	Budget request	MVFCA request
Atchafalaya Basin, LA	19,750,000	21,750,000
Atchafalaya Basin Floodway System	7,500,000	8,000,000
MS Delta Region, LA	10,400,000	10,400,000
MS & LA Estaurine, Area, MS & LA	100,000	100,000
Louisiana State, Penitentiary, LA	3,000,000	7,400,000
Tensas Basin, Red River Backwater, LA	8,930,000	8,930,000
Channel Improvements, IL, KY, MO, AR, TN, MS & LA	37,865,000	43,165,000
Mississippi River Levees, IL, KY, MO, AR, TN, MS & LA	23,250,000	32,750,000
Subtotal—Construction	176,732,000	217,318,000
Subtotal—Maintenance	117,500,000	131,914,000
Subtotal—Mississippi River & tributaries	299,652,000	354,562,000
Less reduction for savings & slippage	−19,562,000	−19,562,000
Grand total—Mississippi River and tributaries	280,000,000	335,000,000

PREPARED STATEMENT OF AUBREY GRAVOIS, PRESIDENT, BOARD OF COMMISSIONERS, LAFOURCHE BASIN LEVEE DISTRICT, VACHERIE, LA

MISSISSIPPI RIVER LEVEES

Although there are no current or scheduled contracts within the jurisdiction of the Lafourche Basin Levee District for levee enlargements and slope paving, we still have a few areas which are below grade which needs to be elevated and slope paved. Therefore, we are requesting that these small reaches be considered in future appropriations.

The Board of Commissioners of the Lafourche Basin Levee District urges the subcommittees to appropriate as much funds as possible for the continuation of the levee enlargement and concrete sloped pavements through out the State of Louisiana.

CHANNEL IMPROVEMENTS

The revetment construction program must be funded annually to prevent future levee failures, land losses and relocations. The Lafourche Basin Levee District has several areas of continued caving banks which concern us. Some of these banks are along reaches where there are extremely very narrow battures and further these areas are in locations where high tourism exist such as Oak Alley and Laura Plantations. The Lafourche Basin Levee District urges the committee to continue to appropriate as much funding as possible for the continuation of strong Channel Improvement Program. If caving banks are not controlled, the only answer is "set back". There is very little room remaining available for levee setbacks in the jurisdiction of the Lafourche Basin Levee District.

DONALDSONVILLE TO THE GULF OF MEXICO RECONNAISSANCE STUDY

The Board of Commissioners of the Lafourche Basin Levee District is grateful for the funding already submitted and received towards this very important study. For years now we have been deeply concerned with the drainage and back water flooding problems that have been and is continuing to occur in this basin which covers the jurisdictional boundaries of our levee district. The benefits from this study will hopefully become a massive project which will be of great benefit and assistance to the Lafourche Basin Levee District with regards to flood control efforts which will include wetlands hydrology, conservation, restoration, and wildlife habitat. The Board of Commissioners of the Lafourche Basin Levee District has taking on the responsibility of being the Local Sponsor of this subject study and we are urging the committee to commit to additional funding to the amount of $500,000 for fiscal year 2000. Budget contains $250,000.

THE LEVEE DISTRICT

The Lafourche Basin Levee District extends downstream from the City of Donaldsonville to the Jefferson-St. Charles Parish Line area, a distance of 63 miles, it includes the west (right descending) bank of the Mississippi River, and is comprised of portions of the following parishes: Ascension, St. James, St. John the Baptist, St. Charles, Lafourche, and Assumption. The Mississippi River westbank levee is continuous through out the Parishes of Ascension, St. James, St. John the Baptist, and St. Charles Parishes.

Major industries have developed in the Lafourche Basin Levee District. One of the largest is the Nuclear Power Plant or Energy in Taft, Louisiana. Others such as ADM/Growmark, Agrico Chemical, CF Industries, Monsanto, Occidental Chemical Corp., Shell Chemical Co., Triad Chemical, Union Carbide and others all reap the benefits of being protected from the flooding of the Mississippi River through the assets and contributions received for the MR&T Projects. Along with industrial growth, our Levee District is continuing to experience an increase in residential and urban expansions. A great portion of the rich land and soil in our levee district is used for agricultural purposes.

Without the protection of the Mississippi River and Tributaries Flood Control Project, the continued flood control and maintenance improvements of the Lower River Valley Levees would not exist. The project is a necessity for us to be able to continue to serve the national needs of our economy and continued growth of our areas.

COMMENTS

The Lafourche Basin Levee District plans to continue to advise this subcommittee of our current and future needs. We understand that all of the items of the MR&T Flood Control Project are of extreme importance. We also understand that this year we may not be able to submit oral testimony before the subcommittees as we have done so in the past. We hope that we can return to this type process, so that we can verbally voice our concerns in person for the problems which occur in the Lower River Valley. Four representatives from the Lafourche Basin Levee District are here today desiring to present views to the subcommittee and they are President Aubrey Gravois, Commissioner Lloyd Becnel, Attorney Joseph C. Wiley, and Administrative Manager, Randy Trosclair.

CONCLUSION

The Board of Commissioners of the Lafourche Basin Levee District realizes that the funding being discussed for water resources must be increased for the well being of our country. The improvements received from the funds for the MR&T Flood Control Projects are the wealth of the country, and they pay back their cost several times over and over. We must continue to protect our future. We along with many other levee districts endorse the recommendations presented by the Association of Levee Boards of Louisiana, Louisiana Department of Transportation and Development, Mississippi Valley Flood Control Association and the Red River Valley Association.

PREPARED STATEMENT OF BILLY J. FELTY, CHIEF ENGINEER, ST. FRANCIS LEVEE DISTRICT OF ARKANSAS

My name is Bill Felty. I am Chief Engineer of the St. Francis Levee District of Arkansas. I live in West Memphis, Arkansas which is located on the West side of the Mississippi River in the St. Francis Basin.

The St. Francis Basin extends from the foot of Commerce Hills near Cape Girardeau, Missouri to the mouth of the St. Francis River seven miles above Helena, Arkansas, a distance of 235 miles. It extends to the West to the uplands of Bloomfield and Crowley's Ridge, having a maximum width of 45 miles. The Basin is comprised of an area of 3,500 square miles.

Within the St. Francis Basin and the Lower Mississippi Valley, we are witnessing a great industrial expansion and the economy in the area is improving rapidly throughout the entire basin especially along the Mississippi River. This industrial growth and prosperity could not exist without the drainage and flood control protection made possible by the appropriations from your Committee for the Mississippi River and Tributaries Project (MR&T). Since 1928, the MR&T Project has prevented flood damages in the Lower Mississippi Valley totaling $231 billion at an investment of $9.9 billion. Additionally the MR&T Project has resulted in an annual transportation savings on the Mississippi River totaling $1 billion.

As your Subcommittee reviews the Civil Works Budget for fiscal year 2000 appropriations for the MR&T Project, please consider the importance of this project to the Lower Mississippi Valley and to the Nations economy and infrastructure. The amount of $280,000,000 in the President's Budget for use in the MR&T Project throughout the Lower Mississippi Valley is far below the amount needed to keep vital projects on schedule. Considering the impacts that the Lower Mississippi Valley has on the nations economy and infrastructure, it is essential that we keep this project on track and complete it in a timely manner.

Therefore, we support the amount of $335,000,000 as requested by the Mississippi Valley Flood Control Association for the fiscal year 2000 Civil Works Budget, Mississippi River And Tributaries Appropriations as shown on the enclosed Budget Request sheet. This is the minimum amount that the Executive Committee of the Association feels is necessary to adequately fund the projects and maintain the proposed schedules during the coming fiscal year.

The amount of $4,350,000 included in the President's Budget for Construction on the St. Francis River Basin Project in Arkansas and Missouri is sufficient to allow for adequate progress on the projects within the Basin. However, the amount of $6,300,000 included in the President's Budget for Maintenance within the St. Francis Basin is not sufficient to adequately maintain the existing projects and keep them in a good state of repair. Therefore, I am requesting an additional capability in the amount of $3,250,000 be added to the budget to provide for a total of $9,550,000 in maintenance funds for the fiscal year for use in the St. Francis Basin Project. The amounts requested are part of the total Mississippi River and Tributary Appropriations of the Civil Works Budget.

I feel the Subcommittee will give fair consideration to the needs of the Mississippi River and Tributaries Appropriations. I appreciate the time given and the work you do to advance the development of the water resource projects.

We have a large number of members from the St. Francis Levee District here today to attend the Appropriations Hearings. They have come to show their support for the St. Francis Basin Project and the Mississippi River and Tributaries Projects.

PREPARED STATEMENT OF WAYNE ORILLION, PRESIDENT, BOARD OF COMMISSIONERS, ATCHAFALAYA BASIN LEVEE DISTRICT, PORT ALLEN, LA

ATCHAFALAYA BASIN LEVEE DISTRICT

The Atchafalaya Basin Levee District was created in 1890 by the Louisiana Legislature and is the largest levee district in the State. The flood protection system within the District includes levees on the Mississippi River, Atchafalaya River, Morganza Lower Guide and East and West Atchafalaya Basin Protection Levees. The District is charged with the obligation of securing and clearing interfering facilities for rights-of-way for levee and levee drainage purposes, routine levee maintenance, borrow pit maintenance, and land management including oil, gas, mineral, campsites, hunting, and other leases.

MISSISSIPPI RIVER AND TRIBUTARIES ATCHAFALAYA BASIN, LA PROJECT

The Atchafalaya River Basin, in south-central Louisiana, originates at the confluence of the Mississippi, Red, and Atchafalaya rivers near Simmesport. The basin extends in a north-south direction from the latitude of Old River and Bayou Des Glaises to the Gulf of Mexico.

The Atchafalaya River is the largest of all distibutaries of the Mississippi. Improvements in the Atchafalaya River Basin have been authorized by Congress and constructed primarily under the Mississippi River and Tributaries (MR&T) project. Basin flood protection works are an integral and extremely important part of the lower Mississippi River. The project allows one-half of the project design flood (1.5 million cubic feet per second) to be introduced into the Atchafalaya Basin Floodway while the other half is allowed to continue down the main Mississippi River channel. Floodways follow opposite sides of the Atchafalaya River to the end of the levee system along the river. There they merge into a single broad floodway that discharges into the Gulf of Mexico through Wax Lake Outlet and the Lower Atchafalaya River.

Features of the Atchafalaya Basin, Louisiana project include levees, channel dredging, locks, floodgates, control structures, Morganza Floodway and Control Structure, pump stations, drainage structures, and drainage canals and enlargements.

LEVEE SLIDES, WEST ATCHAFALAYA BASIN PROTECTION LEVEE

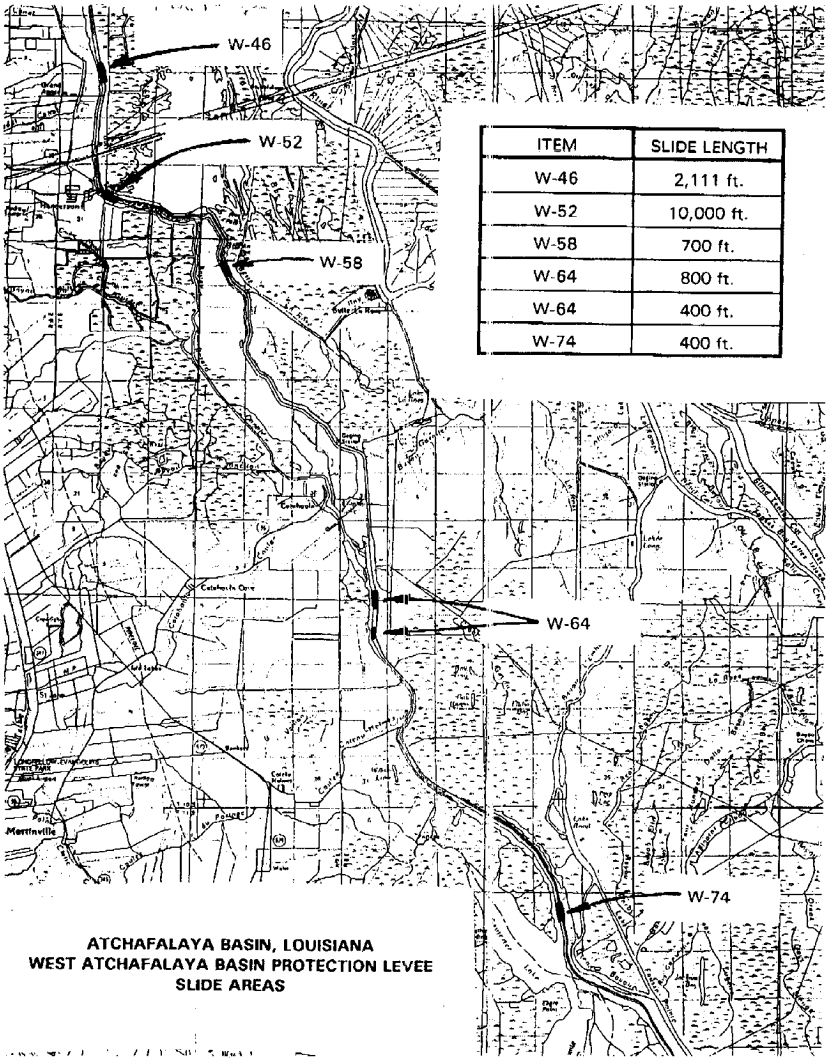
A levee slide is a partial levee failure brought on by the soil's properties of shrinking and swelling. This condition is affected by the soil's moisture content and results in a reduced shear strength. As the shear strength is reduced, the levee's ability to hold itself up is reduced until a portion of the levee breaks off.

There are currently six levee slides at five locations along the West Atchafalaya Basin Protection Levee. Each slide area is shown in the table below.

Item	Levee stations	Slide length (Ft.)
W–46	2552 + 27 to 2573 + 38	2,111
W–52	2800 + 00 to 2900 + 00	10,000
W–58	3047 + 00 to 3054 + 00	700
W–64	3416 + 00 to 3424 + 00	800
W–64	3499 + 00 to 3503 + 00	400
W–74	3923 + 00 to 3927 + 00	400

These slides are of great concern to the Levee District and are in need of immediate attention. Traditionally, the levee district repairs minor slides in its normal maintenance program. However, the larger failures which involve engineering expertise and funding beyond the means of the levee district are the responsibility of the Corp of Engineers. In some cases the slides occur partially due to lack of proper compaction during the original construction process. The estimated cost to repair the slides is $4.2 million.

The Board of the Atchafalaya Basin Levee District respectfully requests that the funds presented in the President's budget for the Flood Control, Mississippi River and Tributaries, Atchafalaya Basin, Louisiana project, Operation and Maintenance be increased by $4.2 million and that this $4.2 million be designated for the levee slide repairs.



ITEM	SLIDE LENGTH
W-46	2,111 ft.
W-52	10,000 ft.
W-58	700 ft.
W-64	800 ft.
W-64	400 ft.
W-74	400 ft.

ATCHAFALAYA BASIN, LOUISIANA
WEST ATCHAFALAYA BASIN PROTECTION LEVEE
SLIDE AREAS

PREPARED STATEMENT OF REYNOLD S. MINSKY, PRESIDENT, BOARD OF COMMISSIONERS, FIFTH LOUISIANA LEVEE DISTRICT, TALLULAH, LA

As each spring passes, the people of Louisiana sigh with relief. Another "high River" season is over and all is well, yet each spring draws the region closer to the inevitable, "Project Flood." That surge of water flowing south, down the Mississippi River Channel, draining 41 percent of the United States at a level not experienced since 1927.

If it were to happen this spring, Louisiana and Mississippi would not be prepared. Levees insufficient in height would give way to the force beyond their capabilities to constrain. Lives would be lost and livelihoods destroyed that would take decades to restore. The cost of restoring and rebuilding would be unequaled by any natural disaster America has suffered.

Funding for adequate flood control in the Mississippi Valley now will be minimum compared to the potential that exists if flood control projects are not completed as currently planned.

The fiscal year 2000 Civil Works Budget, Mississippi River and Tributaries (MR&T) Appropriations includes a total of $23,250,000 for "Mississippi River Levees, IL, KY, MO, AR, TN, MS & LA." Insufficient to divide among seven states and be able to show significant improvement in flood control.

To guarantee that the Vicksburg District, Corp of Engineers is able to maintain the level of progress needed to ensure MR&T construction schedules are met, it is imperative that an additional $5,500,000 above the $9,750,000 proposed budget be allocated for construction in the Vicksburg Corp District. Another $400,000 will be necessary for proper levee maintenance.

The Mississippi River Levee System in Louisiana and Mississippi must be brought to heights and capabilities equal to that of the levees stretching northward; otherwise, upper reaches of the Mississippi River Levee System will become a funnel, protecting states to the north while directing havoc southward. Increased funding for MR&T levee improvement projects in Louisiana and Mississippi is the only means to eliminate this possibility.

PREPARED STATEMENT OF AUDREY J. LAPLACE, PRESIDENT, BOARD OF COMMISSIONERS, PONTCHARTRAIN LEVEE DISTRICT, LUTCHER, LA

These three items are of indispensable importance to the State of Louisiana. There are serious project deficiencies in the Pontchartrain Levee District. Federal appropriations must continue at adequate levels to move forward.

$42,000,000 for Mississippi River levees (Budget contains $23,250,000)

In the Pontchartrain Levee District several reaches of main line levee must be enlarged and slope paved to advance from the current status of partial flood protection. During the 1997 high water an emergency levee cap was constructed at Marchand to prevent overtopping and a possible crevasse. Enlargement and Slope Pavement construction for the levee reach Marchand to Darrow is now completed, as are two other items, Romeville to Remy and Remy to Garyville; all three items accomplished while the Sierra Club's consent decree has been in effect. This is a credit to the Corps of Engineers. After slipping out of the program for the past two years, funds are now badly needed for construction of the levee from Carville to Marchand.

Future levee enlargements and slope paving are required in the Levee District. The Board of Commissioners, Pontchartrain Levee District, urges the Subcommittees to appropriate $42,000,000 in fiscal year 2000 for Mississippi River levees.

$50,000,000 for channel improvement (Budget contain $37,685,000)

Main line levees must be protected from caving banks throughout this lower river reach where extremely narrow battures are the last line of defense against levee crevasses and failures. If caving banks are not controlled the only answer is "setback". Simply stated there is no room remaining for levee setbacks in the Pontchartrain Levee District. Revetment construction must be annually funded to prevent levee failures, land losses and relocations. This item also benefits the 55-foot depth navigation channel. The Pontchartrain Levee District recommends at least $50,000,000 be appropriated for fiscal year 2000.

$10,000,000 for Louisiana State Penitentiary (Budget contains $3,000,000)

Angola, Louisiana's State Penitentiary, has been under River attack for more than ten years, lost its front line levee and hundreds of acres agricultural areas to caving banks. The Setback levee is extremely unstable, likely to fail under stress of the next high water. Warden Burl Cain describes the situation as an acute emergency. Inside the prison the City of Angola does exist, has its own Post Office, a population of 627 tax paying citizens, and 138 residences. With a levee failure potential damages amount to $500,000,000. Currently, the only alternative is to move the 5,000 maximum security inmates into tents on higher ground. It is urgently recommended that $10,000,000 be appropriated for fiscal year 2000.

$325,000,000 minimum recommended for all items of the MR&T flood control project

THE LEVEE DISTRICT

The Pontchartrain Levee District extends downstream from the City of Baton Rouge to the New Orleans area, a distance of 115 river miles, includes the east (left descending) bank of the Mississippi River, and is comprised of portions of East

Baton Rouge, Iberville, Ascension, St. James, St. John the Baptist and St. Charles Parishes. The Mississippi River east bank levee is continuous throughout the Levee District, including the Bonnet Carre Floodway. We serve as the local sponsor for the St. Charles Parish Hurricane Protection Levee, now in the eighth year of construction, designed to protect the Parish, a portion of New Orleans and its International Airport from hurricane tides. The West Shore Hurricane Protection Project, St. John the Baptist Parish, is now involved in a Feasibility Study and this Levee District is again serving as Local Sponsor.

Extensive development of major industries has taken place in the Pontchartrain Levee District and is continuing. Along with industrial growth, our Levee District is experiencing dramatic increase in residential and urban expansions. Substantial portions of the Levee District area are used for agriculture. Three nationally ranked deep-water ports are companions to the Pontchartrain Levee District—the Baton Rouge Port, South Louisiana Port, and New Orleans Port. A portion of the New Orleans International Airport is also located within the district.

All these features and many other improvements along with more than one million residents are protected by the Mississippi River and Tributaries Flood Control Project in this Levee District. Only through continuous, effective flood control improvements and maintenance can this area and the Lower River Valley meet requirements to serve national needs for its economy and continued growth.

COMMENTS

The Pontchartrain Levee District has full realization of the necessity of keeping this Subcommittee advised of current and future needs for federal monetary support on vital items of the MR&T Flood Control Project. In 1995, 1996 and 1997 the Subcommittees refused to give audience to the Lower Mississippi Valley Flood Control Association seven (7) state delegation. This year we have been advised that no oral testimony will be heard. Again, this is a great travesty of justice. Such actions seriously erode the partnership that has been built between the Corps of Engineers and local sponsors. We trust that this pattern will revert back to the sixty-three year practice of hearing our delegation. Four representatives from the Pontchartrain Levee District are present today desiring to present views to the Subcommittees—they are Commissioner Joseph Gautreau, Vice President; Commissioner LeVerne B. Brown; Commissioner Michael Reames; and Gerald Dyson, Executive Assistant.

NEAR FUTURE IS UNCERTAIN—ITS UP TO CONGRESS

In the search for new ways to accomplish required flood control and other water resources projects, Congress must remain mindful not to jerk the rug out from under its own feet and our own. Without protection there will be few jobs, farms, industries, businesses, voters and related activities. Congress should know that we in the Lower Mississippi Valley do not have the option to say "No". Also it stands that Congress should not have the option to reduce, remove or stop federal responsibility for controlling national water, whether in flood or drought. With respect to Louisiana most of its runoff is generated outside the State area for all its main carrier rivers, including Mississippi, Red, Ouachita, Black, Atchafalaya Floodway, Pearl and Sabine Rivers. In Louisiana we have a comprehensive flood control plan sponsored, operated and maintained by some 23 Levee Districts to handle and provide for safe passage of almost one half the nation's waters. This invokes federal involvement, don't mess up the system.

CONCLUSION

The Board of Commissioners, Pontchartrain Levee District, compliments the Subcommittee on Energy and Water Development for its keen understanding of real needs for the MR&T Flood Control Project and efficient, alert actions taken to appropriate funds for its many complex requirements. We endorse recommendations presented by the Association of Levee Boards of Louisiana, Louisiana Department of Transportation and Development, Mississippi Valley Flood Control Association and Red River Valley Association.

PREPARED STATEMENT OF AUBREY J. LAPLACE, PRESIDENT, PRESIDENT, BOARD OF COMMISSIONERS, PONTCHARTRAIN LEVEE DISTRICT, LUTCHER, LA

IN SUPPORT OF APPROPRIATIONS FOR LAKE PONTCHARTRAIN & VICINITY HURRICANE PROTECTION, LOUISIANA—ST. CHARLES PARISH AND WEST SHORE

THE PROJECTS

These recommendations are limited to two separable items under the project "Lake Pontchartrain & Vicinity, Hurricane Protection, Louisiana", (1) St. Charles Parish authorized in 1965 and (2) West Shore, St. John the Baptist Parish, authorized in 1974. Federal funding is required for construction on (1) St. Charles Parish and Feasibility Study on (2) West Shore.

Funding requirements, fiscal year 2000

St. Charles Parish, Construction	$6,000,000
West Shore, Feasibility Study	600,000

OBJECTIVES

St. Charles Parish.—The Accelerated Plan has been developed in conjunction with the Corps of Engineers whereby the ten mile levee system first lift and drainage structures can be completed in a five year period, providing a closed system and protection from hurricane tides to elevation 9.0. We are now entering the second year of the five year plan. Additional levee lifts will be added to raise the levee system to elevation 13.5 as consolidation will allow.

West Shore.—The Feasibility Study is moving satisfactorily and must be completed on schedule, two more years. Local 50 percent funding has been deposited in an escrow account, matching federal funds are now required.

PROJECT DESCRIPTIONS

The St. Charles Parish Hurricane Protection Levee is ten miles in length, has five drainage structures, extends from the Bonnet Carre Floodway to New Orleans International Airport and is situated about four hundred feet north of U.S. Hwy. 61. Construction cost is estimated at $99,000,000 financed at 70 percent Federal and 30 percent Local (Pontchartrain Levee District). Project is now 30 percent complete. Local contributions have been deposited in an escrow account and now exceed the 30 percent local funding requirement compared to federal funds. When the first lift and structures are completed, immediate protection to elevation 9.0 will be in place, whereas now there is nothing to prevent extensive, devastating flooding in St. Charles Parish, a portion of Jefferson Parish and New Orleans International Airport. Then additional lifts will be added to raise the levee to elevation 13.5 as consolidation will allow.

The West Shore Hurricane Protection Levee will provide tidal flooding protection to the Town of LaPlace and vicinity, St. John the Baptist Parish. Other improvements to be protected are reaches of I–10 and I–55 along with U.S. Highways 61 and 51, and State Highways. These are designated evacuation routes for New Orleans metro area. The Benefit/Cost ratio is 2.1, and estimated construction cost is $60,000,000. The Pontchartrain Levee District is serving as Local Sponsor in partnership with St. John the Baptist Parish Council.

These are two critical emergency projects, we have local funds now available, and the next move is in the hands of Appropriation Subcommittees on Energy and Water Development. You must act now.

Representatives of the Pontchartrain Levee District appeared at the Subcommittee Staff Office to submit this statement and answer any questions. They are Commissioners Joseph Gautreau, Vice President, Commissioner Michael Reames, Commissioner LeVerne B. Brown and Gerald Dyson, Executive Assistant. You may call either of them or the undersigned at any time for information, (225) 869–9721.

PREPARED STATEMENT OF KENNETH L. WEILAND, P.E., CEO AND CHIEF ENGINEER, YAZOO-MISSISSIPPI DELTA (YMD) LEVEE BOARD

This statement has been prepared by Kenneth L. Weiland, P.E., CEO and Chief Engineer for the Yazoo-Mississippi Delta (YMD) Levee Board. It is submitted today, March 23, 1999, on behalf of the entire Levee Board and the citizens we represent in the Mississippi Delta, which includes the Yazoo and Sunflower River Basins. In addition to the funding request contained herein, the YMD Levee Board also supports the general funding testimony for fiscal year 2000 as submitted by the Mis-

sissippi Valley Flood Control Association. As members of this Association, we join in their praises of your continuing support for the important flood control projects within the Mississippi River and Tributaries (MR&T) Project.

We are very concerned about the Administration's continued submittal of budgets containing severely inadequate funding levels for flood control projects within the MR&T project. Consequently, both Levee Boards in Mississippi are making efforts to address these concerns with key Administration officials as well as our Congressional delegations. It is our desire to facilitate better support and understanding of the importance of the MR&T project by policy and budget decision makers within the Administration to reduce or eliminate the complete Congressional overhauls of the MR&T budget that have been required in recent years.

After careful consultation with U.S. Army Corps of Engineers officials, the YMD Levee Board continues our support and request for a minimum annual funding level of 335 million dollars for the timely completion and maintenance of the MR&T project. Following the devastating flood of 1927 on the Mississippi River, the Flood Control Act of 1928 verified the national priority placed on the development of a comprehensive flood control plan (the MR&T project) to minimize the likelihood of such devastation occurring again in the lower Mississippi valley. The wisdom of this Act is obvious today, seventy-one years later, by the fact that the project has yielded 20 dollars of benefits for every dollar invested in the project. Unfortunately, however, a substantial amount of work is still uncompleted on the project that exposes many areas to the risk of flood devastation. The YMD Levee Board makes its most urgent and ardent appeal that proper funding be provided by Congress for the MR&T project. Your past support of this vital work verifies your recognition of the consequences to the nation that would result from allowing the MR&T project to become vulnerable to a catastrophic failure of any one of its major components due to delays and neglect caused by inadequate funds.

The following paragraphs identify certain projects within our Levee District that merit special mention. For your convenience, we have provided a detailed, tabular listing of key components of our funding request for fiscal year 2000 at the end of this statement. As you will note, the requested funding levels in the table are supported jointly by both Levee Boards in Mississippi.

MISSISSIPPI RIVER LEVEES AND CHANNELS MAINTENANCE

As stated above, there can be no question of the importance of the continued construction and maintenance of the mainline levee system and channel protection on the Lower Mississippi River. The YMD Levee Board is proud of our long record of protection of the mainline levee in our District and understands that your generous funding to insure adequate major maintenance of these features of the project is the key to preventing a catastrophic failure of the system. Again we emphasize the importance of adequate funding of the MR&T project, especially with respect to maintenance of the mainline levees and the Mississippi River channel.

UPPER YAZOO PROJECTS

Following the destructive flood of 1932, Congress authorized the formulation of a plan that would reduce the risk of flooding of the Mississippi Delta from the uncontrolled release of headwater out of the hills in north central Mississippi. The original plan, released in 1936, included a system of flood control reservoirs that would discharge into a system of channels and levees that could safely convey the headwater from the hills to the Mississippi River. In the late 1980's, this project was forced into reformulation under the guise of environmental concern. Reformulation of the Upper Yazoo Project (UYP) was completed in late 1993. Construction was immediately resumed on the project, and outstanding progress has been made since. The tabular funding request attached to the end of this statement reflects a request for the funding necessary to assure that progress on the UYP continues. The requested funding will support the necessary work to complete the UYP to the city of Greenwood, MS, long considered a milestone in the overall completion of the project. The YMD Levee Board is very appreciative of the Congressional support of this project in past appropriations and respectfully requests funding as shown to assure that construction on this project can proceed as rapidly as possible to completion.

YAZOO HEADWATER FLOOD CONTROL RESERVOIRS

As mentioned above, four major flood control reservoirs exist in Mississippi to control the release of headwater into the Yazoo River system. These reservoirs are Arkabutla, Sardis, Enid and Grenada. The reservoirs have prevented an enormous amount of flood damages by allowing drainage from the hills to be released into the

Delta at a rate that prevents flooding. The proper maintenance and operation of these reservoirs is therefore critically important to all citizens living downstream of them in the Delta. The YMD Levee Board has specified a reasonable request for maintenance funding of the infrastructure associated with these reservoirs. Providing the requested funding will allow the Corps to make the necessary repairs and operational improvements consistent with the critical role these reservoirs play in protecting the Mississippi Delta.

SUNFLOWER RIVER CHANNEL MAINTENANCE PROJECT

Over time, all streams in the Delta lose their capacity to convey design discharges due to siltation in the bottom of the streams. In the month of July, 1989, sections of the Mississippi Delta along the Sunflower River system experienced significant flooding over half grown row crops of food and fiber. In response to this devastation, the Board of Mississippi Levee Commissioners (MLB), located in Greenville, MS, requested a study by the Corps of Engineers (Corps) to determine whether the reduction of the Sunflower River system flow capacities had contributed to the flooding, and thus, whether the Corps should begin its obligatory maintenance of the channels in this system. Subsequent surveys by the Corps reflected loss of channel capacity from the original design of approximately forty (40) percent. Studies were made and plans completed by the Corps for the work necessary to perform this major maintenance. The YMD Levee Board, whose District shares in the damages resulting from the overflow of the rivers in this area, and the MLB serve as the local sponsors of this project and have joined as intevenors on behalf of the Corps to defend this work from litigation that has been filed to delay this important work. We are very optimistic that all legal roadblocks will be removed and urge the requested funding levels be provided so that no delays occur once these litigation matters have been resolved.

DEMONSTRATION EROSION CONTROL PROJECT

In past years, Congress has provided funds for the continuation of construction of measures to control erosion and sedimentation in streams located primarily in the headwater area of the Yazoo Basin. Though most of this work is located outside of the physical limits of our District, the YMD Levee Board supports your continued funding of these projects due to the fact that substantial amounts of the sediments controlled by the projects would eventually end up in the Coldwater-Tallahatchie-Yazoo River system. Such sedimentation would result in significant additional maintenance on this system to prevent the loss of capacity of these rivers to carry the design discharges from the four major flood control reservoirs. (Arkabutla, Sardis, Enid, Grenada)

YAZOO TRIBUTARIES STUDY

The Yazoo Tributaries Study is the last phase of the MR&T project in the Yazoo Basin. This study will identify work necessary for proper drainage and flood control on the major tributaries to the Yazoo River system. Upon completion of the before stated UYP, construction on these tributary streams can begin. The YMD Levee Board therefore urges Congress to provide adequate funding for the timely completion of this study.

Project	Fiscal year 2000—		
	President's submitted budget	MLB Levee Board, YMD Levee Board funding request	Requested congressional add-ons
Yazoo Basin			
Construction:			
Upper Yazoo Project	$11,620,000	$13,700,000	$2,080,000
Upper Steele Bayou	3,915,000	4,500,000	585,000
Tributaries	340,000	340,000	.....
Yazoo Backwater	520,000	1,000,000	480,000
Reformulation (backwater & tributaries)	1,570,000	1,570,000	.....
Demonstration Erosion Control	6,294,000	20,000,000	13,706,000
Maintenance:			
Big Sunflower River	209,000	4,800,000	4,591,000

Project	Fiscal year 2000— President's submitted budget	MLB Levee Board, YMD Levee Board funding request	Requested congressional add-ons
Tributaries	1,269,000	1,300,000	31,000
Arkabutla	3,265,000	4,900,000	1,635,000
Sardis	4,334,000	7,300,000	2,966,000
Enid	3,214,000	4,400,000	1,186,000
Grenada	4,280,000	6,600,000	2,320,000
Mississippi River Levees			
Construction:			
MS Valley Division	23,250,000	35,750,000	12,500,000
Memphis District	7,500,000	13,500,000	6,000,000
Vicksburg District	9,750,000	15,300,000	5,550,000
Maintenance:			
MS Valley Division	3,736,000	4,686,000	950,000
Memphis District	1,460,000	2,410,000	950,000
Vicksburg District	1,269,000	1,700,000	431,000

The figures provided in the table above are based on our assessment of projected Corps capabilities using the best information available as of 17 March, 1999. The YMD Levee Board and the MLB Levee Board support funding at the full capability of the Corps in order to complete our important flood control projects in a timely and effective manner. Please do not hesitate to call us if you have questions or comments regarding this information.

PREPARED STATEMENT OF JAMES E. WANAMAKER, CHEIF ENGINEER, BOARD OF MISSISSIPPI LEVEE COMMISSIONERS

Mr. Chairman and members of the committee: I am James E. Wanamaker, Chief Engineer for the Board of Mississippi Levee Commissioners, Greenville, Mississippi, and I have the privilege of presenting this statement on behalf of this Board and the Citizens of the Levee District. Our Levee District consists of the counties of Bolivar, Issaquena, Sharkey, Washington, and parts of Humphreys and Warren in the Lower Yazoo Basin in Mississippi.

As in past years, we remind you that the Mississippi River and Tributaries Project is one of if not the most cost-effective projects ever undertaken by the United States. The foresight used by the Congress in their authorization of the many features of this project is exemplary. Annual funding for this project needs to be $350,000,000 for construction to stay on schedule. We continue to be aware of the desire of the Congress to balance the Federal budget and appreciate the effort made by the Congress to provide the maximum funding available for this work. The Congressional adds for fiscal year 1999 have kept construction moving in the Basin at an acceptable pace. The Lower Mississippi Valley Flood Control Association will be submitting a general statement in support of the appropriation of $335,000,000 for fiscal year 2000 for the construction, surveys, advanced engineering and the operation and maintenance of the Mississippi River and Tributaries Project. The Lower Mississippi River receives flood water from 41 percent of the continental United States and has experienced water levels above flood stage for the past 6 years.

The President's Budget request again falls far short of the needs and capabilities of the Corps of Engineers for the Mississippi River and Tributaries Project that includes work on the Mainline Mississippi River Levees and the Yazoo Basin Projects. The following table outlines what the Congress appropriated last year, the President's Budget request and our request for your consideration while deliberating the appropriation for this year.

YAZOO BASIN FLOOD CONTROL FISCAL YEAR 2000 APPROPRIATIONS SUMMARY

Project	Fiscal year—		
	1999 Appropriations	2000 President's Budget Request	2000 Levee Board (Local Sponsor)
Construction:			
Yazoo Backwater	$500,000	$520,000	$1,000,000
Upper Steele Bayou	4,500,000	3,915,000	4,500,000
Demonstration Erosion Control	13,500,000	6,294,000	20,000,000
Tributaries	200,000	340,000	340,000
Upper Yazoo Project	10,000,000	11,620,000	13,700,000
Maintenance:			
Big Sunflower	2,500,000	209,000	4,800,000
Arkabutla	3,700,000	3,265,000	4,800,000
Enid	3,270,000	3,214,000	4,400,000
Grenada	4,330,000	4,280,000	6,600,000
Sardis	5,300,000	4,334,000	7,300,000
Tributaries	1,238,000	1,269,000	1,300,000
Total	49,038,000	39,260,000	68,740,000
Mississippi River Levees			
Construction:			
Vicksburg District [1]	14,850,000	9,750,000	15,300,000
Lower MS River Valley Division [2]	30,750,000	23,250,000	35,750,000
Maintenance:			
Vicksburg District [1]	2,251,000	1,269,000	1,600,000
Lower MS River Valley Division [2]	6,500,000	3,736,000	4,686,000

[1] Vicksburg District includes portions of the states of Mississippi, Arkansas, and Louisiana.
[2] Lower MS Valley Division includes portions of the states of Illinois, Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana.

It is imperative that the work on the Mainline Mississippi River Levee Enlargement Project move forward as fast as funding will allow. We are requesting an appropriation for mainline levees of $35.75 million, which will allow the continuation of two construction contracts enlarging 18 miles of the most deficient levee in Mississippi near Mayersville. These additional funds will also allow the initiation and completion of relief wells on the Magna Vista to Brunswick Item protecting our area of greatest underseepage problems during the recent high waters.

The Reformulation of all remaining work in the Yazoo Basin has delayed construction for as much as 5 years on the Upper Steele Bayou and Upper Yazoo Projects. Our request includes additional funding necessary to assure that construction continues on the remaining projects in the Yazoo Basin.

Our request includes $4.5 million for the Upper Steele Bayou Project which will allow the Vicksburg District to complete Main Canal Item 2 which comes up through the City of Greenville and also Item 2 on Black Bayou. This funding increase will also allow for the award of Black Bayou Item 3 which also provides drainage to Greenville, Mississippi. The Vicksburg District will be able to complete phase 4 on Item 66–A at Swan Lake as part of the ongoing work at the Yazoo Wildlife Refuge.

One million dollars is requested for the Vicksburg District to initiate the design for the project in anticipation of the completion of the Reformulation Report. Preliminary information indicates that there will be an alternative with a positive benefit cost ratio. The Mississippi Levee Board is currently scheduling meetings with public and private environmental groups in an effort to arrive at a plan for this project to provide flood protection and environmental benefits to the South Delta area.

We are requesting $4.8 million to initiate construction of Items 2 and 3 on the Big Sunflower Maintenance Project. The Big Sunflower River is the outlet for a major portion of the Mississippi Delta, including parts of 10 Counties. This is also the outlet relied upon for 60 Drainage Districts in the Mississippi Delta. The two Mississippi Levee Boards are currently intervenors in both the State and Federal litigation involving the work planned for this project. It is our opinion that the

Corps of Engineers has made a strong argument in both cases and with out these funds construction will be delayed at least a year with the successful out come of this litigation.

Our request also includes additional funding for the Upper Yazoo Project and maintenance of the Mississippi Reservoirs that provide protection to the eastern portion of the Mississippi Delta. The increased funding will allow the Upper Yazoo Project to continue upstream to Greenwood and the reservoir funding will allow the Corps to complete long awaited maintenance on our four lakes and Dams. Demonstration Erosion Control and Tributaries features of the Yazoo Basin Appropriation will reduce sediment to the Delta streams reducing long term maintenance needs.

We are grateful for the consideration given to us each year by the Committee and appreciate the opportunity to present our requests to you at this time.

PREPARED STATEMENT OF A. LYNN LOWE, PRESIDENT, RED RIVER VALLEY ASSOCIATION

INTRODUCTION

The Red River Valley Association is a voluntary group of citizens banded together to advance the economic development and future well-being of the citizens of the four state Red River Basin area in Arkansas, Louisiana, Oklahoma and Texas.

For the past 74 years, the Association has done notable work in the support and advancement of programs to develop the land and water resources of the Valley to the beneficial use of all the people. To this end, the Red River Valley Association offers its full support and assistance to the various Port Authorities, Chambers of Commerce, Economic Development Districts and other local governmental entities in developing the area along the Red River.

The Resolutions contained herein were adopted by the Association during its 74th Annual Meeting in Bossier City, Louisiana on February 18, 1999, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association, specifically: Economic and Community Development; Environmental Restoration; Flood Control; Bank Stabilization; A Clean Water Supply for Residential, Commercial, Industrial and Agriculture Uses; Hydroelectric Power Generation; Recreation; and Navigation The.

Red River Valley Association is aware of the constraints on the federal budget, and has kept those restraints in mind as these Resolutions were adopted. Therefore, and because of the far-reaching regional and national benefits addressed by the various projects covered in these Resolutions, we urge the members of Congress to review the materials contained herein and give serious consideration to funding the projects at the levels requested.

RRVA TESTIMONY

Mr. Chairman and members of the Committee. I am Lynn Lowe, and I am pleased to represent the Red River Valley Association as its President. Our organization was founded in 1925 with the express purpose of uniting the citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin.

We appreciate the President's fiscal year 2000 budget submission of $3.9 billion from his fiscal year 1999 submission of $3.3 billion (21.5 percent increase); however, we take exception to the programs earmarked for the increase. Most all of it will go to deep-draft ports and channels and environmental programs. The traditional programs, inland waterways and flood protection remained at the low, unacceptable level as last year. These traditional civil work projects are the backbone to our nation's infrastructure for waterways, flood control and water supply. We remind you that these projects are a true 'jobs program' in that 100 percent of the construction is contracted to the private sector as is much of the architect and engineer work. Not only do these funds provide jobs, but provide economic development opportunities for our communities to grow and prosper.

The civil works program is a catalyst that is responsible for the great economy we now experience. It would be irresponsible to allow our nation's infrastructure to deteriorate, or worse, stop its growth in a time when America must be the leader in the world market. Our inland waterways is the key to our dominance in world trade. This is a pivotal budget year where critical decisions must be made which will determine our future economic strength.

We ask you to correct this imbalance in distribution of funds within the Corps and to fund the Corps of Engineers at the level of $4.7 billion which will realistically

fund the ongoing programs. We also request you place in your budget language that recognizes the importance of our nation's waterways and the positive economic impact civil work activities have to our citizens.

I would like to comment on our specific requests for the future economic well-being of the citizens residing in the four state Red River Basin area.

Navigation.—The J. Bennett Johnston Waterway is living up to the expectations of the benefits projected. The average tonnage moved in 1995 through 1997 was 3.1 million tons and the projected tonnage to justify the project is 3.3 million tons. Estimates for 1998 are 3.4 million tons. We are extremely proud of our public ports, municipalities and state agencies who have created this success. New facilities opened in 1998 included a fertilizer terminal at Alexandria and stone distribution at the Port of Shreveport-Bossier. Liquid petroleum shipments increased in 1998 as did commercial stone operations. Currently under construction, at our ports, are a wood chip barge loading system, new liquid petroleum tank farm, fertilizer facility and two general cargo warehouses. You are reminded that the Waterway is not complete, ten percent remains, $200 million. We appreciate the President's budget level of $21 million; however, we respectfully request the expressed Corps capability of $25.1 million. In order to keep the waterway safe and reliable we must continue at a funding level higher than the President's Budget. The RRVA formed a Navigation Committee for industry, the Corps and Coast Guard to partner in making our Waterway a success. This effort has reaped many benefits. We can not sacrifice what has been accomplished by inadequate funding levels.

In fiscal year 1999 you reprogrammed funds to initiate the feasibility study to extend navigation from Shreveport-Bossier City, Louisiana into the State of Arkansas. It is imperative that you continue funding this important study and reprogram the remaining $582,600 from the 'Daingerfield Reach' study. Many areas continue to suffer major unemployment, and the navigation project, although not the total solution, will help revitalize the economy in this region. The U.S. Fish and Wildlife Service 'Planning Aid Report' indicated minimal impact and most probably an enhancement to environmental value. Last summer colonies of least terns (an endangered species) were found on stabilized sandbars in the Waterway in Louisiana as well as increased migratory birds due to the newly formed pools. This will be a multipurpose project addressing navigation, hydropower, bank stabilization and environmental restoration. I want to stress that the local sponsor, the Red River Commission of Arkansas, has available their 50 percent cost share for the complete feasibility study. Few local sponsors have funds 'in the bank' and are also willing to fund additional studies to insure a complete analysis is made.

Bank Stabilization.—One of the most important continuing programs on the Red River is bank stabilization in Arkansas and North Louisiana. We must stop the loss of valuable farmland that erodes down river and interferes with the navigation channel. In addition to the loss of farmland is the threat to public utilities such as roads, electric power lines and bridges; as well as increased dredging cost in the navigable waterway. These revetment projects are compatible with subsequent navigation and we urge that they be continued in those locations designated by the Corps of Engineers to be the areas of the worst erosion. We appreciate Congressional funding in fiscal year 1999 and request you again fund this project at a level of $17 million.

It is essential to protect the banks from caving and erosion along the Red River below Denison Dam, Texas to Index, Arkansas along the Texas/Oklahoma border. The Federal Government constantly encourages its farmers to protect their lands against all forms of erosion, so it only makes sense to be consistent. An authorized project exists; 'Red River Waterway, Index, AR to Denison Dam, TX, Bank Stabilization', so the issue lies with the benefit/cost ratio. We believe that the authorized, on going 'Sediment Transport Study' will identify benefits due to reduced dredging cost to the navigable Waterway in Louisiana.

There is a new technique for bank stabilization which could be tested as a demonstration project under this authorization. This new technique, underwater bendway weirs, has proven to be less expensive than conventional methods and more efficient in controlling the energy of the river as well as providing environmental benefits. Much prime farmland in Oklahoma and Texas is lost each year to river erosion and we must investigate all avenues to correct this problem. You funded the initiation of this project last year and we request you continue that funding this year at a level of $5.8 million, the expressed Corps capability.

Flood Control.—You will recall that in 1990 major areas of northeast Texas, Southwest Arkansas and the entire length of the Red River in Louisiana were ravaged by the worst flooding to hit the region since 1945 and 1957. More than 700,000 acres were flooded with total damages estimated at $20.4 million. However, it could have been much worse. The Corps of Engineers estimates that without the flood

control measure authorized by Congress over the past several decades an additional 1.3 million acres would have been flooded with an estimated $330 million in additional flood damage to agricultural and urban developments.

We continue to consider flood control a major objective and request you continue funding the levee rehabilitation projects ongoing in Arkansas and Texas. Four of eleven items have been completed and levees rehabilitated to meet federal standards. $5 million will construct two more items; completing Miller County, AR and starting levees in Lafayette County, AR.

In addition, Bowie County levee, in Texas, is crucial to the integrity of the Arkansas levee system. Should the Bowie levee fail flood waters will inundate behind the just completed Miller County levees in Arkansas. It is important to have this projected funded for $900,000, for the 'locally preferred' option, according to cost sharing under the Flood Control Act of 1946 not withstanding economic justification.

Clean Water.—Nearly 3,500 tons of natural salts, primarily sodium chloride, enter the upper reaches of the Red River each day, rendering downstream waters unusable for most purposes. The Truscott Brine Lake project, which is located on the South Fork of the Wichita River in King and Knox Counties, Texas became operational in 1987. An independent panel of experts found that the project not only continues to perform beyond design expectations in providing cleaner water, but has an exceptionally favorable cost benefit ratio. $16 million dollars was appropriated in fiscal year 1995, by the Administration, to accelerate engineering design, real estate acquisition and initiate construction of the Crowell Brine Dam, Area VII and Area IX. Due to a conflict over environmental issues, raised by the U.S. Fish and Wildlife Service, completion of the SFEIS was delayed pending further study to determine the extent of possible impacts to fish and wildlife, their habitats and biological communities along the Red River and Lake Texoma. In an effort to resolve these issues and insure that no harmful impact to the environment or ecosystems would result, a comprehensive environmental and ecological monitoring program was implemented. It evaluates the actual impacts of reducing chloride concentrations within the Red River watershed. This base line data is crucial to understanding the ecosystem of the Red River basin west of Lake Texoma and funding for this must continue.

Dr. Westphal, Assistant Secretary of the Army (Civil Works), in October 1998 agreed to support a re-evaluation of the Wichita River Basin. Completion of this tributary will reclaim Lake Kemp as a usable water source for the region. We request the expressed Corps capability of $2.1 million to continue this important project.

Operation & Maintenance.—We appreciate the support of your subcommittee to support the completion of navigation to Shreveport/Bossier City which is now providing an increase to our industrial base, creating jobs and providing economic growth. We request that O&M funding levels remain at the expressed Corps capability to maintain a safe, reliable and efficient transportation system. As experienced this past year failure to maintain a revetment for $500,000, when the problem was first identified, resulted in a catastrophic failure of the revetment and adjacent levee. This led to an emergency repair of $5 million which could have been prevented. The President's level of $8.8 million does not address the backlog of maintenance at the five lock and dams or deteriorating dikes and revetments. The Corps capability of $14 million is required to maintain a safe waterway. Full O&M funding levels is not only important for the Waterway Project but for all our Corps projects and flood control lakes.

We are sincerely grateful to you for the past support you have given our various projects. We hope that we can count on you again to fund our needs and complete the projects started that will help us diversify our economy and create the jobs so badly needed by our citizens.

Thank you for the opportunity to present this testimony and project details of the Red River Valley Association on behalf of the industries, organizations and citizens we represent throughout the four state Red River Valley region. We believe that any federal monies spent on civil work projects are truly investments in our future and will return several times the original investment in benefits that will accrue back to the federal government.

I am always available to provide you and your staff additional information or clarification on any issue presented.

GRANT DISCLOSURE

The Red River Valley Association has not received any federal grant, subgrant or contract during the current fiscal year or either of the two previous fiscal years.

SUMMARY OF FISCAL YEAR 2000 REQUESTS RED RIVER VALLEY ASSOCIATION

[NOTE.—Projects are *NOT* in any order of priority. Project number correspond to the backup information in Section V.]

A. Studies (General Investigations)

1. Navigation on the Red River in Southwest Arkansas: WRDA 96 authorized a feasibility study for this project. Funding was reprogrammed in fiscal year 1999 to continue the study. The Project Study Plan (PSP) is complete and the Feasibility Cost Sharing Agreement (FCSA) will be signed in March 99. The study will commence with full participation from the communities in the project area which include counties and parishes of Arkansas, Louisiana, Texas and Oklahoma. It is imperative that this study continue to be funded and the remaining funds in the 'Daingerfield' study be reprogrammed for this study in Bill language.

[NOTE.—The local sponsor is prepared to cost share the study, 50 percent and has funds available.]

"Request that the Secretary of the Army is directed to use $582,600 of the funds appropriated in Public Law 102–377 for the Red River Waterway, Shreveport, Louisiana, to Daingerfield, Texas, project for the feasibility phase of the Red River Navigation, Southwest Arkansas, study."

2. Grassy Lake, AR: Project Modifications for Improvement of the Environment (Section 1135). The Secretary of the Army acting through the Chief of Engineers is requested to expend, within the funds provided for the Section 1135 Program; $300,000 for a feasibility study of modifications to restore the environmental quality of Grassy Lake, Hempstead County, Arkansas, degraded by the construction of Millwood Lake, Arkansas. Fiscal year 2000 Funds Requested: $300,000.

3. Southwest Arkansas, Arkansas: Provided further, that the Secretary of the Army is directed to initiate a reconnaissance study in Southwest Arkansas utilizing $300,000 appropriated herein to develop an ecosystem restoration plan that integrates flood control, water supply, releases for navigation and wildlife habitat. The study will investigate adverse results caused by construction of Millwood, DeQueen, Dierks, and Gilham Lakes. Navigation has been extended to Shreveport/Bossier City, Louisiana, on the Red River, and water releases of these four lakes could be used to aid navigation. Flooding remains a problem and the lakes' water supply is not being utilized to its full benefits. Fiscal year 2000 Funds Requested: $300,000.

B. Construction

4. Red River Waterway Project, LA:

a. We support the $21,113,000 included in the President's budget and items of work proposed by the Corps.

b. In addition, to insure that the integrity and safety of the Red River navigation channel is maintained for reliable barge transportation we request additional funding, at the Corps expressed capability, to accelerate construction on Cognac Reinforcement ($1,250,000) and Poisson ACS ($1,250,000). These sites have been identified by industry as problem areas. Fiscal year 2000 Funds Requested: $2,500,000.

c. Mitigation: We support all efforts to meet this obligation of the project. Existing funds must be carried forth to continue land purchase actions.

d. Request the Corps cost share in the design and construction of boat launch facilities in Pool 3; one at Hampton's Lake Recreation site and one at Colfax, LA. There is limited access to the Red River in Pool 3 and as commercial traffic increases it is imperative that there be access for safety. Two important municipal riverfront projects are the Teague Parkway Trails in Bossier City and Shreveport riverfront development. These sites will be cost shared 50/50 with the Red River Waterway Commission who has their funds on hand to participate.

Total Funds Requested	$3,000,000
Fiscal year 2000 Federal Share	1,500,000
Local Sponsor Share	1,500,000

e. Following is the total Federal requirement for the Red River Waterway Project (a thru d above):

President's Budget	$21,113,000
Navigation Construction Adds	2,500,000
Public Recreation Sites	1,500,000
Mitigation	
Total Requested for fiscal year 2000	25,113,000

5. Red River Chloride Control Project:

a. In October 1998 the Assistant Secretary of the Army (Civil Works) agreed to support a thorough re-evaluation of the Wichita River Basin features. Three out of four options have a positive benefit to cost ratio. He reprogrammed funds so that work could continue in fiscal year 1999. We are disappointed there were no funds in the President's budget.

b. Many of the features in the Wichita River basin have been constructed and completion of this system would reclaim Lake Kemp which would become a major water source for the region.

c. It is extremely important that the ongoing water quality and environmental monitoring continue. This is critical to establishing a baseline in which to evaluate the effects of the project. Fiscal year 2000 Funds Requested: $2,100,000.

6. Red River Below Denison Dam, Arkansas Levees: Continue funding levels to fully fund construction and restoration of Levee Item #5 (Miller County Levee District) and Levee Item #9A (Red River Levee District in Lafayette County). This completes all Miller County Levees and starts the Lafayette County Levees. Funds are to "remain available until expended". Fiscal year 2000 Funds Requested: $5,000,000.

7. Bowie County Levee, TX: The plans and specifications have been completed. We request construction funding for the 'locally preferred' option under the cost sharing requirements of the Flood Control Act of 1946 not withstanding economic evaluation. Assurances of support and maintenance have been obtained from the local sponsor. Fiscal year 2000 Funds Requested: $200,000.

8. Red River Emergency; Bank Protection; AR & LA: Fully fund construction on Black Lake Phase II ($2.0 mil), Hunters Island Revetment ($7.1 mil), Pleasant Valley Revetment ($4.9 mil) and design Bois D'Arc Revetment. These are the most critical sites that require reinforcements as soon as possible. Funds requested include engineering, design and construction management and are to 'remain available until expended'. Fiscal year 2000 Funds Requested: $17,000,000.

9. Red River Waterway, Index, Arkansas to Denison Dam, Texas (Bank Stabilization): We request the following items be funded at full federal expense.

a. Phase II of the Sediment Transport Study will cost $275,000. This will determine the quantity and types of sediments entering the Red River, along Texas and Oklahoma, that are being deposited in the Red River Waterway navigation channel and creating dredging costs.

b. To initiate construction and a monitoring program for a Bendway Weir 'demonstration project' located at US Highway 271 bridge between Hugo, Oklahoma and Paris, Texas. Fiscal year 2000 Funds Requested for a and b: $5,800,000.

10. Aloha-Rigolette Project, LA: Construction is underway and the funding should continue at full Corps capability to complete the project in fiscal year 2000.

President's Budget	$581,000
To Complete the Project	519,000
Total Requested for fiscal year 2000	1,100,000

11. McKinney Bayou, AR: The reconnaissance study was completed and determined to be economically feasible. This project will go directly into PED and cost shared with the local sponsor (Federal—75 percent; local sponsor 25 percent) over a three year period; as soon as the local sponsor commits to the cost share requirement.

12. Ogden Levee, Little River County, AR: This levee was authorized to be incorporated into the Federal Levee System by the Flood Control Act of 1946. The levee is in need of rehabilitation and has yet to be incorporated into the Federal Levee System. A reconnaissance report completed in November 1991 found that flood control levees along the Red River in Little River County were justified and not environmentally objectional. The Secretary of the Army acting through the Chief of Engineers is directed to perform preconstruction engineering and design (PED) for the Ogden Levee. PED costs shall be initially 100 percent Federally funded and shared in the same percentage as the project purposes. The Ogden Levee is to be designed to the same specifications as the opposite bank levees in Bowie and Miller Counties. A sponsor has been identified and provided a letter of intent.

Total PED Funds Requested	$400,000
Fiscal year 2000 Funds Requested	340,000

13. Bossier Levee System, LA: Direct the Corps to clear and snag the channel of Loggy Bayou from its confluence of the Red River for 7.8 miles. This channel has a serious impact on flooding in the upstream reaches which includes the southern parts of Bossier City. Fiscal year 2000 Funds Requested: $500,000.

C. Operation and Maintenance

14. Red River Waterway, O&M:

a.The President's budget included $8,781,000 for the O&M of this project which falls short of capability and needs. Maintaining existing navigation structures is crucial to the safety of this new waterway. As experienced in 1998 failure to spend $500,000 to maintain the Dismall Swamp Revetment, when the problem was first identified, resulted in a catastrophic failure of the revetment and adjacent levee which cost $5,000,000 in emergency repairs.

b. WRDA 96 authorized the Corps to insure the oxbows remain accessible to the Red River for environmental purposes. The O&M funding level must be adequate to address this issue each year.

c. Currently there appears to be a failure in the Cupples Landing Revetment, at the center of the Port of Shreveport-Bossier complex. Continued erosion of this revetment will threaten existing port structures. The Corps must be directed to investigate this and repair the revetment at full federal expense.

d. Approximately 90 dikes and revetments are in need of repair in order to maintain the integrity and safety of the channel. We request funds for the Corps expressed capability of $2.5 million to repair Cupples and Grand Bend revetments; however, the priority of revetments can change due to changing river conditions.

e. We request the Corps expressed capability of $2.8 million to complete the backlog of maintenance at the five locks and dams. If not funded this maintenance will cost more in the future or become an emergency, shutting down the Waterway.

Fiscal year 2000 President's Budget	$8,781,000
Revetment Repair	2,500,000
L&D Backlog Maintenance	2,800,000
Total fiscal year 2000 O&M Funds Requested	14,081,000

15. Operations & Maintenance at Corps Projects: Request that all O&M funded projects be funded at the level of 'expressed Corps capability'. A serious backlog of maintenance will create more expensive problems in the future.

BACKUP INFORMATION FOR REQUESTS

Following is backup information and a historical perspective on each project request. They are numbered to correspond to each numbered project in the Summary of Request, Section III.

1. NAVIGATION ON THE RED RIVER IN SOUTHWEST ARKANSAS

Twenty-one years ago the Arkansas General Assembly created the Red River Commission upon the recommendation of Governor Dale Bumpers, now the Senior United States Senator for the State of Arkansas. The Commission was vested with the authority to furnish the local cooperation necessary for the construction and study of projects and to coordinate with the Corps of Engineers and the Congress to develop the water resources of the Red River in Arkansas. With navigation now a reality to Shreveport, Louisiana, we are prepared to extend water transportation into Arkansas. Southwest Arkansas and East Texas are economic depressed regions. This project would provide multi-purpose opportunities for industries and increased employment. A regional impact study recently completed clearly demonstrates the benefits this project would have in the region. The local sponsor, Red River Commission of Arkansas, initiated and fully funded this Regional Economic Impact Study which showed benefits greater than 2.0 to 1.

There is no doubt that this project is feasible and only a full feasibility study will prove that. Most importantly, the local cost share, 50 percent, is available now for this study. The feasibility study was funded in fiscal year 1998 and fiscal year 1999 with reprogrammed funds from another Red River Study. It is imperative to continue that funding.

2. NO ADDITIONAL INFORMATION

3. NO ADDITIONAL INFORMATION

4. RED RIVER WATERWAY PROJECT; NAVIGATION TO SHREVEPORT-BOSSIER CITY

The Red River Valley Association and Louisiana delegation are appreciative for the completion of Locks and Dams 4 and 5. Navigation to Shreveport-Bossier City has significantly boosted the economy throughout the river basin.

There is still work ahead of us to maintain and develop the navigation channel. It is also imperative that funds be appropriated to continue construction on navigation structures for this waterway to insure reliable, safe commercial navigation.

This project is NOT complete, $200 million, remains to be constructed. The Red River Valley Association encourages and supports the continuation of the mitigation commitment for the whole project. These are important environmental projects for the overall system of the Red River.

Recognizing that recreation is an integral component of the Red River Waterway Project, the Red River Valley Association supports the development of recreational facilities as a part of the overall project construction. The Master Plan for Recreation has been submitted to the Mississippi Valley Division for final review and approval. We support approval of this re-evaluation and funding to construct the recommended sites.

5. RED RIVER BASIN CHLORIDE CONTROL PROJECT

Natural mineral pollutants in the upper reaches of the Red River Basin are rendering downstream waters unusable for most purposes. The primary pollutants are chlorides and sulfates.

The U.S. Public Health Service initiated a study in 1957 to locate the natural pollution areas and determine the contribution of pollutants from the individual areas to the Red River. It was determined that 10 natural salt source areas located in the basin contribute a daily average of about 3,600 tons of salt (as NaC1) to the Red River. The U.S. Army Corps of Engineers, Tulsa District, entered the study in 1959 to recommend measures to control the natural pollution. Structural measures were recommended for 8 of the 10 salt source areas.

An experimental project at Area V near Estelline, Texas was authorized by the Flood Control Act of 1962. The project consists of a 9-foot-high by 340 foot diameter earthen dike encompassing a brine spring and a 4-foot-wide concrete outlet flume with stoplogs to control flow. With the project in operation since January 1964, surface flow from the spring has been suppressed, thus preventing over 240 tons of chlorides per day from entering Prairie Dog Town Fork of the Red River.

Structural measures for chloride control at Areas VII, VIII, and X in the Wichita River Basin above Lake Kemp were authorized by the Flood Control Act of 1966 (PL 89–789), and structural measures for Areas VI, IX, XIII, and XIV were authorized by the Flood Control Act of 1970 (PL 91–611). Actual construction, however, was not to be initiated until approved by the Secretary of the Army and the President. The Flood Control Act of 1970 was amended by the Water Resources Development Act of 1976 to eliminate the required approval of the President to initiate construction.

The Water Resources Development Act of 1974 (PL 93–251), specifically authorized construction of chloride control measures at Area VIII, located on the South Fork of the Wichita River in King and Knox Counties, Texas. The project includes a low-flow dam with a deflatable weir to collect brine flows emitting from the area, Truscott Brine Reservoir, located near Truscott, Texas, for brine storage, and a pump station and pipeline to deliver the brine to the impoundment. Construction began in the fall of 1976 and the project was placed in operation in May 1987. Area VIII continues to exceed design specifications and currently controls over 168 tons of chlorides daily.

The Water Resources Development Act of 1986 (PL 99–662) required that a special panel evaluate the improvement in water quality downstream of Area VIII to determine its consistency with the water quality assumed in the development of project benefits. A favorable report was submitted to the Assistance Secretary of the Army (Civil Works) and the Committee on Environment and Public Works of the Senate and the Committee on Public Works and Transportation of the House of Representatives in August of 1988. PL 99–662 authorizes 100 percent federal funding and construction of the remaining control features contingent upon the favorable evaluation of the panel.

Congress appropriated $5 million in fiscal year 1991, $3 million in fiscal year 1992, $6 million in fiscal year 1993, $4 million in fiscal year 1994 and $16 million in fiscal year 1995 which was in the President's Budget for the first time ever. These funds were to continue design and construction of Areas VI, VII, IX and X and the Crowell Brine Reservoir. Construction of part of the brine collection facilities (pump station and low flow dam) at Area X was initiated in September 1991 and is complete. Accelerated design of the remaining chloride control features was approved in fiscal year 1994 to permit construction as additional funds become available.

Real estate acquisition for Area VI, VII, IX, and the Crowell Brine Reservoir was scheduled to begin in fiscal year 1993, but was postponed pending the outcome of the economic re-evaluation report ordered by the Assistant Secretary of the Army for Civil Works which was subsequently approved in November 1993 and further instructed the Corps of Engineers to complete all remaining areas of the project.

As part of the process to complete a Supplemental Environmental Impact Statement (SEIS) USFWS objected to the project in August 1994. This was unexpected by the Corps of Engineers since they had been coordinating with USFWS since 1991 and there was no indication they would deliver a negative opinion. This has stopped all construction work and effectively delayed the project.

The SFEIS was completed in August 1996; however, Dr. Zirschky, Acting ASA(CW), directed that a Supplement Assessment Report (SAR) be completed by February 1997. The ASA(CW) in November 1997, directed the Corps to proceed with the Wichita River Basin features of the project. In October 1998, Dr. Westphal, ASA (CW), reprogrammed funds and continued support for the Wichita River. Continued funding is needed to maintain the environmental monitoring program in place and to initiate work on the Wichita River portion of this project.

6. RED RIVER BELOW DENISON DAM, ARKANSAS LEVEES

The facilities constructed under this authorization are the first lines of flood protection for the Red River Valley and its citizens. Accelerated and new caving of the river banks of the Red River continue to endanger existing flood control structures and levees as well as valuable agricultural lands, highways, railroads, utilities, home and other valuable resources and improvements within the Red River Valley.

Following the disastrous flood of May 1990, there can be no doubt of the importance of properly maintained levees. All areas not protected by properly maintained levees were flooded and the only protection from enormous bank caving was where revetment projects had been constructed by the Corps.

The Red River Levees Below Denison Dam Project is the only comprehensive flood control program on the Red River containing authorization for construction of a variety of flood control measures, levees and other flood control works. Some of the projects planned in the original authorization project have not been completed and these must be constructed in order for the citizens of the Red River to derive necessary flood protection. Only minimal funds have been appropriated by Congress for the Red River Levees in recent years.

Another example of flood control work needed is levee rehabilitation along the main stem of the Red River in the state of Arkansas. Many of these levee sections were severely tested by the May 1990 flood, and it is apparent that rehabilitation is needed to increase their integrity, substantially reduce maintenance costs, and provide additional structural strength at appropriate elevations needed to protect citizens, agricultural land and transportation systems. The Corps has completed an engineering study of the Levees on the Red River from Index, AR to the Louisiana State Line to establish and prioritize levee locations that have deficient grades, slopes and crown. This report included the recommendations with construction costs for all identified area. The first item of construction on the Miller County Levee System was completed in 1995 and three more items will be completed by the end of fiscal year 1998.

It is imperative that Red River Levees continue as authorized by Congress and that adequate funding be appropriated to accomplish the construction of this needed protection. There are eleven construction items to be constructed with four completed to date.

7. BOWIE COUNTY LEVEE, TX

Major flooding along the Red River in May 1990 severely tested the integrity of the Bowie County Levee located along the right bank of the Red River north of Texarkana, Texas. Had it not been for emergency measures taken by the U.S. Army Corps of Engineers and local interests, the levee would have been destroyed during the flood. It is the opinion of the Corps that the levee would fail if subjected to another flood of the magnitude encountered in May 1990. Replacement or restoration of the levee is necessary to protect approximately 7,000 acres of prime agricultural land as well as residential and farm structures.

Additionally, this levee system protects the land side of the Miller County levees in Arkansas. The Arkansas levees are being rehabilitated at full federal expense; therefore, a case has been made that the Bowie County levee should be funded the same as Arkansas levees. Again, the Arkansas levees would not be of any value should the Bowie County levee fail.

In fiscal year 1997 Congress directed the Corps to complete designs and specifications for two options; federally preferred and locally preferred options. It is our intention to have a fully funded federal project for the locally preferred option in accordance with cost sharing guidelines in the Flood Control Act of 1946.

8. RED RIVER EMERGENCY BANK PROTECTION; AR & LA

Although Federal projects have been authorized for flood control and navigation, many active caving banks cannot be stabilized because they are not yet sufficiently

advanced or not included in earlier authorizations. The result is continuing, rampant destruction of valuable lands, threatening vital flood control facilities and endangering high-cost improvements such as bridges, pipelines, highways, railroads, utilities, cities and towns.

It is urgent that adequate funding under the authority "Emergency Bank Protection" be continued to construct bank stabilization work as early as possible in the most critical locations instead of waiting several more years and experiencing the loss of land and economic benefits due to damages. Further, continued neglect of these caving banks will substantially worsen alignment of the River, making future navigation realignment and stabilization much more costly and difficult. Many caving banks have an existing alignment that is usable for the navigation channel and should be preserved now.

9. RED RIVER WATERWAY; INDEX, ARKANSAS TO DENISON DAM

Widely fluctuating stages and high flows during the past several years have caused sharp increases in bank caving along the Red River from Index, AR to Denison Dam. This accelerated bank caving has caused the loss of valuable, vital improvements and non-replaceable prime agricultural lands. Flood control structures and levees which protect the Valley from disastrous floods are also endangered. These disastrous losses can be stopped by a systematic program of bank stabilization. Progressive construction of such a program is absolutely essential to the safety growth and well-being of the Red River Valley. To further delay this vitally needed protection would be short-sighted.

In view of the fact that construction of bank stabilization is so important to the citizens along the Red River boundary of Oklahoma and Texas we strongly recommend allowing the Corps of Engineers to proceed with a "demonstration project." There are new techniques which we believe are less expensive with better results than the traditional methods. One new technique is the underwater bendway weir. This demonstration project will be evaluated along with the ongoing 'sediment transport' study to determine the potential for a large scale bank stabilization project.

A 'sediment transport study' completed in 1998 demonstrated that 1.6 million tons of sand sediments from this stretch of river are entering the navigation channel in Louisiana. A second phase of this study is required to determine what benefits can be realized from reduced dredging costs as well as the quantities of clay, silt and sand, NOT considered, in the completed study.

Funds were appropriated in fiscal year 1999 to complete the design of the demonstration project. It is critical to continue this funding to construct and monitor the project as well as to continue with the 'sediment transport study'.

10. ALOHA-RIGOLETTE PROJECT

This project, initially authorized in 1941 and constructed during the 1948–54 period, provides for the protection during high stages of the Red River of some 58,000 acres of alluvial land. Drainage from 340,000 acres that must flow through protected areas during lower river stages is disposed of by gravity flow through two 10 foot by 10 foot gated concrete drainage structures in the levee at the lower end of the project. This protected area has continued to develop agriculturally since construction of the project and now additional gates are needed to allow adequate gravity drainage during low river stages. As a result, local interests requested that additional studies be made of the project, paying particular attention to the adequacy of the flood gate which has now been determined to be significantly inadequate for current conditions.

A feasibility study was completed by the New Orleans District, Corps of Engineers in June 1989. The Red River Valley Association urges that Congress appropriate the full capability of the Corps fiscal year 2000 budget to complete construction activities for the project on the Bayou Darrow flood gate, clearing and snagging of channels, the low flow structure and mitigation.

11. McKINNEY BAYOU PROJECT, AR

The Corps of Engineers completed a reconnaissance study of drainage in Miller County, Arkansas. The project is known as the McKinney Bayou Project as it is the principal drainage ditch in the County. Due to the thousand of acres of land cleared in Miller County during the past 25 years, the ditch is grossly inadequate to handle the drainage after heavy rains. The Reconnaissance study had a high B/C ratio and therefore was recommended to go directly to Planning, engineering and design (PED). A local sponsor has been identified to cost share PED; Federal 75 percent/ local sponsor 25 percent.

12. NO ADDITIONAL INFORMATION

13. BOSSIER LEVEE DISTRICT, BOSSIER PARISH, LA

There ia a drainage channel issue which should be the responsibility of the Corps of Engineers to maintain. This is Loggy Bayou with its confluence on the Red River, river mile 194.1, with the channel in question extending approximately 8 miles upstream into Loggy Bayou.

Loggy Bayou is the final and only channel that drains a vast area of Northwest Louisiana and part of Arkansas water into the Red River. The headwaters start in Columbia County, Arkansas and the drainage area includes large parts of Webster, Beinville and Bossier Parishes in Louisiana. There are no other diversions for these waters to the Red River except through Loggy Bayou.

In 1943 the Bossier Levee District agreed to maintain the last 7.8 miles of Loggy Bayou before it enters the Red River. Conditions have changed drastically since 1943, to include: the diversion of Coushatta Bayou into the Loggy Bayou; the channel is now approximately 20 feet deeper due to increased drainage flows and the Red River Waterway Project has pooled the water into this section of Loggy Bayou permanently raising the water level. The Bossier Levee District does not have the equipment, expertise or funding to keep the channel maintained so there is now a real threat for increased flooding upstream. Since there have been considerable changes to the Loggy Bayou Watershed, beyond the control of the Bossier Levee District, and the waters drained are multi-state it is requested that the Corps of Engineers be directed to maintain the channel in Loggy Bayou, under the 'Red River Waterway Project', Operations and Maintenance, from its confluence with the Red River upstream for approximately 8 miles.

14. NO ADDITIONAL INFORMATION

15. NO ADDITIONAL INFORMATION

SUPPORT STATEMENT: GREATER SHREVEPORT CHAMBER OF COMMERCE

TRANSPORTATION—WATER

RED RIVER WATERWAY PROJECT FISCAL YEAR 2000 BUDGET

ISSUE: The Locks and Dams for the Red River Waterway Project have been completed from the Mississippi River to Shreveport/Bossier City, Louisiana. It is important to know that the project is only 90 percent complete with $200 million required in construction appropriations. In addition, it will take approximately $14 million per year to operate and maintain the system.

WHY IMPORTANT: For economic development to be fully realized, we must operate the Red River in a reliable manner for industry to use it as a major transportation system. The navigation channel must be maintained at a 9-foot draft for efficient use. If the channel is not properly maintained, industry will be reluctant to use the Red River since they would not be able to load barges to full capacity making other modes of transportation competitive.

The project Recreational Master Plan has been completed and it is important to execute the plan as soon as possible. There is limited access to the Red River and these sites are necessary for safety as well as the economic benefits of recreation.

OUR POSITION: We appreciate the allocation in the President's fiscal year 2000 budget for $21 million in construction funds, which is much higher than was in the budget last year. However, this falls short of what we require and includes no funding for recreation. An additional $4.5 million is needed for navigation and recreation projects. Our total request for Red River Waterway construction is $25.5 million.

Maintaining the infrastructure of this Waterway is extremely important. Funding maintenance items sooner always costs less than waiting until it becomes an emergency. The President's budget allocated $8.8 million while a total of $14 million is required to complete all regularly scheduled and backlog items. This includes the five locks and dams and repair to dikes and revetments.

RED RIVER BASIN CHLORIDE CONTROL PROJECT

ISSUE: The first comprehensive study of the water quality of the Red River basin was initiated in 1957 by the U.S. Public Health Service under the authorization of the Federal Water Pollution Control Act. It was determined that ten natural salt source areas contribute a daily average of 3,600 tons of salt per day to the river. This renders downstream waters unusable for most purposes. Structural measures to help control the chloride pollution at 8 of the 10 sites were developed by the Tulsa District, Corps of Engineers. These plans led to Congressional authorization in the Flood Control Acts of 1962, 1966 and 1970. The first structure was completed

in January 1964 and the second in May 1987. The Water Resources Development Act of 1986 authorized the construction of the remaining sites.

Approximately one-third of the project cost has been expended. The total project is expected to cost $303 million.

The Assistant Secretary of the Army (Civil Works), ASA(CW), Dr. Westphal, directed the Tulsa District to conduct a re-evaluation report for the Wichita River Basin portion of the project. This is to be completed in 1999.

WHY IMPORTANT: Natural mineral pollutants (primarily chlorides and sulfates) in the upper reaches of the Red River Basin are rendering downstream waters unusable for most purposes; therefore, the Red River Chloride Project is imperative in order to realize full utilization of the surface water supplies in Louisiana (as well as Texas, Oklahoma and Arkansas). More than 1,000 miles of streams in the river system are severely contaminated by naturally occurring brine and is not suitable for municipal, industrial or agricultural purposes.

OUR POSITION: The President did not fund this project in the fiscal year 2000 budget, even thought it is supported by the ASA (CW). It is imperative that $2.1 million be appropriated so that the re-evaluation of the Wichita River can be completed and the next phase of construction start in fiscal year 2001. These funds also include the environmental monitoring program currently underway to collect valuable data on the ecosystem of this region.

PREPARED STATEMENT OF THE CADDO/BOSSIER PORT COMMISSION, SHREVEPORT, LA

On behalf of the citizens of Northwest Louisiana, the Caddo-Bossier Parishes Port Commission strongly urges the Congress of the United States to allocate in fiscal year 2000 the necessary monies to ensure safe and reliable inland waterway, and in particular Red River, navigation and to carefully consider the numerous new taxes and user fees proposed impacting the nation's ports.

Port's are a vital element of the national economy and national security and federal commitment to provide reliable and secure funding for our port system is paramount. Yet the waterways are facing once again proposals for reduced funding, new user fees and the constant call of the "Green Scissors" campaign to cut maritime programs to pieces.

The President's budget request appears to shortchange inland navigation and flood control while other civil works programs are fully-funded. For example, construction and maintenance of projects along the nation's inland waterways would be funded at less than half the level needed to optimize project schedules while deep draft harbor maintenance and construction would be funded at an optimal level. The optimal spending would be funded, however, by a new Harbor Services User Fee (HSUF), a hastily crafted proposal which leaves open troubling and unanswered questions and unfairly places the entire financial burden on certain commercial vessel operators. Instead of making America's trade gateways safer or more efficient, the HSUF would make them more costly and less competitive.

The Port of Shreveport-Bossier, regularly operating now for two years, is a part of this national infrastructure. Maintaining the international competitive position of this country's ports is necessary in order for the inland ports to operate as much of the cargo carried on inland waterways travels through the deepdraft ports.

The Port of Shreveport-Bossier stands today as a longtime dream with a potential proving to exceed even the most optimistic projections. With local taxpayer investment guaranteed by a 1993 property tax in the two parishes of Bossier and Caddo, the Port's infrastructure is growing to meet the demands of a rapidly expanding customer base. Public investment in the Port complex today stands at more than $73,000,000. Businesses located at the complex are Arch Chemicals, Oakley Louisiana, Re-Claim Environmental, Red River Terminals and Shreveport Fabricators.

PREPARED STATEMENT OF THE RED RIVER WATERWAY COMMISSION, NATCHITOCHES, LA

On behalf of the citizens of the Red River Waterway District of Louisiana, the Red River Waterway Commission strongly urges the Congress of the United States to allocate the funds necessary for fiscal year 2000 for Red River Waterway Project. Adequate funding will allow continued construction progress toward actual project completion and will facilitate totally reliability in operations for continued industrial and recreational development. The infrastructure investment of $1.8 billion can only be justified if commercial and recreational development interests can rely on an efficient, functional and user friendly river system.

Construction on Red River is approximately 90 percent complete, however, it is vitally important that we understand the importance of steady progress toward project completion with full knowledge of the financial constraints this country, the President and the Congress are wrestling with during the budget process.

AREAS OF NEED FOR THE RED RIVER WATERWAY PROJECT

Navigation Structures (Revetments and Dikes).—These structures are necessary to maintain the channel alignment so as to provide reliable navigation to the users. In addition, the structures help insure that barges can be loaded to the maximum depths allowable for profitable operation.

Recreation Development.—Design and Construction in Pools 3, 4 and 5 should begin immediately. Important projects such as Shreveport Riverfront, Teague Parkway Trails, Colfax and Hampton Lake establish an excellent recreation foundation.

Operations & Maintenance Program.—Channel Maintenance (Dredging) is critical to the viability of the waterway system. The Corps of Engineers needs sufficient resources to adequately maintain the navigation channel to provide dependable and reliable depths so that barges moving on the system can be loaded to the maximum nine foot draft. Reliable conditions will encourage other development on the Red River. Maintenance of existing navigation structures at strategic locations is vital to the users. The backlog of maintenance items at the lock & dam structures could be devastating to the nation's investment in the navigation system.

Construction/Maintenance Program.—The Corps of Engineers needs resources available to react quickly to landowner bank caving complaints that are a result of the project and are fully justified.

Aids to Navigation.—As commercial use continues to increase, the Coast Guard presence and resources must reflect a similar growth to adequately maintain the buoy system on the Red River and stimulate confidence in the river system.

Mitigation and Bendway Dredging.—Continue with land acquisition and developmental cost analysis associated with the mitigation portion of the project and as soon as practical begin the bendway dredging operations to reestablish the connection to the channel of Red River.

MIDWEST U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF TERRENCE J. O'BRIEN, PRESIDENT, METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

On behalf of the Metropolitan Water Reclamation District of Greater Chicago (District), I want to thank the Subcommittee for this opportunity to present our priorities for fiscal year 2000 and, at the same time, express our appreciation for your support of the District's projects in the years past. The District is the local sponsor for three Corps of Engineers priority projects of the Chicagoland Underflow Plan: the O'Hare, McCook and Thornton Reservoirs. We are requesting the Subcommittee's full support for McCook and Thornton Reservoirs, as the O'Hare Reservoir has recently been completed. Specifically, we request the Subcommittee to include a total of $6,000,000 in construction funding for the McCook and Thornton Reservoir projects in the bill. The following text outlines these projects and the need for the requested funding. Also, attached is a booklet indicating the municipalities in our area, which benefit from these projects and the need for the requested funding. The booklet reviews the history of the issues involved, including newspaper articles and pertinent data from the U.S. Army Corps of Engineers (Corps) and the Illinois State Water Survey.

THE CHICAGOLAND UNDERFLOW PLAN

The Chicagoland Underflow Plan (CUP) consists of three reservoirs: the O'Hare, McCook, and Thornton Reservoirs. The O'Hare Reservoir Project was fully authorized for construction in the Water Resources Development Act of 1986 (Public Law 99–662) and completed by the Corps in fiscal year 1999. This reservoir is connected to the existing O'Hare segment of the District's Tunnel and Reservoir Plan (TARP). Adopted in 1972, TARP was the result of a multi-agency effort, which included officials of the State of Illinois, County of Cook, City of Chicago, and the District.

TARP was designed to address the overwhelming water pollution and flooding problems of the Chicagoland combined sewer areas. These problems stem from the fact that the capacity of the area's waterways has been overburdened over the years and has become woefully inadequate in both hydraulic and assimilative capacities. These waterways are no longer able to carry away the combined sewer overflow dis-

charges nor are they able to assimilate the pollution associated with these discharges. Severe basement flooding and polluted waterways (including Lake Michigan, which is the source of drinking water for millions of people) is the inevitable result. We point with pride to the fact that TARP was found to be the most cost-effective and socially and environmentally acceptable way for reducing these flooding and water pollution problems. Experience to date has reinforced such findings with respect to economics and efficiency.

The TARP plan calls for the construction of the new "underground rivers" beneath the area's waterways. The "underground rivers" would be tunnels up to 35 feet in diameter and 350 feet below the surface. To provide an outlet for these tunnels, reservoirs will be constructed at the end of the tunnel system. Approximately 93.4 miles of tunnels have been constructed or are under construction at a total cost of $2.1 billion and are operational. The tunnels capture the majority of the pollution load by capturing all of the small storms and the first flush of the large storms. Another 15.8 miles of tunnels costing $399 million need to be completed. The tunnels connected to the O'Hare Reservoir now discharge when they fill up during large rainstorms into the Reservoir and this system is working well and providing benefits. Thornton and McCook Reservoirs have not been built yet, so significant areas remain unprotected. Without these outlets, the local drainage has nowhere to go when large storms hit the area. Therefore, the combined stormwater and sewage backs up into over 470,000 homes. This is a reduction from the 550,000 homes impacted before the tunnels were put on line.

Since its inception, TARP has not only abated flooding and pollution in the Chicagoland area, but has helped to preserve the integrity of Lake Michigan. In the years prior to TARP, a major storm in the area would cause local sewers and interceptors to surcharge resulting in CSO spills into the Chicagoland waterways. Since these waterways have a limited capacity, major storms have caused them to reach dangerously high levels resulting in massive sewer backups into basements and causing multi-million dollar damage to property. To relieve the high levels in the waterways during major storms, the gates at Wilmette, O'Brien, and the Chicago River would be opened and the CSOs would be allowed to backflow into Lake Michigan.

Since the implementation of TARP, some backflows to Lake Michigan have been eliminated. Since implementation of TARP, 358 billion gallons of CSOs have been captured by TARP, that otherwise would have reached waterways. After the completion of both phases of TARP, 99 percent of the CSO pollution will be eliminated. The elimination of CSOs will result in less water needed for flushing of Chicago's waterway system, making it available as drinking water to communities in Cook, DuPage, Lake, and Will counties, which have been on a waiting list. Specifically, since 1977, these counties received an increase of 162 mgd, partially as a result of the reduction in the District's discretionary diversion in 1980. Additional allotments of Lake Michigan water, beyond 1991, will be made to these communities, as more water becomes available from sources like direct diversion.

With new allocations of lake water, communities that previously did not get to share lake water are in the process of building, or have already built, water mains to accommodate their new source of drinking water. The new source of drinking water will be a substitute for the poorer quality well water previously used by these communities. Partly due to TARP, it is estimated by IDOT that between 1981 and 2020, 283 mgd (439 cfs) of Lake Michigan water would be added to domestic consumption. This translates into approximately 2 million people that previously did not receive lake water, would be able to enjoy it. This new source of water supply will not only benefit its immediate receivers but will also result in an economic stimulus to the entire Chicagoland area, by providing a reliable source of good quality water supply.

THE MC COOK AND THORNTON RESERVOIRS—CHICAGOLAND UNDERFLOW PLAN

The McCook and Thornton Reservoirs of the Chicagoland Underflow Plan (CUP) were fully authorized for construction in the Water Resources Development Act of 1988 (Public Law 100–676). The CUP, as previously discussed, is a flood protection plan that is designed to reduce basement and street flooding due to combined sewer back-ups and inadequate hydraulic capacity of the urban waterways. These projects are the second and third components of CUP, they consist of reservoirs to be constructed in west suburban Chicago and Thornton in south suburban Chicago.

These reservoirs will provide a storage capacity of 15.3 billion gallons and will produce annual benefits of $104 million. The total potential annual benefits of these projects are approximately twice as much as their total annual cost. The District,

as the local sponsor, is actively pursuing land acquisition for these projects, and is prepared to meet its cost sharing obligations under Public Law 99–662.

These projects are a very sound investment with a high rate of return. They will enhance the quality of life and the safety and the peace of mind of the residents of this region. The State of Illinois has endorsed these projects and has urged their implementation. In professional circles, these projects are hailed for their far-sightedness, innovation, and benefits.

Based on two successive Presidentially-declared flood disasters in our area in 1986 and again in 1987 and dramatic flooding in the last several years, we believe the probability of this type of flood emergency occurring before implementation of the critical flood prevention measure is quite high. As the public agency for the greater Chicagoland area responsible for water pollution control, and as the regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal of construction completion.

We have been very pleased that over the years, the Subcommittee has seen fit to include critical levels of funds for these important projects. We were delighted to see the $3,250,000 in construction funds included in the Energy and Water Development Appropriations bill for fiscal year 1999. However, it is important that we receive a total of $6,000,000 in construction funds in fiscal year 2000 to maintain the commitment and accelerate these projects. This funding is critical to accelerate the detailed design, plans and specifications and initiate construction of the McCook Reservoir. The community has waited long enough for protection and we need these funds now to move the project into construction. We respectfully request your consideration of our request.

SUMMARY

Our most significant recent flooding occurred on February 20, 1997, when almost four inches of rain fell on the greater Chicagoland area. Due to the frozen ground, almost all of the rainfall entered our combined sewers, causing sewerage back-ups throughout the area. When the existing TARP tunnels filled with approximately 1.2 billion gallons of sewage and runoff, the only remaining outlets for the sewers were our waterways. Between 9:00 p.m. and 3:00 a.m., the Chicago and Calumet Rivers rose six feet. For the first time since 1981 we had to open the locks at all three of the waterway control points; these include Wilmette, downtown Chicago, and Calumet. Approximately 4.2 billion gallons of combined sewage and stormwater had to be released directly into Lake Michigan.

Given our large regional jurisdiction and the severity of flooding in our area, the Corps was compelled to develop a plan that would complete the uniqueness of TARP and be large enough to accommodate the area we serve. With a combined sewer area of 375 square miles, consisting of the city of Chicago and 51 contiguous suburbs, there are 550,000 homes within our jurisdiction, which are subject to flooding at any time. The annual damages sustained exceed $150 million. If these projects were in place, these damages could be eliminated. We must consider the safety and peace of mind of the 2 million people who are affected as well as the disaster relief funds that will be saved when these projects are in place. As the public agency in the greater Chicagoland area responsible for water pollution control, and as the regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal. It is absolutely critical that the Corps' work, which has been proceeding for a number of years, now proceed into construction.

Therefore, we urgently request that a total of $6,000,000 in construction funds be made available in the fiscal year 2000 Energy and Water Development Appropriations Act to advance construction of the McCook and Thornton Reservoir Project.

Again, we thank the Subcommittee for its support of our project over the years and we thank you in advance for your consideration of our request this year.

PREPARED STATEMENT OF THE ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of this distinguished Committee, my name is Wallace Gieringer. I am retired as Executive Director of the Pine Bluff-Jefferson County (Arkansas) Port Authority. It is my honor to serve as Chairman of the Arkansas River Basin Interstate Committee, members of which have been appointed by the governors of the great states of Arkansas, Colorado, Kansas, Missouri, and Oklahoma.

As Chairman, I present this summary testimony as a compilation of the most important projects from each of the member states. Each of the states unanimously

supports these projects without reservation. I request that the copies of each state's individual statement be made a part of the record, along with this testimony.

Mr. Chairman, the members of the Interstate Committee have again identified as our top priority a project vital to the five-state area and beyond—the urgently needed Montgomery Point Lock and Dam at the confluence of the McClellan-Kerr Arkansas River Navigation System and the Mississippi River.

Continuing problems caused by sediment and lowering of the Mississippi River plague McClellan-Kerr entrance channel users. Construction of Montgomery Point must continue as rapidly as possible before limited dredge disposal areas become inadequate. During times of low water on the Mississippi River the entrance channel is drained of navigable water depth. As the Mississippi River bottom continues to lower, the McClellan-Kerr moves toward total shutdown.

Thus, the entire Arkansas River Navigation System is at risk, and its long term-viability is threatened without Montgomery Point. Some $5 billion in federal and private investments, thousands of jobs, growing exports in world trade and future economic development are endangered.

The good news is that you, your associates, the Congress and the Administration have all recognized the urgency of constructing Montgomery Point!

The Corps of Engineers awarded a $186 million construction contract on July 19, 1997. Last year Congress appropriated $44 million to begin construction of the lock and dam. Work is progressing.

Mr. Chairman and Members of the Committee, continuing Congressional support is essential at this crucial time in the history of the project. An appropriation of $44 million is needed for fiscal year 2000 to insure that Montgomery Point is in operation as soon as possible at the lowest possible cost.

The Interstate Committee also respectfully recommends the following as important priorities:

Providing $500,000 for the continuation of the Arkansas River, Fort Smith Study. While navigation is the primary purpose of the McClellan-Kerr, navigation needs and flood control are closely related. Sustained high flows result in difficult navigation conditions and continued flooding in the vicinity of Fort Smith, Arkansas. Flood control features of the Navigation System in that area are based on the Van Buren, Arkansas, gage, thus the flooding concerns and navigation problems are interrelated. Accordingly, this study would address the Navigation System Operating Plan to improve navigation conditions on the river, as well as the performance of flood control measures, especially in the Fort Smith reach.

The Interstate Committee supports funding for the Upper Colorado River Endangered Fish Recovery Program. For fiscal year 2000 we request $6.25 million for the U.S. Bureau Reclamation ("Upper Co region Endangered Species Recovery Programs") and (Activities), and U.S. Fish and Wildlife Service $1.2 million ("Resources Management Funds"), "Section Six Funds", and "RWS Budget Base Funds—Fisheries Activity; Hatchery O&M, sub-activity, to operate the Endangered Fish Propagation Facilities at Ouray National Wildlife Refuge, Utah."

The Interstate Committee also requests funding in the amount of $500,000 for the continuation of the Equus Beds Groundwater Recharge Demonstration Project—a City of Wichita, Groundwater Management District No. 2 and State of Kansas project to demonstrate the feasibility of recharging a major groundwater resource supplying water to 500,000 municipal, industrial and irrigation users and will also reduce potential degradation of the existing groundwater quality by minimizing migration of saline water.

Mr. Chairman, we strongly urge the Committee to provide funding in the amount of $1.5 million to initiate the installation of tow haulage equipment on the McClellan-Kerr Arkansas River Navigation System at designated locks in Oklahoma.

Mr. Chairman, Members of this Committee, we respectfully request that you and members of your staff review and respond in a positive way to the attached individual statements from each of our states which set forth specific requests pertaining to those states.

We sincerely appreciate your consideration and assistance. Thank you very much for the foresight, wisdom and resourcefulness you and your colleagues demonstrate each and every year in providing solutions to our nation's water resource problems.

PREPARED STATEMENT OF WALLACE A. GIERINGER, CHAIRMAN FOR ARKANSAS, ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of the Committee, thank you for the opportunity to present testimony to this most important committee. I am retired as Executive Director of the Pine Bluff-Jefferson County Port Authority and serve as Arkansas

Chairman for the Interstate Committee. Other committee members representing Arkansas, in whose behalf this statement is made, are Messrs. Wayne Bennett, soybean and rice farmer from Lonoke; Colonel Charles D. Maynard, U.S. Army, retired, from Little Rock; Barry McKuin, a Director of the Morrilton Port Authority at Morrilton; and N. M. "Buck" Shell, transportation specialist of Fort Smith and Van Buren.

1998 was a memorable year in the history of the McClellan-Kerr Arkansas River Navigation System—and you helped make it so! Last year Congress continued to recognize the urgent need for Montgomery Point Lock and Dam by appropriating $44 million. This much needed facility is under construction near the confluence of the McClellan-Kerr System and the Mississippi River. To each of you, your staff and the Congress—our most heartfelt thanks!

The Corps of Engineers awarded a $186 million contract for construction of the lock and dam proper on July 19, 1997 and work is progressing. When completed, Montgomery Point will protect over $5 billion in public and private investments, thousands of jobs and world trade created as a result of the McClellan-Kerr Arkansas River Navigation System. Without Montgomery Point Lock and Dam the future of our wonderful navigation system remains threatened. Time is of the essence.

The absence of Montgomery Point Lock and Dam continues to deter economic growth along the entire McClellan-Kerr and the project is certainly time sensitive! As the Mississippi River bottom continues to lower, the McClellan-Kerr moves toward total shutdown. Existing dredge disposal areas are virtually full. Ongoing dredging and disposal of material can mean environmental damage. Construction must continue as rapidly as possible if the project is to be in place before disposal areas become inadequate.

During construction, and use of a temporary by-pass channel, navigation hazards will increase making it imperative that work on the lock and dam be completed as quickly and as safely as possible.

We are very grateful that you, your associates, the Congress, and the Administration have all recognized the urgency of constructing Montgomery Point. Appropriations of $107.3 million have been made to date for engineering, site acquisition and construction for this project which should be completed in 2003 according to the Corps' optimum construction funding schedule.

Mr. Chairman and Members of the Committee, continuing Congressional support is essential at this crucial time in the history of the project. We respectfully request and urge the Congress to appropriate $44 million for use in fiscal year 2000 to continue construction. Adequate funding will insure that the urgently needed facility is in operation as soon as possible at the lowest possible cost.

On another matter, we wish to express thanks, Mr. Chairman, for the Committee's support of funding for the Morgan Bendway Environmental Restoration Project. The groundbreaking ceremony was held in January in Dumas, Arkansas. The state of Arkansas provided one-fourth of the cost for this $3.3 million project which includes a 1,000 acre lake and wetland restoration measures. This project adds to the many widespread public benefits associated with the McClellan-Kerr Arkansas River Navigation System.

Other projects are vital to the environment, social and economic well-being of our region and our nation. We recognize the importance of continued construction of needed features to the McClellan-Kerr Arkansas River Navigation System and strongly recommend that you favorably consider the following in your deliberations:

Provide $500,000 for the Arkansas River, Fort Smith Study. While navigation is the primary purpose of the McClellan-Kerr Arkansas River Navigation System, navigation needs and flood control are closely related. Sustained high flows result in difficult navigation conditions and continued flooding in the vicinity of Fort Smith, Arkansas. As the operation of the flood control features of the Navigation System in that area are based on the Van Buren, Arkansas gage, the flooding concerns and navigation problems are interrelated. Accordingly, this study would address the Navigation System Operating Plan to improve navigation conditions on the river, as well as the performance of flood control measures, especially in the Fort Smith reach.

Support continued funding for the construction, operation and maintenance of the McClellan-Kerr Arkansas River Navigation System.

Continue construction authority for the McClellan-Kerr Arkansas River Navigation Project until remaining channel stabilization problems identified by the Little Rock District Corps of Engineers have been resolved. It is vitally important that the Corps continue engineering studies to develop a permanent solution to the threat of cutoffs developing in the lower reaches of the navigation system; and for the Corps to construct these measures under the existing construction authority.

Provide funding and direct the Corps to complete installation of tow haulage equipment for all the locks and dams on the McClellan-Kerr Arkansas River Navigation System. This efficiency feature will reduce lockage time by as much as 50 percent while permitting tonnage to double in each tow with only a minor increase in operating cost.

Provide funds and direct the Corps of Engineers to begin construction of the Arkansas River Levees Project as authorized by Section 110 of the Water Resource Development Act of 1990. Continuing engineering and design is needed for these levees which have been previously studied in the cost-shared Arkansas River Arkansas and Oklahoma Feasibility Study.

$1.0 million needs be specifically provided and the Corps directed to begin rehabilitation construction on the Plum Bayou Levee.

Fund completion of the repair and rehabilitation of the power units at the Dardanelle Lock and Dam which first went into operation in 1965. After this work is completed, power output will be increased by 13 percent and thus increase income to the Federal Treasury.

Funds for repair and rehabilitation of the power units at the Ozark-Jeta Taylor Lock and Dam Powerhouse which first went into operation in 1970. This project is vitally needed to correct problems which have plagued the slant axis turbines since they were first put in operation and to continue the reliable production of power from this facility.

We also urge the Congress to continue to encourage the Military Traffic Management Command to identify opportunities to accelerate use of the nation's navigable waterways to move military cargoes, thereby helping contain the nation's defense costs.

In conclusion, Mr. Chairman, please help prevent a crisis for the Arkansas River Navigation System and the multi-state region it serves by appropriating $44 million for use in fiscal year 2000 for Montgomery Point Lock and Dam.

The entire Arkansas River Navigation System is at risk, and its long-term viability is threatened. The System remains at risk until Montgomery Point is constructed. Some $5 billion in federal and private investments and thousands of jobs and growing exports are endangered.

We fully endorse the statement presented to you today by the Chairman of the Arkansas River Basin Interstate Committee. We appreciate the opportunity to provide testimony to your most important subcommittee and urge you to favorably consider our request for needed infrastructure investments in the natural and transportation resources of our nation.

PREPARED STATEMENT OF STEVE ARVESCHOUG, DISTRICT GENERAL MANAGER, SOUTHEASTERN COLORADO WATER CONSERVANCY DISTRICT

Mr. Chairman and Members of the Appropriation Subcommittee on Energy and Water Development, thank you for the opportunity to present these comments and requests on behalf of Colorado as a participant in the Arkansas River Basin Interstate Committee.

Let me first voice my support for the Interstate Committee's priority funding requests for the fiscal year 2000 budget—the Montgomery Point Lock and Dam project and the other priority projects as listed by the Arkansas River Basin Interstate Committee member states.

Mr. Chairman, Members of the Committee, we respectfully request funding for the following: Upper Colorado River Endangered Fish Recovery Program—Fiscal Year 2000 Request—United States Bureau of Reclamation, $6.25 million (Upper CO Region Endangered Species Recovery Programs) and (Activities), and U.S. Fish and Wildlife Service, $1.2 million (Resources Management Funds, Section Six Funds, and FWS Budget Base Funds—Fisheries Activity; Hatchery O&M, sub-activity, to operate the Endangered Fish Propagation Facilities at Ouray National Wildlife refuge, Utah)

Reduction of Bureau of Reclamation Overhead Charges: we would like to make this Committee aware of what we consider to be excessive overhead costs on Safety of Dams projects and project O&M. Bureau charges are adding 50 percent to 60 percent to the cost of O&M and repair projects. Of that added cost, almost half comes from the application of the Bureau's overhead surcharge. Congress should hold the Bureau accountable for these costs by requiring the Bureau to study less costly alternatives for the delivery of these basic services.

Mr. Chairman, I would like to give you an example of these excessive charges on a project that we are involved with.

Introduction.—The Southeastern Colorado Water Conservancy District is the local public-agency sponsor of the Fryingpan-Arkansas Project. The multipurpose Fry-Ark Project annually delivers approximately 70,000 acre-feet of trans-mountain water to eastern Colorado cities and farms, serving a population of 620,000 and irrigating over 200,000 acres. Authorized in 1962, the Fry-Ark Project was built and is today operated and maintained by the Bureau of Reclamation. The Southeastern District has the financial responsibility for the reimbursable construction costs and annual operation and maintenance costs of the Project. That obligation is met through the assessment of a tax on all real and taxable personal property within the nine-county service-area of the District, and through direct water and storage charges. In 1999 the Southeastern District and our constituents will send the Bureau over $5.7 million. For the most part we consider it an investment in much needed water for our local communities.

In 1997 the Bureau of Reclamation determined that major "Safety of Dams" (SOD) repairs were needed at the Pueblo Reservoir Dam, the largest storage facility in the Fry-Ark Project system. Initial cost estimates for the repairs were over $28 million. The costs would be over and above the annual repayment and O&M costs, and would be shared between the federal government and the Southeastern District. Under the federal Safety of Dams Act of 1978 and 1984, the Bureau (federal taxpayers) would pay for 85 percent of the costs while local sponsors pay for 15 percent of the costs. That means that the Southeastern District would pay about $4 million, which is about 60 percent of the District's $6.3 million total annual budget. The District has committed reserve funds and assessed additional user fees in order to meet this additional financial obligation.

Because the District's financial obligations for the Fry-Ark Project are substantial, and growing, we take a keen interest in how the Bureau of Reclamation spends our constituents' dollars.

Excessive Administrative Costs.—The Safety of Dams (SOD) project at Pueblo Dam has again raised concerns regarding the cost of the Bureau of Reclamation's administration of project operations and repairs (work began in 1997 and will be complete Spring 2001). As documented in our Cost Comparison Report, the Bureau of Reclamation's administration, or "non-construction" costs, of the SOD repair project (design, engineering, oversight, construction management, contract administration, etc.) Adds 48 percent to 58 percent to cost of the construction project, private-sector industry standards suggest the 15 percent to 25 percent is a reasonable factor to administer a construction project of this type.

The Bureau of Reclamation did not give the District the option to administer the SOD repair project ourselves (such authority may not exist). However, in a side-by-side comparison of the Bureau's estimated administrative costs and the cost to administer the project at a local level, we believe we could save at least $5 million. That would save the federal taxpayers $4.25 million and the District $750,000, which is a lot of money to us. It's simple to understand where the savings come from when you compare the organizational chart for the Bureau's administration with the organizational chart for our local option.

The Added Cost of Overhead Surcharge.—All Bureau of Reclamation (BOR) direct labor costs charged to the Safety of Dams Project at Pueblo pay for the Bureau's administrative functions for the Project. In addition, the Bureau applies a surcharge to these direct labor costs to cover general BOR overhead. Based upon Bureau accounting of the total expenditures to date on this project ($5.2 million since fiscal year 1997), nearly $1.5 million is to pay for these overhead surcharges. To put that in perspective, the cost of direct labor for Bureau personnel to work on this project has cost $1.8 million to date. These overhead surcharges nearly double the administrative costs on this SOD project. In many cases the same is true for normal operation and maintenance on Bureau Projects. Because the Bureau of Reclamation handles the O&M for the Fry-Ark Project and assess a surcharge on every direct labor hour, a sizable portion of the District's annual payment's for O&M never benefit the Project. While these dollars are being siphoned off for general Bureau administration, we fall further and further behind in addressing critical repair and maintenance on Project facilities.

Bureau Response to Date.—Bureau decision makers on the Pueblo Dam SOD Project have responded to the District's request to re-evaluate their non-construction costs. As we were negotiating a repayment contract for our share of these repair costs, we asked the Bureau to re-think their estimated costs for "construction management." Original estimates had this line item at $7.6 million just to manage the day-to-day work of the on-site contractor who actually does the repair work. With some repeated encouragement from the District, the Bureau did lower the estimated cost for construction management down to $4.3 million. The actual numbers will not be known for several months. Even with this adjustment in estimated costs, the Bu-

reau's administration of this SOD Project nearly exceeds the actual bid price for the major construction component of the Project (contract for RCC placement—$8.9 million; Bureau non-construction costs—$8.3 million).

Conclusions and Recommendations.—The Southeastern District is proud to be the local sponsor for the Fryingpan-Arkansas Project and has considered itself a willing partner with the Bureau of Reclamation on the development and operation of the Project since Congress authorized the Project in 1962. However, the present-day cost of doing business with the Bureau of Reclamation makes it more and more difficult for the District to afford the partnership. The excessive administrative charges and surcharges on the Pueblo Dam SOD Project are just one example of just how costly it is to do business with the Bureau. We have similar concerns with the Bureau's operation and maintenance of the Fry-Ark Project. It is difficult for us to repeatedly go back to our constituents to ask them for more money to keep pace with the Bureau's costly business practices.

We offer the following recommendations as an alternative to the status quo:

1. Allow for local administration of Safety of Dams projects and O&M on Bureau facilities to reduce costs to local beneficiaries and the federal taxpayer.

2. Reduce the Bureau's administrative structure so that the fundamental services of the Bureau can be delivered at less cost—this would allow for a reduction in the overhead surcharge rates now being applied to maintain the current Bureau administrative structure.

3. Totally eliminate or substantially reduce the overhead surcharges on all SOD projects—the general administrative functions of the Bureau should already be covered by the current surcharges on Project O&M and other direct charges.

4. Review and audit the Bureau's application of their "cost recovery objectives and policies", and "contracts and repayment policy"—local water users cannot even discuss their future water management objectives with the Bureau without being charged—where does this money go?

Mr. Chairman and Members, your time and interest in these matters is greatly appreciated. As I present these issues and requests to you, I recognize the difficulty you have in meeting these needs along with the many others you have been presented. Of course, like the others, the requests of the Arkansas River Basin Interstate Committee are important to us and our constituents. Your fair consideration of the needs of the member states of the Interstate Committee is all that I can ask.

Thank you for your commitment to the water resource needs of our citizens.

PREPARED STATEMENT OF GERALD H. HOLMAN, CHAIRMAN FOR KANSAS, ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of the committee, I am Gerald H. Holman, Senior Vice President of the Wichita Area Chamber of Commerce, Wichita, Kansas and Chairman of the Kansas Interstate Committee for the Arkansas Basin Development Association. This statement is submitted on behalf of the entire Kansas Delegation.

We are honored to join with our colleagues from the states of Oklahoma, Arkansas, Colorado, and Missouri to form the five (5) state Arkansas River Basin Interstate Committee. We are unified as a region and fully endorse the statement of the Arkansas River Basin Interstate Committee.

In addition to the important projects listed below, we state our unanimous support for the continued construction of the authorized Montgomery Point Lock and Dam Project to maintain viable navigation for commerce on the McClellan-Kerr Navigation System. This inland waterway is vital to the economic health of our area. Your support is vital to maintain its future viability. Construction is well underway and continued funding authorization is needed. We state our unanimous support for the $44 million needed by the Corps of Engineers to maintain the most economical and cost efficient construction schedule.

The water resources projects in the Kansas portion of the Arkansas River Basin have been carefully reviewed by the Kansas delegation and reflect accurately the need. Many of the projects are safety, environmental and conservation oriented. We are grateful for your past commitment and respectfully request your continued commitment.

We ask for your continued support for these important Bureau of Reclamation projects on behalf of the Wichita/South Central Kansas area:

1. *Equus Beds Groundwater Recharge Demonstration Project.*—This is the continuation of a Bureau of Reclamation project jointly endorsed by the City of Wichita, Groundwater Management District No. 2 and the State of Kansas. This model technology is demonstrating the feasibility of recharging a major groundwater resource supplying water to nearly one-half million irrigation, municipal and industrial

users. The full scale project, when implemented, will capture flood flows from the Little Arkansas River providing water for use during times of low rainfall or dry conditions and will also reduce on-going degradation of the existing groundwater quality by minimizing migration of saline water. The Bureau of Reclamation pilot project is fully operational. Data positively supports predictions that the full scale project can be successful and is capable of meeting the increasing water resource needs of the area to the mid 21st century. The pilot project is scheduled for an additional two years to confirm early findings.

The Equus Beds provides approximately half of the Wichita area regional municipal water supply. This recharge project is vital to the future of the metropolitan Wichita area and surrounding farming communities. Governor Graves supports this much needed project as a benefit to 20 percent of the state's population. We are grateful for your consistent funding support since fiscal year 1995 which totals $3 million as a compliment to cost share funds provided by the City of Wichita.

We request continued funding in the amount of $500,000 for fiscal year 2000.

For fiscal year 1998, the Conference Committee also approved the following report language: "The conferees direct the Bureau of Reclamation to notify the Committees on Appropriations of the House and the Senate before reprogramming any funds from the Equus Beds Groundwater Recharge Demonstration Project in Kansas." This or similar language was also approved in fiscal year 1999. We request this or similar language remain for fiscal year 2000.

2. *Cheney Reservoir.*—The reservoir provides greater than 50 percent of Wichita's regional water supply. Two environmental problems threaten the water quality and longevity of the reservoir. One is sedimentation from soil erosion and the other is non-point source pollution, particularly the amount of phosphates entering the reservoir resulting in offensive taste and odor problems. A partnership between farmers, ranchers and the City of Wichita has proven beneficial in implementing soil conservation practices and to better manage and/or eliminate non-point source pollution. This partnership must continue indefinitely to protect the reservoir and the Wichita water supply and therefore, on-going funding will also be important. The City of Wichita is providing funding for this critical, nationally acclaimed model project. We request continued funding in the amount of $125,000 for fiscal year 2000. As the funding from Section 319 of the Clean Water Act is phased out, we request another source to maintain funding at a total of $125,000.

Recently, the Bureau of Reclamation completed a Comprehensive Facility Review for the Cheney Dam. The Review concluded that significant damage exists in the soil-cement slope of the dam, which must be fully determined, and needed repairs completed. Present plans are to lower the reservoir during the winter of 1999/2000 to accurately determine needed repairs and then complete those repairs. Lowering the reservoir the necessary 4 feet will reduce available water supply by 24 percent. Repairs must be completed at the time the reservoir is lowered. We request funding support in the amount of $500,000 to accomplish the work required by the Bureau of Reclamation.

3. *Arkansas River Mineral Intrusion Study.*—A critically important research is the Mineral Intrusion Study in the Equus Beds Aquifer along the Arkansas River between the cities of Nickerson and Hutchinson. Ground water pumping in the aquifer is inducing saltwater from the river into the freshwater supplies of the Equus Beds. The State of Kansas has supported this project with cost share monies and now the Bureau of Reclamation is funding completion of the modeling. Data collection was complete at year end 1998 and the report could be published by year end 1999. Special funding for this project is not needed in fiscal year 2000. However, following analysis of the study results, follow-on projects might be warranted along with federal funding.

Many of our agricultural communities have historically experienced major flood disasters, some of which have resulted in multi-state hardships involving portions of the state of Oklahoma. The flood of 1998 emphasized again the need to rapidly move needed projects to completion. Approximately 1,600 homes were damaged or destroyed with damage totaling approximately $38 million. Most of the damage occurred in Sedgwick, Butler and Cowley counties. Our small communities do not have the necessary funds or engineering expertise. Federal support is needed. Projects in addition to local protection are also important. This Committee has given its previous support to Kansas Corps of Engineers projects. We request your continued support for the projects listed below.

1. *Arkansas City, Kansas Flood Protection.*—Unfortunately, this project was not completed prior to the flood of 1998. The flood demonstrated again the critical need to protect the environment, homes and businesses from catastrophic damages from either Walnut River or Arkansas River flooding. When the project is complete, damage in a multi-county area will be eliminated and benefits to the state of Oklahoma

just a few miles south will also result. The Secretary of the Army was authorized to construct the project in fiscal year 1997. We request your continued support in the amount of $4.3 million for fiscal year 2000.

2. *Winfield, Kansas Flood Protection.*—This project is scheduled for completion in June 1999. However, project closeout work will continue into fiscal year 2000. We greatly appreciate the support to complete the much needed project as was again demonstrated by the flood of 1998. We request continued funding at the level needed by the Corps of Engineers to closeout the project.

3. *Walnut and Whitewater River Watersheds, Kansas, Reconnaissance Study.*—A reconnaissance study of the water resource problems in this watershed is critical. The devastating flood of 1998 left more than 600 homes and businesses damaged in and around the city of Augusta. In addition, local officials are concerned about the economic future of the area due to water supply and infrastructure constraints. A study would evaluate the basin needs and would include a reevaluation of the proposed Douglass Lake project. We request funding in the amount of $100,000 to conduct the reconnaissance study.

4. *John Redmond Reservoir Reallocation Study.*—John Redmond Reservoir remains a primary source of water supply for many small communities in Kansas. It is suffering loss of capacity ahead of its design rate because of excessive deposits within the conservation pool. The flood pool remains above its design capacity. A study would ascertain the equitable distribution of sediment storage between conservation and flood control storages and also evaluate the environmental impact of the appropriate reallocation. Funding requirements for the Corps of Engineers study is $550,000. We request your support.

5. *Upper Arkansas River Watershed, Kansas, Reconnaissance Study.*—A reconnaissance study of the high flow carrying capacity of the Arkansas River from the Colorado State Line to the vicinity of Great Bend is important to western Kansas. This study would compliment the research accomplished on the Colorado portion of the river below the federally-constructed John Martin Dam. Lack of flows over the past two decades has allowed vegetation to encroach into the river channel, thereby restricting its ability to convey flood flows during runoff periods. Additionally, the delineation of the Ordinary High Water Mark separating the river channel property between the public trust and private lands has become muddled because of the lack of definition of a permanent channel in the Western Kansas reach. The study will evaluate the watershed changes to determine if flood damage prevention, watershed and ecosystem restoration or other solutions to water resource problems in the basin are warranted. We request this project be funded in the amount of $100,000 to complete the necessary research.

6. *Grand Lake Feasibility Study.*—The Grand-Neosho River Committee was formed at the request of the Kansas and Oklahoma congressional delegations to evaluate water resource problems associated with the adequacy of existing real estate easements necessary for flood control operations which affect both Kansas and Oklahoma. A study authorized by the Water Resources Development Act of 1996 was completed in September of 1998 and determined that if the project were constructed based on current criteria, additional easements would be acquired. A Feasibility study is now required to determine the most cost-effective solution to the real estate inadequacies. Changes in the operations of the project or other upstream changes could have a significant impact on flood control, hydropower, and navigation operations in the Grand (Neosho) River system and on the Arkansas River Basin system, as well. We request funding in the amount of $3 million in fiscal year 2000 to fully fund Feasibility studies for this project.

7. *Grand (Neosho) Basin Watershed Reconnaissance Study.*—A need exists for a basin wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. The reconnaissance study would focus on the evaluation of institutional measures which could assist communities, landowners, and other interests in southeastern Kansas and northeastern Oklahoma in the development of non-structural measures to reduce flood damages. We request funding in the amount of $100,000 in fiscal year 2000 to conduct the study.

8. *Continuing Authorities Program.*—We support funding for this program including the Small Flood Control Projects Program (Section 205 of the 1948 Flood Control Act, as amended) as well as the Emergency Streambank Stabilization Program (Section 14 of the 1946 Flood Control Act, as amended). Smaller communities in Kansas (Iola, Liberal, Medicine Lodge, Iola, McPherson, Augusta, Parsons, Altoona and Coffeyville) have requested assistance from the Corps of Engineers and are currently on the waiting list. We urge you to support these programs to the $40 million programmatic limit for the Small Flood Control Projects Program and $15 million for the Emergency Streambank Stabilization Program.

9. *Operation, Maintenance and Planning Assistance Budgets.*—To effectively manage water resources in the state, continued funding for the Corps of Engineers for planning assistance, operation and maintenance is needed, specifically for Water Control. Of particular interest at this time is on-going stream gaging support to help plan and develop solutions to potential flooding so the devastating effects of the flood of 1998 will not happen in the future. Continued funding at the programmatic limits, specifically for Water Control, is requested.

Your continued support of a most important U.S. Department of Interior, Fish & Wildlife Service project is very much appreciated:

1. *Quivira National Wildlife Refuge.*—This is a joint project involving the U.S. Fish & Wildlife Service—Region 6, the State of Kansas, the local Groundwater Management District and the Water Protection Association of Central Kansas. Quivira provides a resting area for waterfowl and endangered species during their annual migrations in the Central Flyway. The Refuge is comprised of a series of shallow pools totaling about 6,500 surface acre-feet and is part of the Rattlesnake Creek basin. The Rattlesnake Creek basin has experienced groundwater and streamflow declines due to climatic conditions as well as expansion of irrigated agriculture. An engineering feasibility study is nearing completion which will identify the watershed-based options available for producing the most efficient and effective use of the water resources in the Rattlesnake Creek basin to protect the Wildlife Refuge as well as the agriculture economy of the area. We appreciate your previous funding in fiscal year 1996 and fiscal year 1997. Federal funds along with cost share funds from the State of Kansas and area businesses/organizations were sufficient to complete the study. No funding was requested for fiscal year 1998 or fiscal year 1999 and none is requested for fiscal year 2000. However, future funding requests may be made.

Finally, we are most concerned with any proposal to limit participation of both the Corps of Engineers and Bureau of Reclamation in development and protection of water resources infrastructure. It is essential to have the integrity and continuity these agencies provide on major public projects. Your continued support of these vital agencies, including funding, will be greatly appreciated. Our infrastructure must be maintained and where needed, enhanced for the future.

Mr. Chairman and Members of this Committee, we thank you for the dedicated manner in which you and your colleagues have dealt with the Water Resources Programs and for allowing us to present our views and recommendations. We look forward with great expectations and hope for the future of water resource development in Kansas and the entire Arkansas River Basin.

PREPARED STATEMENT OF JAMES M. HEWGLEY, JR., CHAIRMAN FOR OKLAHOMA ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of the committee, I am James M. Hewgley, Jr., Oklahoma Chairman of the Arkansas River Basin Interstate Committee, from Tulsa, Oklahoma.

It is my privilege to present this statement on behalf of the Oklahoma Members of our committee in support of adequate funding for water resource development projects in our area of the Arkansas River Basin. Other members of the Committee are: Mr. Ted Coombes, Tulsa; Mr. Edwin L. Gage, Muskogee; and Mr. Terry McDonald, Tulsa; Mr. Lew Meibergen, Enid.

Together with representatives of the other Arkansas River Basin states, we fully endorse the statement presented to you by the Chairman of the Arkansas River Basin Interstate Committee. We appreciate the opportunity to present our views of the special needs of our State concerning several studies, projects and programs.

As we have testified in the past, serious problems exist at the waterway entrance to the McClellan-Kerr Arkansas River Navigation System. Extensive modeling and testing has proven that construction of Montgomery Point Lock and Dam is the only acceptable means to correct the problem. The project is well underway and adequate funding must follow to keep the project on its construction schedule.

Your recognition, as well as that of the Administration, of the importance of constructing Montgomery Point Lock and Dam is very gratifying. To date, you and your colleagues have appropriated $107,3 million for engineering, site acquisition and construction. This action is very much appreciated.

We are grateful that the Congress, in Public Law 102–580, directed that "The Secretary shall proceed expeditiously with design, land acquisition and construction of the Montgomery Point Lock and Dam on the White River, Arkansas, authorized as part of the McClellan-Kerr Waterway by section 1 of the River and Harbor Act of July 24, 1946 (60 State. 635–363)."

We respectfully request the Congress to appropriate $44 million in the fiscal year 2000 budget cycle to continue construction of the authorized project. This is the amount the Corps of Engineers has indicated is necessary to keep the project on schedule. This will help insure the project is completed and in operation as soon as possible at the lowest possible cost.

Mr. Chairman, members of this distinguished Committee, we respectfully remind each of you this navigation system has brought low cost water transportation to Oklahoma, Arkansas and surrounding states. There has been in excess of $5 billion invested in the construction and development of the McClellan-Kerr Arkansas River Navigation System by the Federal Government and the public and private sector. There have been more than 50,000 jobs created as a result of the partnered investment.

Tow Haulage Equipment, Oklahoma.—We strongly urge the Committee to provide funding in the amount of $1.5 million to initiate the installation of tow haulage equipment on the McClellan-Kerr Arkansas River Navigation System at designated locks in Oklahoma. This project would involve installation of tow haulage equipment on W.D. Mayo Lock and Dam #14, Robert S. Kerr Lock and dam #15, and Webbers Falls Lock and Dam #16, on the Oklahoma portion of the waterway. The tow haulage equipment is needed to make transportation of barges more economical by allowing less time for tows to pass through the various locks.

We are particularly pleased that the President's budget includes funds to advance work for Flood control in Oklahoma. Of special interest to our committee is funding for the Skiatook and Tenkiller Ferry Lakes, Dam Safety Assurance Project in Oklahoma. We are pleased that construction funding has been provided for these important projects.

We support funding for the Grand Lake and Arkansas River System Operations Feasibility Studies. We also support funding for reconnaissance studies of watershed development needs for the Cimarron River Basin, the Illinois River Basin, the Grand (Neosho) Basin Watershed, and the Upper Arkansas River Basin.

Grand Lake Feasibility Study.—We support the ongoing effort to evaluate water resource problems in the Grand-Neosho River basin in Kansas and Oklahoma and request funding to initiate a comprehensive Feasibility study. We support the continued funding of studies to evaluate solutions to upstream flooding problems associated with the adequacy of existing real estate easements necessary for flood control operation of Grand Lake Oklahoma. A study, authorized by the Water Resources Development Act of 1996 was completed in September of 1998 and determined that if the project were constructed based on current criteria, additional easements would be acquired. A Feasibility study is now required to determine the most cost effective solution to the real estate inadequacies. Changes in the operations of the project or other upstream changes could have a significant impact on flood control, hydropower, and navigation operations in the Grand (Neosho) River system and on the Arkansas River basin system, as well; we urge you to provide $3 million to fully fund Feasibility studies for this important project in fiscal year 2000.

Cimarron River Basin reconnaissance Study.—We request funding in the amount of $100,000 to conduct a reconnaissance study of the Cimarron River Basin. Studies conducted by the Tulsa district in the 1970's identified the potential for flood damage reduction measures in the Cimarron River Basin. Several potential multiple purpose reservoirs were considered for development in response to needs for flood control, water supply, fish and wildlife, and recreation. Development and operation of these projects in conjunction with the existing system of reservoirs in the Arkansas River Basin would provide for flood damage reduction along the Cimarron River downstream as well as along the Arkansas River from Keystone Dam near Tulsa to Fort Smith, Arkansas. These projects would also offer the potential for development of hydropower and navigation benefits along the McClellan-Kerr Arkansas River Navigation System. Additional water resource development, including restoration of habitat lost as a result of Federal construction and rehabilitation of Federally constructed watershed projects require further evaluation within the basin.

Illinois River Watershed Reconnaissance Study.—We request funding in the amount of $100,000 to conduct a reconnaissance study of the water resource problems of the Illinois River Basin. The Illinois River watershed is experiencing continued water resource development needs and is the focus of ongoing Corps and other agency investigations. However, there are increasing watershed influences upstream of Lake Tenkiller which impact on the quality of water available for fish and wildlife, municipal and industrial water supply users, and recreation users of the Lake Tenkiller and Illinois river waters. The committee requests funding to initiate reconnaissance studies for the Illinois River Watershed in fiscal year 2000.

Grand (Neosho) Basin Watershed Reconnaissance Study.—We request funding in the amount of $100,000 to conduct a reconnaissance study of the water resource

problems in the Grand (Neosho) Basin in Oklahoma and Kansas. There is a need for a basin-wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. The reconnaissance study would focus on the evaluation of institutional measures which could assist communities, landowners, and other interests in northeastern Oklahoma and southeastern Kansas in the development of non-structural measures to reduce flood damages in the basin. The committee requests funding to initiate reconnaissance studies in fiscal year 2000.

Arkansas River System Operations Feasibility Study, Arkansas and Oklahoma.—We also request funding for a Feasibility study of the optimization of the Arkansas River system in Arkansas and Oklahoma. The system of multipurpose lakes in Arkansas and Oklahoma on the Arkansas River and its tributaries supports the McClellan-Kerr Navigation System, which was opened for navigation to the Port of Catoosa at Tulsa, Oklahoma, in 1970. The navigation system consists of 445 miles of waterway that winds through the states of Oklahoma and Arkansas. This study would optimize the reservoirs in Oklahoma and Arkansas that provide flows into the river with a view toward improving the number of days per year that the navigation system would accommodate tows. The committee requests funding of approximately $500,000 to initiate feasibility studies in fiscal year 2000.

We also request funding for reallocation studies for John Redmond Reservoir in Kansas, Broken Bow, Wister and Tenkiller Lakes in Oklahoma.

John Redmond Reservoir Reallocation Study.—We request funding of approximately $550,000 to conduct a reallocation study of the water storage of John Redmond Reservoir, Kansas. A reallocation study is needed at John Redmond Reservoir to insure an equitable distribution of sediment storage between conservation and flood control storage's. This study will help insure the project can continue to provide for both important water resource purposes.

Broken Bow Lake Reallocation Study.—Public Law 102–580, PP 102(V) provided for the reallocation of a sufficient amount of existing water supply storage space to support the Mountain Fork Trout Fishery. Releases of water for the fishery is to be undertaken under terms and conditions acceptable to the Secretary of the Army.

The Corps has been cooperating with the state of Oklahoma to make releases for the trout fishery in a series of demonstration programs since 1989. There is a Federal interest in the reallocation of storage from one project purpose if it achieves an increase in the net National Economic Development benefits and has no significant environmental impacts. However, recreation is a low priority for Army Civil Works funding and the Federal government is limited to no net out-of-pocket expense. A re-allocation study must be conducted to determine the amount of storage needed to support the fishery, costs, benefits, and a National Environmental Policy Act evaluation for impacts to existing project purposes and downstream environments. The results of this re-allocation study will be documented in a report to be used by the Assistant Secretary of the Army. The report will provide recommendations for future interim use arrangements. Mr. Chairman, we support funding in the amount of $170,000 for this study.

Wister Lake Reallocation Study.—We request funding of approximately $450,000 to conduct a reallocation study of the water storage of Wister Lake, Oklahoma. Wister Lake is located on the Poteau River near Wister, Oklahoma. The lake was completed in 1949 for flood control, water supply, water conservation and sediment control. Wister Lake is the primary water resource development project in the Poteau River Basin. It provides substantial flood control, municipal and industrial water supply, and recreation benefits for residents of LeFlore County, Oklahoma, and the southeastern Oklahoma region. Originally constructed for flood control and water conservation, seasonal pool manipulation was initiated in 1974 to improve the project's water supply and recreation resources. The conservation pool level was permanently raised in the Water Resources Development Act of 1996. A reallocation study, which would include National Environmental Policy Act (NEPA) coordination, is required. NEPA and other resource evaluation and coordination would include the assessment of cultural and fish and wildlife impacts, potential mitigation measures, and reallocation studies.

Lake Tenkiller Reallocation Study.—We request funding of approximately $500,000 to conduct a reallocation study of the water storage of Tenkiller Ferry Lake, Oklahoma. Tenkiller Ferry Lake is located on the Illinois River approximately 7 miles northeast of Gore, Oklahoma, and 22 miles southeast of Muskogee, Oklahoma. Construction of the existing project began in June 1947 and the dam was completed in May 1952. The proposed study would involve reallocation of the authorized project purposes among competing users of the project's flood control, hydropower and water supply resources.

We also support funding for the Continuing Authorities Program including the Small Flood Control Projects Program, (Section 205 of the 1948 Flood Control Act, as amended) and the Emergency Streambank Stabilization Program, (Section 14 of the 1946 Flood Control Act, as Amended). We want to express our appreciation for your continued support of those programs.

We request your support of the Planning Assistance to States Program (Section 22 of the 1974 Water Resources Development Act) which authorizes the Corps of Engineers to use its technical expertise in water and related land resource management to help States and Indian Tribes solve their water resource problems. The program is used by many states to support their State Water Plans. As natural resources diminish, the need to manage those resources becomes more critical. We urge your continued support of this important program as it supports States and Native American Tribes in developing resource management plans which will benefit citizens for years to come. The program is very valuable and effective, matching Federal and non-Federal funds to provide cost effective engineering expertise and support to assist communities, states and tribes in the development of plans for the management, optimization, and preservation of basin, watershed, and ecosystem resources. The Water resources Development Act of 1996 increased the annual program limit from $6 million to $10 million and we urge this program be fully funded to the programmatic limit of $10 million.

Section 205. Although the small Flood control Projects Program addresses flood problems which generally impact smaller communities and rural areas and would appear to benefit only those communities, the impact of those projects on economic development crosses county, regional, and sometimes state boundaries. The communities served by the program frequently do not have the funds or engineering expertise necessary to provide adequate flood damage reduction measures for their citizens. Continued flooding can have a devastating impact on community development, so much so, in fact, that there is currently a backlog of requests from communities who have requested assistance under this program. Oklahoma communities that have requested assistance from the Corps of Engineers under the Section 205 authority and are currently on a waiting list include Cherokee, Sayre, Dewey, McAlester, Claremore, and Warr Acres. Additionally, the Pawnee Indian Tribe has requested the Corps' assistance with flooding problems. We urge this program be fully funded to the programmatic limit of $40 million.

Section 14. Likewise, the Emergency Streambank Stabilization Program provides quick response engineering design and construction to protect important local utilities, roads, and other public facilities in smaller urban and rural settings from damage due to streambank erosion. The protection afforded by this program helps insure that important roads, bridges, utilities, and other public structures remain safe and useful. By providing small, affordable, and relatively quickly constructed projects, these two programs enhance the lives of many by providing safe and stable living environments. There is also a backlog of requests under this program; counties in Oklahoma that have requested assistance under the Section 14 authority and are on a waiting list include Blain, Wood, Kiowa, and Kingfisher. The city of Clinton, Oklahoma, and Waurika Master Conservancy District have also requested assistance. We urge this program be funded to the programmatic limit of $15 million.

Sections 1135 and 206. We also request your continued support of and funding for the Ecosystem restoration Programs (Section 1135 of the Water Resources Development Act of 1986 and Section 206 of the Water Resources Development Act of 1996). The Ecosystem restoration Programs are relatively new programs which offer the Corps of Engineers a unique opportunity to work to restore valuable habitat, wetlands, and other important environmental features which previously could not be considered. Local interest has been expressed for potential ecosystem restoration projects located at Great Salt Plains Reservoir, the Mountain Fork River, Meadow Lake, and the North Canadian River in Oklahoma. The Section 1135 Program is already providing significant benefits to the states of Kansas and Oklahoma. A Section 1135 project is complete at Arcadia Lake in Oklahoma. A Section 1135 project is underway at the Sequoyah National Wildlife Refuge. We urge that these programs be fully funded to programmatic limit of $25 million each.

We also request your continued support of the Flood Plain Management Services Program (Section 206 of the 1960 Flood Control Act) which authorizes the Corps of Engineers to use its technical expertise to provide guidance in flood plain management matters to all private, local, state, and Federal entities. The objective of the program is to support comprehensive flood plain management planning. The program is one of the most beneficial programs available for reducing flood losses and provides assistance to officials from cities, counties, state, and Indian Tribes to ensure that new facilities are not built in areas prone to floods. Assistance includes flood warning, flood proofing, and other flood damage reduction measures, and crit-

ical flood plain information is provided on a cost reimbursable basis to home owners, mortgage companies, realtor's and others for use in flood plain awareness and flood insurance requirements.

We also request your support and funding for the Challenge 21 Program. The Challenge 21 Program is in support of the Clean Water Action Plan and would provide opportunity for the Corps of Engineers to work closely with other Federal, State, and Local land and water resource agencies to develop comprehensive solutions to reduce flood damages and improve quality of life. The program would focus on watershed-based solutions that could also include the restoration of riparian and wetland ecosystems. Although the construction of dams and levees has prevented billions of dollars in flood damages, many communities still experience disastrous flood events. Some of that flooding can be attributed to over development in and around the flood plain. The Challenge 21 program will focus on opportunities to move homes and businesses from harms way through structural and non-structural measures and through comprehensive watershed planning efforts. We support funding of this important initiative.

On a related matter, we would share with you that we are greatly concerned that the Administration has not requested sufficient funds to meet the increasing infrastructure needs of our nation. The Administration's request for $3.9 billion will not keep projects moving at the optimum level to complete them on a cost effective basis. Moving the completion dates out is an unacceptable exercise since 50 percent of the funds come from the Waterways Trust Fund. This will not only waste federal funds but, those from the trust fund as well.

The Administration's proposal to use the money from the not-yet-enacted Harbor Services Fund, is akin to counting your chickens before they hatch. Mr. Chairman, this committee finds that proposal unacceptable. We strongly urge the Appropriations Committee to raise the Corps of Engineers budget to $4.7 billion so that the Corps can meet the obligations of the Federal Government to people of this great country.

Concerning another related matter, we have deep concerns about the attempt to re-authorize the Endangered Species Act without significant beneficial reforms. If a bill is passed through without reforms, it will be devastating to industry and the country as a whole. We strongly urge you to take a hard look at any bill concerning this re-authorization and insure that it contains reasonable and meaningful reforms.

The Tenkiller Utilities Authority.—The Tenkiller Utilities Authority (TUA) was established October 19, 1998 as a Public Trust under Oklahoma Law. TUA is comprised of twenty-nine (29) rural water districts, rural towns, and Native American Governments. TUA's main purpose is the production of safe drinking water on a wholesale basis distributed through our Authority members to about 60,000 retail customers. About 12,000 of that number are not presently serviced at all. Current providers are individually struggling to meet increasingly stringent drinking water standards and some are operating with outdated equipment. By coming together under a single Authority, providers can gain economies of scale and provide uniform, high quality water at consistent prices.

TUA has been working closely with the Oklahoma water resources board, the U.S. Army Corps of Engineers, Eastern Oklahoma Development district, Cherokee Hills Resource Conservation and Development Project, and the Cherokee Nation. The cooperation and partnering among these groups has been outstanding. The TUA has been successful in bringing together, in a single regional entity, varied interests who share a common goal: Improving the health and quality of life for all citizens in the Lake Tenkiller region. The great challenge now before the TUA is to finalize the plan and build the system. The members of the TUA believe they can make it happen.

Mr. Chairman, we include the section on The Tenkiller Utilities Authority to show that the studies and projects that are supported by the Arkansas River Basin Interstate Committee, are necessary and essential to the further development of rural utilities and compliance with mandated government regulations as they relate to water resources.

Mr. Chairman, we appreciate this opportunity to present our views on these subjects.

PREPARED STATEMENT OF CHRISTOPHER J. BRESCIA, PRESIDENT, MIDWEST AREA RIVER COALITION 2000

Mr. Chairman and Members of the Committee, I am Christopher J. Brescia, President of the Midwest Area River Coalition 2000 (MARC 2000). Thank you for

the opportunity to submit our coalition's views on the needs of the Mississippi Valley.

I would like to structure this testimony to address:

—The shortcomings in the President's fiscal year 2000 Budget for the Mississippi Valley Corps of Engineers programs;

—Specific Upper Mississippi/Illinois Waterway fiscal year 2000 appropriations need; and

—Specific concerns with the Upper Mississippi/Illinois Waterway Navigation Feasibility Study.

BACKGROUND

Over 60 percent of the U. S. grain exports reach world markets by transiting the Upper Mississippi River system to our Gulf ports. Returning traffic often brings agricultural inputs, petroleum, coal, steel, cement and other materials into the inner reaches of the Midwest. These exports contribute, on average, $18 Billion per year to our balance of trade and are fundamental to supporting farmer incomes.

According to the independent accounting firm Price Waterhouse, barge traffic originating and terminating on the Upper Mississippi and Illinois Rivers has been estimated to support over 153,000 full-time equivalents (FTEs) or between 306,000 to 459,000 full and part-time jobs in the 10-state Mississippi River Valley. These jobs are estimated to generate $4 Billion in income and between $11–15 Billion in business revenue. This data reinforces other data establishing the strong linkage between the Upper Mississippi and Lower Mississippi Valleys.

Our sixty-year-old lock and dam system on the Upper Mississippi and Illinois Rivers has provided reliable, environmentally friendly and cost-effective barge transportation which currently provides net transportation savings of $1.5 Billion per year to the U. S. economy, including $671 million in savings to farmers. However, in order to continue these benefits, certain lock chambers need to lengthened to accommodate modern tows (Tow boat with 15 barges).

While the 35 dam locations are structurally sound, traffic volume has grown from 2 million tons to over 100 million tons of cargo, creating congestion choke points at the lower portion of the system (five locations on the Upper Mississippi River and two on the Illinois River). This congestion is costing our economy millions of dollars per year and is expected to grow exponentially as traffic increases by 63 to 100 percent over the next 30 years. River congestion, contributing to transportation cost inefficiencies, is a key determining factor that leads to reduced farmer income for those grains exported and in relation to the overall price of corn, soybean and wheat in the heartland. Without efficient water transportation U.S. exports will continue to decline and farmer income will suffer needlessly. Preliminary results from a Texas A&M study identify a potential loss of between $100-$150 million per year to agricultural producers if congestion choke points limit our capacity to process traffic efficiently.

FISCAL YEAR 2000 MISSISSIPPI VALLEY APPROPRIATIONS NEEDS

The Mississippi Valley's civil works needs are under funded by approximately $190 million. The total requested level of $685 million needs to be raised to $875 million in order for key projects to be completed at optimum levels. The President's budget shorts the Mississippi Valley construction program by over $100 million resulting in inefficient time lines, extended schedules, delayed projects, broken commitments to the local sponsors and loss of benefits to the nation.

The President's budget continues to place a strain on the operation and maintenance of the system. It does not even provide sufficient funds to cover "non-deferrable" maintenance and operations services, the bare essentials. An additional $108 million would be needed to take care of these problems.

The perils of flooding that led to the creation of the Mississippi Rivers and Tributaries project are at a higher risk with the President's budget. This integrated project protecting the populations of seven states is quickly eroding in credibility. Levees in place are as much as six feet below grade in height, in other areas below grade in sections. The risk of not providing sufficient funding for this program of national significance is unsupportable. Approximately $70 million in additional funds are needed for the 20+ projects within the scope of this program and for general maintenance.

SPECIFIC UPPER MISSISSIPPI FISCAL YEAR 2000 APPROPRIATION NEEDS

Within the Mississippi Valley's needs, there are approximately $40.5 million additional dollars necessary in the Upper Mississippi, Illinois and Missouri Rivers programs. We would urge the following funds be made available accordingly:

[In millions of dollars]

	Budget request	What we want	Variance
General Investigations:			
Upper Miss Nav Study	6.700	15.700	9.00
Upper Miss Flow Frequency	2.100	2.100	.....
Comprehensive Plan Study	.....	2.000	2.00
Subtotal	.....	.....	11.00
Construction General:			
L&D 24 Part 1 Rehab	3.844	3.844	.....
L&D 24 Part 2 Rehab	1.200	1.200	.....
L&D 25 Rehab	4.560	4.560	.....
Mel Price	2.900	3.900	1.00
EMP	18.955	18.955	.....
L&D 12 Rehab	2.600	([1])	([1])
L&D 14 Rehab	4.092	([1])	([1])
Missouri River Mitigation	5.000	10.000	5.00
L&D 3 Rehab	3.200	3.200	([1])
MS River (MO–OH)	3.000	4.500	1.50
Subtotal	.....	.....	7.50
Operation & Maintenance:			
MS River, MN–MO	103.547	108.547	5.00
MS River (MO–OH)	13.544	.....	.....
Illinois Waterway	25.368	.....	.....
Kaskaskia River Nav.	1.588	.....	.....
Missouri River	7.812	.....	.....
Major Maintenance	.....	17.00	17.00
Subtotal	.....	.....	22.00
Total	.....	.....	40.50

[1] Major maintenance.

Additional funds are needed to implement an expedited pre-construction and design initiative for seven locks extensions on the Upper Mississippi River and Illinois Waterway. Addressing these function now, during the study phase lowers our competitive risk and prepares for whenever Congress authorizes construction, rather than waiting until the full study is completed. In addition, additional funds are needed to initiate a comprehensive study for an integrated flood control system in the Upper Mississippi Basin.

Funding from the construction account in the Upper Mississippi Basin is close to capability levels, except for two categories and the Missouri mitigation program. It is important that additional funding be provided for these accounts to meet efficient time lines and to create additional opportunities for finding creative ways of enhancing the habitat restoration on the Missouri River. Those projects with an asterisk have Major Maintenance counterparts to the Major Rehab projects underway.

One of the most vexing problems has been the lack of operation and maintenance funds to sufficiently address dredging needs, major maintenance needs at key locks and some key safety concerns. An additional $5 million is needed for dredging alone. In many cases the least cost alternative may not be the environmentally preferred alternative needing additional funds. In addition, at L&D #3, there is a clear safety concern requiring extension of the Guardwall Major Maintenance Project ($13.3 M) for which no funds are available. At L&D 12 & 14 there are over $40 million in Major Maintenance project needs that should be expedited. In addition, L&D 27 requires an additional $1.1 M in major maintenance repairs. All these facilities have exceeded their design life and are critical to the functioning of the system. For example, in 1997 L&D 27 was closed for 50 days to replace parts on the miter gates. The estimated cost to navigation for tows waiting was estimated to be $17.5 million that year.

CONCERNS WITH THE UPPER MISSISSIPPI/LLLINOIS WATERWAY NAVIGATION FEASIBILITY STUDY

Mr. Chairman, we have lost confidence in the Upper Mississippi River/Illinois Waterway Feasibility process. We recommend that this Committee review the process and methodology and take whatever steps are necessary to direct the Corps of Engineers to provide Congress with an Interim Feasibility report by June 2000. The competitive position of our nation is at stake and we must be prepared to have Congress informed sufficiently to make important authorization decisions in a WRDA 2000. An independent economic critique will be provided the Committee within the next six weeks to help clarify technical and theoretical flaws in the approach chosen by the Corps of Engineers. MARC 2000 is also prepared to make technical experts available for a briefing of Committee Members and staff as might be deemed appropriate.

MARC 2000 has been part of this study process, working with the Corps of Engineer, other federal agencies and State government representatives for the last six years. Although we can point to some positive outcomes to this process, we are dismayed by the "new" and improved economic model used for calculating benefits and cost. Let's examine some of the assumptions that are embedded in this thinking:

(1) While barge rates will increase due to congestion on the river, rail rates will not increase over the next 50 years and rail will be able to absorb any movements of commodities leaving the river.

Mr. Chairman, we spent two days at Secretary Glickman and Slater's Transportation Summit last year and heard testimony from rail representatives indicating the lack of any additional capacity to move grain. In addition, when coming to this conclusion the Corps acknowledged that they did not consider the increased costs to rail that would have to be borne to increase terminal and switching capacity. And, in interviews with grain companies who use both rail and water, they indicate that the evolving patterns of grain movement, due to global competition are moving in the exact opposite direction required by the rail companies—that is movements over part of the year instead of the whole year. Anyone with any common sense understands the irrational logic behind this assumption, if not the skepticism we hold.

(2) In accepting traffic forecasts, the Corps of Engineers accepted growth lines that do not take into consideration the major impact biotechnology will have in increasing corn and soybean yields or developing specialty grains for export customers.

Despite considerable documentation provided by leading biotech companies and commodity groups, the Corps refuses to accept this possibility in determining the National Economic Development Plan. Many experts agree we are on the threshold of major potential in this field. If the Corps is charged to think on a 50-year time line, then they must incorporate this information accordingly.

(3) Because the Corps is unable to empirically prove the relationship between barge freight increases and whether grain will stay or not stay on the river, they have qualitatively determined "barge freight demand curves."

I won't go into details about this here, our economic paper will, but consider the following. This model assumption claims that relatively small increases in barge rates will lead to major diversion of grain to other uses and conversely, lowering of barge rates sufficiently will lead to major exports of U. S. grain. This assumption is held without regard to knowing the demand capacity of other uses.

Think about that, we are asked to have faith in a model that not only predicts that under certain conditions we will export the total production of the nation, but also predicts that we will export the entire production of the world. What are we going to do, import grain from South America and then export it down the Mississippi River for export to Asia? Our experts have evaluated this model, taken it apart and had discussions with lead economists in the Corps and are aghast at the lack of understanding of basic economic principles and market functions.

(4) This model does not take into account the strategic decisions of competing nations in meeting global customer needs.

This study is supposed to be evaluating the cost and benefits of investing in infrastructure improvements for the future. This cannot be done in isolation of global actions. When strategic investments are considered in many other areas of this country's functioning, countering foreign competition is an integral determinant for timing investment decisions. We do this in business all the time. Not factoring in the competition's capabilities into our strategy to overcome the competition, is selling our country short.

(5) When calculating benefits of the waterway system, the non water-based environmental benefits are not included.

There is strong documentation attesting to lower fuel consumption, lower air emissions and much lower accident rates for barge transportation over other modes. Over the next 50 years the Corps conservatively estimates a 63–100 percent increase in traffic. No societal benefits are attributed to foregone emission clean up costs, energy consumption, fewer fatalities and reduced congestion in our communities. Everywhere in the world societies understand the benefits of moving bulk commodities on the river system, to keep congestion out of cities and volumes off roads, except in the Upper Mississippi Valley. There are no benefits provided for the savings in road repairs that 100 million more tons would cause if truck became the next alternative.

(6) Finally, we are asked to accept a model output that recommends an investment schedule based on average growth as it occurs, rather than anticipating growth.

Grain markets, especially, do not grow systematically. They react to many factors in the production process, ocean-going freight rates, weather around the globe and economic growth cycles of many customers. Therefore, they have many peaks and valleys. If we don't build the infrastructure that will allow the U.S. to grow into market demand, we will lose out further to the competition. If we wait for the congestion on the river to choke us, and try to implement band-aid small-scale investment ideas in key congestion areas, then we will lose. If we had built our highway system to carry existing traffic levels without consideration for growth, we would not have the productivity gains that have permitted our nation's economy to excel. The same principles apply to the waterways.

Thank you for your consideration.

PREPARED STATEMENT OF GEORGE E. WOLF, JR., P.E., ASSISTANT CITY MANAGER/ DIRECTOR OF PUBLIC WORKS, KANSAS CITY, MISSOURI

The City of Kansas City, Missouri welcomes the opportunity to provide written testimony to the Subcommittee on Energy and Water Development regarding appropriations for fiscal year 2000. Herein we discuss our concerns with the President's recommended fiscal year 2000 budget as it relates to flood control projects in the Kansas City area dependent on annual federal funding. All of these projects are essential to the sustainment and revitalization of prominent and long-standing commercial, business and industrial communities in this region, and when complete will provide substantially increased levels of flood protection. Some of these projects are located on urban streams subject to severe flash flooding, which run along major roadways, resulting in an extremely hazardous threat to public safety.

The enclosed attachment shows our fiscal year 2000 funding request made to the Office of Management and Budget last October. Our presentation to OMB was made the morning after yet another terrible flood event ravaged Kansas City taking the lives of eleven people in our community. The most devastating floods were along Turkey Creek and Brush Creek, a tributary of the Blue River. Seven of the fatalities occurred on a bridge crossing Brush Creek just upstream of the Blue River. The small waterway opening at this location restricts the flow in Brush Creek and acts as a dam, backing up floodwater to dangerous depths prior to it overtopping the bridge. The City plans to replace the bridge as soon as possible however, the unimproved Blue River Channel is inadequate to convey the unrestricted flows from upstream.

The Blue River Channel project, currently under construction, represents our most pressing need and for fiscal year 2000 we are requesting that this project be appropriated $25,000,000. This will allow the Corps to make significant progress on the next phase of the Blue River project which reaches upstream to Brush Creek. Work in that reach could then be completed in the fall of 2001, construction of the final phase begun at that same time and the entire project completed in 2003, overall a twenty year construction project. Construction began in 1983 and was originally scheduled for completion in 1998; that has been continually extended due to federal funding constraints.

The Blue River Channel project when complete will significantly reduce the flood threat to inhabitants of the Blue Valley. Additionally, the river winds through a long-standing business district that, after much severe flooding, has now been partially abandoned. The channel improvement will bring many of those sites out of the floodplain and will reduce flooding depths by six to eight feet. This will serve as a means to help reclaim those Brownfield sites in the valley for redevelopment, and to once again build a thriving Blue Valley community.

Kansas City, Missouri appreciates the past assistance we have received with local flood control projects. We are prepared to provide our share of funding in the future,

and respectfully request that federal funding adequate to keep these very important projects moving toward the soonest possible completion be appropriated in the upcoming year.

FISCAL YEAR 2000 APPROPRIATIONS FLOOD CONTROL PROJECTS

The City of Kansas City, Missouri, in cooperation with the Corps of Engineers, presently have five major flood damage reduction projects underway. These consist of the Blue River Channel, Blue River Basin, (also known as Dodson Industrial District), and Swope Park Industrial Area, all along the Blue River in Kansas City, Missouri; and, the Turkey Creek Basin and Kansas Citys, (the study of seven Missouri River levees), both in Missouri and Kansas.

Kansas City fully recognizes the importance of flood control to our community. Over the past several years we have spent nearly $65 million on major flood control projects being done in cooperation with the Corps of Engineers. We appreciate the past assistance we have received with these projects, and are prepared to provide our share of funding in the future.

Our fiscal year 2000 federal appropriations request for the flood control projects is presented in the following table, together with the activity to be performed with those funds by the Corps of Engineers.

Project/Activity	Fiscal year 2000 request	President's budget
Blue River Channel, Kansas City, Missouri: Continue Construction	$25,000,000	$13,700,000
Blue River Basin (Dodson Industrial Dist.), Kansas City, Missouri: Complete Plans,Engineering & Design	500,000	377,000
Turkey Creek Basin, Kansas and Missouri: Continue Plans, Engineering & Design	300,000	266,000
Swope Park Industrial Area, Kansas City, Missouri: Complete Feasibility Study	60,000	58,000
Kansas Citys (7 River Levees), Kansas and Missouri: Begin Feasibility Study	350,000	315,000

The City of Kansas City, Missouri, also requests that the several key programs which provide federal assistance for flood mitigation continue to be made available to local communities and that they be generously supported with annual appropriations. Among these: Small Flood Control Authority, Section 205 of the 1948 Flood Control Act as amended; Flood Plain Management Services, Section 206 of the 1960 Flood Control Act; Planning Assistance to States, Public Law 93–251; and Emergency Bank Stabilization, Section 14 of the 1946 Flood Control Act as amended. We have made use of these programs in the past and will continue to seek out beneficial uses for them in the future.

PREPARED STATEMENT OF FRED THOMAS, SR., CHAIRMAN, PIKITANOI RURAL WATER SUPPLY SYSTEM, KICKAPOO TRIBE

FISCAL YEAR 2000 APPROPRIATIONS REQUEST

The Kickapoo Tribe of Kansas joins with the State of Kansas and rural water districts in 19 counties in the northeastern corner of the state to seek funds for a "special study" of drinking water needs in the region as a continuation and expansion of planning for the Pikitanoi Rural Water System, Kansas. The amount requested is $500,000. The "special study" has a total estimated cost of $1,000,000 and contemplates two years of effort with funding of $500,000 in fiscal year 2000 and $500,000 in fiscal year 2001.

Planning of the project by the Kickapoo Tribe, coordinating with the State of Kansas, began in 1996 and has proceeded to the point that federal funds are needed for continuation. All funds for the project to date have been furnished by the Kickapoo Tribe from its private, non-federal resources. The Kickapoo Tribe requests that funds appropriated for the project will be included in the Corps of Engineers' budget for Water Development.

SIGNIFICANT DEVELOPMENTS

As will be related in the discussion of the history section of this testimony, there have been significant developments in the project. As originally planned by the

Kickapoo Tribe, the project involved a seven county area. Interest in the project has grown to the point that as many as 19 counties are now seeking participation in the planning process. The primary reason for interest is the shortage of high-quality water in this part of Kansas.

The State of Kansas supports the planning effort based on recent agreements in concept for the "special study." The key to the investigation is the study of alternatives to determine if a single system to serve the project area is most appropriate from a financial standpoint. The development of a single system will be compared with the costs of developing several smaller and separate systems. More than one source of water may be involved. While the Missouri River was identified as the best source of water for the seven county area, the "special study" will address sources of water at existing reservoirs on streams tributary to the Missouri River and groundwater potential, even though both potentials may be at some distance from the point of demand. In summary, a comprehensive investigation of water source and configuration alternatives will be undertaken in the "special study."

Finally, while the Corps of Engineers is neither an advocate nor supporter of the project, there has been an effort with the Kansas City District to identify the scope and magnitude of the "special study." If asked, we believe the Corps of Engineers will confirm that the request for appropriations for the "special study " is reasonable given the level of effort required to develop sound cost estimates of alternatives to arrive at the best plan for the region.

HISTORY OF PROJECT

The need for funds for the "special study" is long standing. Several investigations have been undertaken of northeastern Kansas for the purpose of arriving at a solution to a growing shortage of quality water.

The Corps of Engineers studied needs of the area as early as 1993 in Partners for Environmental Progress, Type I Feasibility Study, Northeast Kansas Water Supply. Costs of alternative projects in the 1993 report ranged from $38.0 to $128.4 million, depending on demand assumptions.

The Department of Agriculture developed the Upper Delaware and Tributaries Watershed Plan in 1994. This project studied the water needs of the Kickapoo Nation and other water needs of the region. The primary supply for the regional project was Perry Reservoir. The project contemplated the development of a small reservoir on the Kickapoo Indian Reservation to supply drinking water to the Tribe.

The Kickapoo Tribe completed a needs assessment of its present and future population and associated water requirements within the boundaries of the Kickapoo Indian Reservation as part of the Pikitanoi Project planning. The needs assessment also included submissions from 10 rural water districts and 11 communities within the original study area, which included parts of Doniphan, Brown, Nemaha, Pottawatomie, Jefferson, Jackson and Atchison Counties.

The Kickapoo Tribe planned a wholesale water supply system to serve the area, including the Reservation. The preliminary cost estimate, based on the system shown in Figure 1 for a system diverting from the Missouri River near Atchison, was $127 million. See Table 1 for a statistic summary of the original project. The project would include 304 miles of pipeline from 4" to 24" in diameter and 15 pumping stations of 1,300 horsepower or less. At the original level of interest, the treatment plant and transmission lines would be sized for a demand of 11.6 million gallons per day or 9,669 gallons per minute. The system configuration and the cost estimate were expected to change as more rural water districts joined in the feasibility analysis.

Since completion of the Kickapoo investigation in 1997, other systems in the original seven county area have expressed interest in the project and are supplying information on future needs and points of interconnection to the Pikitanoi Rural Water System. Additionally, the cities of Hays and Russell have expressed interest in the project. Their needs and needs of their region expand the area of interest in the project to an additional twelve counties west of the original project on both sides on Interstate 70. New counties in the project include Leavenworth, Marshall, Riley, Geary, Shawnee, Dickinson, Ottawa, Saline, Lincoln, Ellsworth, Russell and Ellis, bringing the total to 19 counties. Figure 1 distinguishes between the original and the expanded areas, including the cities of Hays and Russell.

The Kickapoo Tribe and other entities are coordinating with the State of Kansas and the Kansas Rural Water Association. The funds requested for fiscal year 2000 will be used to continue investigations by the Kickapoo Tribe, rural water districts and communities in the northeast corner of Kansas. The work will be conducted by non-federal entities with oversight by the Corps of Engineers.

ALTERNATIVES FOR WATER SUPPLY ARE SUBJECT OF SPECIAL STUDY

The need for drinking water in northeast Kansas is acute. Local surface water and groundwater sources are highly developed. When a request of the Kickapoo Tribe for additional water from its current emergency supplier, the City of Horton, was made, it became clear that the City was without options to increase deliveries to the Reservation. The Tribe now relies on the flows of the Delaware River at a diversion point constructed by the Corps of Engineers. The flows of the stream at the point of diversion are not dependable and will fall to zero (no flow) during times of drought. The lack of adequate water supply to meet the needs of other water systems included in the original service area is common throughout northeastern Kansas, as evidenced by the considerable interest of rural water districts and communities in this project.

Project participants are examining a number of alternatives for water source, transmission and distribution. The original project examined Perry Lake and Tuttle Creek Lake, projects owned by the State of Kansas as water supply sources . The Kickapoo Tribe has received authorization for construction of a reservoir on the Delaware River within the Reservation, and the applicability of this project to the overall regional system will be evaluated. The Missouri River forms the eastern boundary of the project area and constitutes an unlimited high-quality supply of water. Groundwater is a good source in some areas and is poor in others. All alternative water sources will be investigated for the development of a single regional rural water project or multiple projects.

ORGANIZATION

It is contemplated that the Corps of Engineers will provide planning oversight for the "special study." The participating non federal entities in the planning process will include the Kickapoo Tribe, a new entity formed by the water user districts and communities, and the State of Kansas.

Federal procurement procedures will be followed to allocate funds for the project to the entities involved in the planning process. For those project tasks to be undertaken by the Kickapoo Tribe, a cooperative agreement based on PL 93–638 contract principles between the Corps and the Tribe will govern. It is anticipated that cooperative agreements between the Corps and other non-federal entities will be formulated and that those cooperative agreements will specify the scope of work to be undertaken by those entities and the procurement practices to be applied.

TABLE 1.—STATISTICAL SUMMARY PIKITANOI REGIONAL WATER PROJECT

Statistic	1990 Census	2020 Projected
Kickapoo R. Population	477	1,490
Counties Population	90,198	89,462
Median Age:		
Kickapoo	25.5	.....
Kansas	36.7	.....
Kickapoo School Enrollment:		
Pre-Primary	23	.....
Elementary or High	80	.....
College	15	.....
Total	118	.....
Housing:		
Housing Units	139	527
Persons per House	3.44	2.83
	Kickapoo	Kansas
1990 Household Income	$14,464	$27,291
1990 Family Income	$16,250	$32,966
1990 Per Capita Income	$4,831	$13,300
Percent Families Below Poverty Level	31.3	8.3
1990 Labor Force	126	765,003
Unemployed	18	13,419

TABLE 1.—STATISTICAL SUMMARY PIKITANOI REGIONAL WATER PROJECT—Continued

Statistic	1990 Census	2020 Projected
Percent in Labor Force	34.2	48.7
Percent Unemployed	14.3	3.6

	Value
Average Annual Water Availability, af:	
Missouri River Streamflows, Rulo, af/year	29,701,000
Big Blue River Near Mahattan, af/year, Tuttle	1,664,232
Delaware River Valley Falls, ay/year, Perry	280,785
Groundwater	Good to Poor
2,020 Design Needs, gallons per capita per average day:	
In-Residence	81
Water Conservation	−12
Lawns and Gardens	66
School Enrollment	3.0
Labor Force	3.0
Commercial and Industrial	8.0
System Losses	22
Total	171
2,020 Design Needs, Kickapoo and Region:	
Average Day, gallons	4,479,755
Maximum Day, gallons	11,602,565
Maximum Day, gpm	9,669
Annual, af	5,086

CONSTRUCTION COSTS

[In 1998 dollars]

	Missouri Alt A	Perry Alt C
Intake	$4,000,000	$4,000,000
Treatment Plant	13,978,000	13,978,000
Pipelines	49,394,000	49,519,000
Pumping Stations	8,203,000	10,090,000
Meters	686,000	686,000
Reservoirs	3,875,000	3,875,000
SCADA	3,000,000	3,000,000
O and M Building	1,500,000	1,500,000
O and M Equipment	1,500,000	1,500,000
Easements	321,000	315,000
Mitigation	500,000	500,000
Non-Contract	35,123,000	35,933,000
Cost Indexing to fiscal year 1996 to 1998	5,471,000	5,598,000
Total	127,551,000	130,494,000

TABLE 1–1.—STATISTICAL SUMMARY PIKITANOI REGIONAL WATER PROJECT

Statistic		
Pipelines, feet:		
24 inch diameter	34,975	236,167
20 inch diameter	294,228	93,203
18 inch diameter	47,234	.....
16 inch diameter	52,619	52,618
14 inch diameter	.....	15,615
12 inch diameter	489,510	493,887

TABLE 1–1.—STATISTICAL SUMMARY PIKITANOI REGIONAL WATER PROJECT—Continued

Statistic		
10 inch diameter	147,369	150,407
8 inch diameter	172,773	283,661
6 inch diameter	66,607	17,120
4 inch diameter	229,042	195,196
2 inch diameter	71,520	37,267
Total	1,605,877	1,575,141
Miles	304.1	298.3
Pumping Stations:		
Number	15	16
Maximum Horsepower	1,300	1,350

PREPARED STATEMENT OF THE UPPER MISSISSIPPI RIVER BASIN ASSOCIATION

[Millions of dollars]

	President's Request	UMRBA Recommendation
Construction General:		
Upper Mississippi River System Environmental Management Program	18.955	19.455
Major Rehabilitation of Locks and Dams	19.392	21.392
Operation and Maintenance: O&M of the UMR Navigation System	142.459	157.459
General Investigations:		
Upper Mississippi and Illinois Navigation Study	6.7	6.7
Upper Mississippi River System Flow Frequency Study	2.1	2.1
Land Management System (Research & Development)	3 (of 27)	3 (of 27)

BACKGROUND

The Upper Mississippi River Basin Association (UMRBA) is the organization created 18 years ago by the Governors of the states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to serve as a forum for coordinating river-related state programs and policies and for collaborating with federal agencies on regional issues. As such, the UMRBA works closely with the Corps of Engineers on a variety of programs for which they have responsibility. Of particular interest to the basin states are the following Corps programs:

ENVIRONMENTAL MANAGEMENT PROGRAM

The Upper Mississippi River System Environmental Management Program (EMP) was authorized in the 1986 Water Resources Development Act in response to the need for both restoring lost and degraded habitat and improving scientific understanding of the river system. What was at first a novel approach to interagency environmental management, has now become a widely recognized and respected regional program.

The EMP consists of two primary components: the construction of individual projects to rehabilitate or enhance critical habitat areas and a long term monitoring program to track the environmental health of the system. The habitat projects, which vary in size and range in cost from about $200,000 to over $10 million, employ different types of techniques, including such measures as island creation, water level control features, side channel closures or openings, and selective dredging to remove sediment. The long term monitoring program uses six field stations throughout the river system which routinely collect standardized data on water, sediment, fish, and vegetation at over 150 sites. In addition, the monitoring program headquarters at the Upper Midwest Environmental Sciences Center is home to a multidisciplinary team of scientists who are interpreting and displaying the data in ways that will be useful for management decisions.

The unique character of the EMP is, in part, a function of its partnership design. While the Corps of Engineers is the lead agency, the U.S. Fish and Wildlife Service, U.S. Geological Survey, and five basin states all have specific roles to play in planning, designing, evaluating, and operating and maintaining the habitat projects, as well as conducting the data collection and analysis that is part of the long term monitoring program.

Fiscal year 2000 marks the fourth year in a row that the President's budget request includes less than the full authorized funding of $19.455 million for the EMP. Last year, the Administration recommended $18.355 million and Congress increased the funding level to $18.9 million. Although the Administration's request is higher this year ($18.955 million), it still falls $500,000 short of full funding. The five basin states are hopeful that Congress will again affirm its support for this important program by providing full funding for the EMP in fiscal year 2000.

Funding shortfalls are of concern to the basin states for the following reasons:

—The Congress is currently considering reauthorizing the EMP as part of the 1999 Water Resources Development Act. The proposals under consideration vary with regard to some provisions, but all include an increase in the annual authorized funding level to approximately $33 million. It would be particularly unfortunate and ironic if the EMP were to face funding cutbacks at the same time that Congress is poised to authorize future funding increases. If the program is weakened by insufficient funding in fiscal year 2000, it will be difficult to rebuild the program to the enhanced levels envisioned by Congress in pending reauthorization bills.

—Unlike most other Corps projects, the EMP is currently "capped" by its Congressional authorization both in terms of annual appropriations and overall time frame. Therefore annual funding decisions have a far greater impact on whether the program is ultimately able to accomplish its goals. No other Corps program or project of which we are aware is constrained by this unique combination of time and financial limitations.

Funding shortfalls in the early years of EMP (FY 1988–91) and in more recent years (FY 1997–1999) total nearly $37 million below authorized levels. The annual cap on appropriations makes it impossible to "recapture" this shortfall.

—Unless and until the EMP is reauthorized, funding shortfalls in the closing few years of the current EMP authorization period will have a particularly debilitating effect on the program. Some habitat projects for which planning and design have been initiated will not be able to proceed to construction, thus negating the investment which has already been made in these projects. The fiscal year 2000 budget will support the continuing construction of 7 projects, the completion of 5 projects, and continuing planning and design work on 16 projects. A number of these projects have already been delayed due to funding constraints. Unless the program is reauthorized, some of these projects may need to be abandoned entirely if sufficient funds are not provided prior to expiration of the authorization in 2002.

—The success of the Long Term Resource Monitoring (LTRM) component of the EMP is dependent, in part, upon relatively reliable and constant funding levels. As a non-construction element of the EMP which supports teams of scientific and field personnel, the LTRM is particularly sensitive to annual funding variances. In this regard, the LTRM is unique within the Corps' construction general account, where there is typically more flexibility to respond to annual budgetary fluctuations.

Efforts are underway to restructure the monitoring program so that it will be more flexible and effectively positioned to accommodate the future data and information needs in the "second generation" EMP. During this difficult transition period, it will be particularly important to provide a minimum, stable funding level for the LTRM, which has already suffered from the effects of inflation on its fixed appropriations authorization.

—The economic and ecological health of the Upper Mississippi River are inexorably linked. Congress recognized this fact when, in 1986, it declared this river system to be "a nationally significant ecosystem and a nationally significant commercial navigation system." Yet EMP funding cuts in the past few years are widening the already large discrepancy between federal investment in these two major river purposes. In fiscal year 2000, the Corps of Engineers will invest over $140 million in operation and maintenance of the Upper Mississippi River System for commercial navigation purposes. Another $20 million is scheduled for major rehabilitation of aging locks and dams. Though some of these investments have incidental environmental benefits, full funding ($19.455 million) for the EMP is critical if the federal commitment to multi-purpose management is to be maintained.

MAJOR REHABILITATION OF LOCKS AND DAMS

Given that most of the locks and dams on the Upper Mississippi River System are over 60 years old, they are in serious need of repair and rehabilitation. For the past 13 years, the Corps has been undertaking major rehabilitation of individual facilities throughout the system in an effort to extend their useful life.

The UMRBA supports the Corps' fiscal year 2000 budget request of approximately $19.4 million for major rehabilitation work at 5 locks and dams on the Upper Mississippi River. Half of this amount is to be provided by the Inland Waterways Trust Fund and will support work at Locks and Dams 3, 12, 14, 24, and 25. These funds will be used for lock rehabilitation, auxiliary lock closure rehabilitation, miter gate installation, electrical and mechanical rehabilitation, scour protection, rehabilitation of embankment systems that are subject to overtopping during flood events, and work on outdraft bendway weirs and wall openings. An additional $2,000,000 could be used in fiscal year 2000 to advance completion of work on embankment systems vital to navigation and environmental interests.

OPERATION AND MAINTENANCE OF THE UPPER MISSISSIPPI RIVER NAVIGATION SYSTEM

The Corps of Engineers is responsible for operating and maintaining the Upper Mississippi River for navigation. This includes channel maintenance dredging, placement and repair of channel training structures, water level regulation, and the daily operation of 29 locks and dams on the Mississippi River and 7 locks and dams on the Illinois River. The fiscal year 2000 budget includes slightly over $142 million for O&M of this river system, including $103.5 million for the Mississippi River between Minneapolis and the Missouri River, $13.5 million for the Mississippi River between the Missouri River and Ohio River, and $25.4 million for the Illinois Waterway.

These funds are critical to the Corps' ability to maintain a safe and reliable commercial navigation system. The efficiency of this system is vital to the agricultural economy of the five states. In addition, these funds support a variety of activities that ensure the navigation system is maintained while protecting and enhancing the river's environmental values. For example, O&M funds support innovative environmental engineering techniques in the open river reaches such as bendway weirs, chevrons, and notched dikes that maintain the navigation channel in an environmentally sensitive manner. In addition, studies of water level management options in a number of pools in the impounded portion of the river are underway as part of the on-going navigation O&M program. Pool level management is a promising new approach for enhancing aquatic plant growth and overwintering conditions for fish without adversely affecting navigation.

While the funds that the Corps has requested for fiscal year 2000 are expected to be adequate to meet basic O&M requirements, the UMRBA supports additional funding of $15 million which could be effectively utilized in fiscal year 2000 for critical needs such as electrical repairs, bulkhead repairs, repairs to cracks and spalls on lockwalls, concrete repairs, repairs to liftgates, revetment and dike repairs, and replacement of roller gate chains at various lock locations on the upper river.

NAVIGATION STUDY

In 1993 the Corps of Engineers initiated a feasibility study of navigation capacity expansion on the Upper Mississippi River and Illinois Waterway, a transportation system that is vitally important to the Midwest and the nation in linking agricultural commodities to international markets. The states in the region have been providing advice and counsel to the Corps throughout the study via a special Governors Liaison Committee comprised of gubernatorial appointees from each of the five basin states. The results of this study will be critical to our ability to make reasoned decisions about the future of the Upper Mississippi navigation system. Given that the merits of future multi-billion dollar federal investments will be judged based upon this study, the states of the basin are keenly interested in both the analysis and the alternatives under consideration.

During the past year, the study experienced delays associated with the need to more carefully review and verify the economic models and some of the model inputs including traffic projections and demand curves. As a result, the study completion date has been postponed by one year to December 2000. Thus, much of the work necessary to bring the study to a close will now be done in fiscal year 2000.

The five basin states support the President's request for $6.7 million in fiscal year 2000 for the navigation study. Those funds will be used to continue the feasibility study, complete the plan formulation process, complete the draft feasibility report and draft Environmental Impact Statement, conduct internal and public review,

hold public meetings, and complete a site-specific report with a baseline cost estimate. It is essential that the Corps has sufficient funds to complete these important tasks and produce a sound economic and environmental assessment of navigation capacity expansion needs.

UPPER MISSISSIPPI RIVER SYSTEM FLOW FREQUENCY STUDY

Flow frequencies for the Upper Mississippi River System badly need revision. The flood profiles currently in use were developed in 1979 by an interagency task force and replaced profiles previously adopted in 1966. A variety of factors suggests that the 1979 profiles need to be updated:

—The 1979 flood profiles are generally lower than the earlier 1966 profiles. In the southern reaches of the Rock Island District, the difference is as much as five feet. For example, the 1979 flood frequencies show that in the short time frame of 29 years, a "100 year" flood, a "200 year" flood, and a "500 year" flood have occurred in the city of Hannibal, Missouri. This has caused many communities along the Upper Mississippi River to question whether the 1979 methodology and resulting profiles are accurate.

—There are now nearly 20 years of additional data available, including flow records from several high water events including the Great Flood of 1993. In addition, new methodologies have enhanced the Corps' ability to model the complex hydraulics of the Upper Mississippi River. In particular, following the 1993 floods, the Corps developed a new mathematical hydraulic model (UNET) to answer "what if" questions such as the impact of levee failures or reservoir operations on stages of the Mississippi River. That model is now essentially complete and will enhance computation of water surface profiles.

—Flood elevation profiles have a variety of uses including flood insurance; floodplain management; and the study, design, and construction of flood control projects. The need for updated math models and flood profiles has been widely recognized, especially since the Great Flood of 1993. The "Galloway Report," which the Clinton Administration commissioned following the 1993 Midwest floods, recommended that the methodology used for flow-frequency analysis be reassessed. Similarly, the Flood Plain Management Assessment published by the Corps in June 1995 recommended that hydrology and hydraulics data be updated, including water surface profiles. The five states of the Upper Mississippi River Basin have been strong supporters of these recommendations.

The UMRBA supports the Corps' fiscal year 2000 budget request of $2.1 million for the Flow Frequency Study. These funds will be used for UNET modeling and initiating work on generating flood profiles.

LAND MANAGEMENT SYSTEM

The Corps of Engineers' Research and Development (R&D) budget for fiscal year 2000 includes $27 million, $3 million of which it is hoped will be used to support development of a Land Management System (LMS) demonstration project on the Upper Mississippi River System. Despite the fact that the LMS project could have utilized $4 million this year, only $800,000 has been made available in fiscal year 1999 for the demonstration sites on the Upper Mississippi River System.

The basin states support the LMS initiative, which is designed to meet the increasing need for integrated approaches to natural resources management. In particular, LMS will rely heavily on modeling tools that can assess cumulative effects and forecast future conditions in a quantitative framework. We are fortunate in the Upper Mississippi River Basin to be chosen for the initial demonstration of these techniques. The Waterways Experiment Station (WES) in Vicksburg, Mississippi is leading the effort, which focuses on three specific locations in the basin: Peoria Lake on the Illinois River, the Minnesota River, and Pool 8 on the Mississippi River. Problems such as backwater filling, poor water quality, and habitat loss are common to all these locations and are related to sediment transport and deposition. Evaluation of the ecological consequences of hydrologic and sediment dynamics at these sites within the Upper Mississippi River System will enhance LMS applications to other large river systems.

PREPARED STATEMENT OF DR. SAM M. HUNTER, PRESIDENT, LITTLE RIVER DRAINAGE DISTRICT

My name is Dr. Sam Hunter, DVM of Sikeston, Missouri. I am a veterinarian, landowner, farmer, and resident of Southeast Missouri.

I am the President of the Little River Drainage District, the largest such entity in the nation. Our District serves as an outlet drainage and flood control District to parts of seven (7) counties in Southeast Missouri. We provide flood control protection to a sizable area of Northeast Arkansas as well. Our District is solely tax supported by more than 3,500 private landowners in Southeast Missouri.

Our District as well as other Drainage and Levee Districts in Missouri and Arkansas is located within the St. Francis River Basin. This is a project item of the Mississippi River and Tributaries Project.

The St. Francis Basin Project was authorized by Congress in 1928 for improvements by the U. S. Army Corps of Engineers. The initial authorization was justified by a projected benefit cost ratio of 2.4:1. Today this ratio is 3.6:1 and the project is only 91 percent completed. As you can see this has been a wise investment of our federal tax dollars. Few projects or ventures with funding levels provided by the Federal Government return more than they cost. This one does and we need to complete it in a timely fashion.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our government now needs to fulfill their part of the project and bring it to completion as quickly as possible.

The St. Francis Basin project has had a base funding level of approximately $10,000,000 over the past several years. Our last five (5) year average has been $9.9 million. That baseline funding level does not need to be diminished. The President's budget request of $4,350,000 is not acceptable. The amount requested by OMB will not provide sufficient funding levels for the Corps to maintain what they have built and/or improved. If these funding figures are accepted and not increased to $10,000,000 for fiscal year 2000 and succeeding years then we have digressed and not progressed.

Since the initiation of the project for improvements we have seen many positive changes occur such as:

(1) Many miles of all weather roads have been constructed and are usable almost daily each year.

(2) Better flood control and drainage.

(3) Development of one of the most fertile and diversified valleys in the world.

(4) Growth of towns, schools, churches, industry, commerce, and etc.

(5) Improvement of our environment: malaria, typhoid and other such diseases are no longer the norm but the rarity.

(6) A future for our young people to have a desire to remain in the area.

(7) Production of a variety of food and fiber products.

As you can see many changes have occurred and we who live there welcome them fully. We, local interests, in Southeast Missouri and Northeast Arkansas want this project brought to completion and adequately maintained. We have waited over seventy (70) years and we believe it is now time to complete a wise investment for our nation.

Our request to you today is to approve funding for the St. Francis Basin at $10,000,000 for fiscal year 2000 and succeeding years to ensure completion of the project.

Further, we are here as a member of the Mississippi Valley Flood Control Association which represents similar interests as our District from the Gulf of Mexico upstream to the headwaters of the Mississippi River.

The MR&T Project has only $280,000,000 in the President's budget. The Corps of Engineers has the capability of $355,000,000 and the need for a minimum of $335,000,000. We ask you to give consideration to provide funding levels at $335,000,000 for this project for fiscal year 2000. This will provide some new construction but it will also provide the necessary maintenance monies needed each year.

Thank you very much for your kind attention and the favorable way this committee has responded to our needs in the past.

CONDENSED INFORMATION OF THE LITTLE RIVER DRAINAGE DISTRICT, ST. FRANCIS BASIN PROJECT AND MR&T PROJECT

Little River Drainage District

(1) Circuit Court Drainage District of Missouri.

(2) Serves parts of seven (7) counties.

(3) Fully funded by special tax on landowners within Little River Drainage District.

(4) Provides flood control and drainage to more than 3500 private landowners.

(5) Located within St. Francis Basin.

(6) Large, diversified, and highly productive area for food and fiber.

(7) Has functioned since 1907.
(8) Major contributor to St. Francis Basin (1,200,000 acres of runoff annually).
(9) Member of Mississippi Valley Flood Control Association.

St. Francis Basin Project

(1) Authorized in 1928.
(2) Justified with 2.4:1 benefit-cost ratio.
(3) Presently providing a 3.6:1 benefit-cost ratio.
(4) Needs a minimum annual funding of $10 million.
(5) President's budget is $4,350,000. (This is simply inadequate to maintain prior constructed features and initiate any new authorized work).
(6) Project has baseline funding of $9.9 million annually for past several years.
(7) Local interest wants and needs this project completed. We have waited over seventy (70) years.
(8) Project 91 percent completed.
(9) Now projected for completion in 2007.

Mississippi River and Tributaries Project

(1) Authorized in 1928. Protects 30,000 square miles at times. Protects 20,550 square miles at all times.
(2) Congress viewed project as a national problem at time of authorization.
(3) Mississippi River drains forty-three percent (43 percent) of Continental United States and some of Canada.
(4) Mississippi River is vital to production of food, industry, commerce, transportation, our nations defense, environment, health, etc.
(5) Annual funding levels of $335,000,000 needed to maintain and continue construction.
(6) President's fiscal year 2000 budget amount of $280,000,000 is inadequate.
(7) Project is now 57 percent completed. (Fiscally).
(a) Authorized levees are 92 percent completed. Projected year to complete is 2009.
(b) Authorized channels are 93 percent completed.
(8) Local interest wants and needs this project completed. We have waited over seventy (70) years.
(9) Corps has capability of $355,000,000.
(10) Finished portion yielding 7.9:1 benefit-cost ratio.
(11) Unfinished portion projected to yield 36:1 benefit-cost ratio.
(12) Entire project when completed will yield 20:1 benefit-cost return.
(13) Project projected for completion in 2031.

PREPARED STATEMENT OF JAMES S. ANDERSON, PRESIDENT, BLUE VALLEY ASSOCIATION

The Blue Valley Association has represented businesses and the community in the Blue River valley since 1920. One of the major concerns of the association throughout its existence has been flooding in the valley.

In order to provide some relief to the area, the Big Blue River Rechannalization Project was approved by Congress in 1970. Construction on the project began in 1983 and was scheduled for completion in 1998. The project was to be constructed in three stages. Stages 1 and 2 are complete. Construction on Stage 3 began in 1997. Our understanding is that the project is now targeted to be completed by 2003, provided the requested funding is approved. Reduced funding would continue to delay the project by an additional three to five years.

The progress that has been made to date has provided environmental cleanup, new jobs in the community, and flood relief to the landowners in the lower portions of the Blue River Valley. Several of our members have reported lower river stages after recent heavy rains.

However, there is much work remaining to be done before the project is complete. We are concerned that the potential for flooding is still a serious threat to the properties upstream from the completed channel improvements. In addition, we are concerned that upstream development along the Blue River and its tributaries may actually increase the risk of flooding in some areas. If continued improvements upstream increase the threat, then obviously it is important to complete this project at the earliest date possible.

For these reasons, we ask your consideration in approving funding for the projects and appropriations listed on the attached sheet for the fiscal year 2000 budget.

Requested Fiscal Year 2000 Appropriation

Blue River Channel, Kansas City Missouri:Continued Construction of Stage 3. Completion—2003	$25,000,000
Turkey Creek, Kansas City Kansas and Missouri: Complete design for construction start	300,000
Missouri River Levee System:	
Restudy Seven Levees—Begin feasibility study	350,000
Unit L–385—Complete revised plans. ROW being acquired. Unit L–142—Complete design for new start	550,000
Upper Blue River, Kansas and Missouri: Complete Final Plans and Specifications this year for construction in 2000. ROW to be acquired in 1999	500,000
Swope Park Industrial Area, Kansas City, Missouri: Complete feasibility study	60,000
Total	26,900,000

PREPARED STATEMENT OF J. M. PETERSON, PRESIDENT, AND DARREL G. CURRY, VICE PRESIDENT OF THE MISSOURI RIVER BANK STABILIZATION ASSOCIATION

The Missouri River Bank Stabilization Association, its members and its officers thank you for the opportunity to present this statement and request relating to the budget for fiscal year 2000.

This statement and the request contained herein relate to the Missouri National Recreational River project which was authorized by the Congress in 1978 per Section 707 of Public Law 95–625. The Association's request for fiscal year 2000 is $250,000.00 for operation and maintenance of structures built prior to 1978 pursuant to Section 32 of the Streambank Erosion Control and Demonstration Act. Additional funding is needed for:

1. Providing for replacement of flood-destroyed facilities which afforded access to the river in the project's lower reaches;
2. The acquisition of shoreline easements to increase wildlife habitat and to improve and restore the scenic characteristics of the river;
3. Provide streambank protection where and as needed;
4. Meet such other needs as may be required to achieve the completion of the project.

This project seeks to preserve and protect the fifty-nine mile segment of the Missouri River extending downstream from near Yankton, South Dakota, circa mile 811, to the Ponca State Park, circa mile 752, near Ponca, Nebraska. This reach of river is the only portion of the Missouri lying downstream of the "main stem" dams which is still in a relatively natural state. Here, the river is neither channelized nor are its banks protected by other than isolated stabilization structures. The entire shoreline is under relentless attack by the voracious Missouri, including even those areas which have been afforded some degree of bank protection. Three years of much higher than normal flows have wrought havoc along this reach of river. Erosion is, of course, a natural process; indeed, the Missouri is notorious for its appetite for its shoreline. The problem here, however, is that in this reach of the river the "main stem" dams have eliminated the annual flooding which once characterized the river. Thus, while the erosion continues, there is no offset in the nature of the natural and historic "build-back" (accretion) from flooding. To exacerbate the problem, the water discharged from the dam near Yankton is relatively free of sediment. Thus, it has a greater capacity to erode the downstream shorelines than did the muddy waters of old. The cleaner water can carry a greater sediment load, and it continues to utilize this increased capacity to the fullest. Evidence of the increased erosion is documented by Corps of Engineers' reports that this reach of river is over sixty percent wider now than when Gavins Point Dam, near Yankton, was completed in the mid-fifties.

While $21 million was authorized for this project, only some $2 million has been spent. The original management plan, will soon be supplanted by a new management plan developed by the National Park Service and Corps of Engineers. The proposed plan details a number of desirable proposals for a variety of efforts designed not only to increase public knowledge, accessibility and enjoyment of this historic reach of the Missouri, but to preserve and protect those characteristics which constitute its identity. Those very characteristics made it worthy of its designation as a Recreational River under the Wild and Scenic Rivers Act.

A significant factor underlying this request is the impending national celebration of the bicentennial of the Lewis and Clark Expedition. Interest in this momentous

event is accelerating dramatically, and one of the focal points of that interest is this segment of the Missouri. As the only remnant of a relatively natural river lying downstream of the Missouri's dams, it affords a dramatic glimpse of the Missouri which faced the Corps Discovery. Improved access, signage, preservation of extant timber, islands, bars and wildlife habitat will help ensure the continued existence of the characteristics which impelled the Congress to include in the Wild and Scenic Rivers Act, this unique segment of the Missouri.

The Association is truly appreciative of the previous support and assistance the Congress has provided, and we thank you for that on-going concern. Joining in our extension of thanks are the numerous individual outdoorsmen, landowners, hunters, fishermen, environmentalists and others who love, respect and enjoy this national treasure and wish to preserve and protect it. Again, our thanks!

UPPER MIDWEST WATER PROJECTS

PREPARED STATEMENT OF NORMAN HAAK, CHAIRMAN, GARRISON DIVERSION CONSERVANCY DISTRICT

Chairman Domenici and Honorable Members of the Subcommittee: On behalf of the Garrison Diversion Conservancy District Board of Directors, thank you for your past support of the Garrison Diversion Project. Previous Garrison Diversion Unit appropriations have been used to deliver reliable, high quality water supplies to residents in rural communities across North Dakota, along with maintenance of 120 miles of canals and pumping plants already constructed across the state.

The Garrison Diversion Project continues to be the backbone of all water projects in North Dakota. Completing Garrison Diversion will assure our citizens affordable access to an adequate quantity and quality water supply for municipal, rural and industrial systems. Garrison Diversion is the key for future economic development, recreation, tourism and wildlife enhancement in our state.

This year's budget includes $24.5 million for the Garrison Diversion Unit. Additional appropriations will continue development of rural water supply systems across the state, providing a dependable water supply to North Dakota residents, who now in many cases are hauling water due to inadequate supplies. The funding received, or not received, impacts the lives of families and business owners across the state who are working toward finding solutions to meet their water needs.

Meeting the Indian MR&I needs also concerns North Dakotans. Existing ceilings are exhausted and the unmet needs on the reservations are growing. Additional appropriations and an appropriate ceiling will allow tribal leaders to continue working on their most critical water needs.

A greater concern is the overall Bureau of Reclamation budget. Current trends show this budget number shrinking on an annual basis. Although the president's current budget request is an increase over last year's appropriation, additional funding is definitely needed. The Bureau budget needs to reflect a greater commitment to completing currently authorized water projects. Although water conservation, water reuse and restoring fish and wildlife resources are important, the Bureau's budget needs to be refocused and increased to place more emphasis on completing the authorized projects already on the books.

To this end, we fully expect the Dakota Water Resources Act to be reintroduced in the very near future. This bill reduces the cost of the project currently authorized and directs the funding to meet the highest priority needs of the state. The state, under the terms of this bill, will repay, with interest, major portions of the costs while matching federal dollars with substantial nonfederal dollars in other areas.

Mr. Chairman, North Dakotans from cities, farms and businesses are committed to the Garrison Diversion Project. Although the project will never be built as originally planned in 1944, it is still the most important water project in our state. I want to thank your committee for past support, and it is my hope your support will continue for this fiscal year.

PREPARED STATEMENT OF KURT PFEIFLE, GENERAL MANAGER, MID-DAKOTA RURAL WATER PROJECT (PUBLIC LAW 102–575)

FISCAL YEAR 2000 FUNDING REQUEST

First let me thank the Subcommittee for the opportunity to testify in support of the fiscal year 2000 appropriations for the Mid-Dakota Rural Water Project and for the Subcommittee's support.

The Mid-Dakota Project is requesting $28 million in federal appropriations for fiscal year 2000. This request anticipates $27 million for Project construction and $1 million for the authorized "wetland" component. As with our past submissions to this subcommittee, Mid-Dakota's fiscal year 2000 request is based on a detailed analysis of our ability to proceed with construction during the fiscal year. In all previous years, Mid-Dakota has fully obligated its appropriated funds, including federal, state, and local, and could have obligated significantly more were they available.

This year (FY 2000) the project is seeking additional funds above the President's budget recommendation in the amount of $23 million. Mid-Dakota understands and appreciates pressures on Congress to pass and maintain a balanced and seemingly an austere budget and in that respect we understand the difficulties before congressional appropriators to find additional funds to supplement the President's budget request. However, we request and strongly urge Congress to appropriate the full amount of Mid-Dakota's request.

HISTORY OF PROJECT FUNDING

The Project was authorized by Congress and signed into law by President George W. Bush in October 1992. The federal authorization for the project totaled $100 million (1989 $s) in a combination of federal grant and loan funds (grant funds may not exceed 85 percent of federal contribution). The State authorization was for $8.4 million (1989 $s). The total authorized indexed cost of the project now stands at $142.163 million. All federal funding considered, the Government has provided 43 percent of its commitment (56.546 million of $132.493 million) to provide construction funding for the Project. In the 1998 Legislative session the South Dakota Legislature appropriated $1.3 million completing the State's authorized commitment to Mid-Dakota. When considering the federal and state combined awards, the project is approximately 47 percent complete, in terms of financial commitments.

Mid-Dakota wishes to thank this committee for its support over the past six years. Within the limited monetary parameters of current federal awards and funds appropriated by the State of South Dakota, we have been able to put those scarce resources to good work, making exceptional progress on project construction, albeit not nearly as fast as is needed or as we had initially envisioned.

SUMMARIZATION OF FEDERAL FUNDING

[In millions]

Fed. Fiscal Year	Mid-Dakota Request	Pres. Budget	House	Senate	Conf. Enacted Levels	Award Level (Under-financing) Applied	Additional Funds	Total fed. Funds provided Mid-Dak.
1994	7.991	.....	.....	2.000	2.000	1.500	.....	1.500
1995	22.367	.....	.....	8.000	4.000	3.600	.....	3.600
1996	23.394	2.500	12.500	10.500	11.500	10.902	2.323	13.225
1997	29.686	2.500	11.500	12.500	10.000	9.400	1.500	10.900
1998	29.836	10.000	12.000	13.000	13.000	12.221	1.000	13.221
1999	32.150	10.000	10.000	20.000	15.000	14.100	.....	14.100
2000	28.800	5.000	.....	.....	.....	.....	.....	.....
Totals	.....	30.000	46.000	66.000	55.500	51.723	4.823	56.546

Additionally, the State of South Dakota has contributed $9.67 million in grants to the Mid-Dakota Project, in previous years. The State of South Dakota completed its initial authorized financial obligation to the Mid-Dakota Project in the 1998 Legislative Session.

The $15 million funding provided by the Subcommittee in fiscal year 1999 provided Mid-Dakota with the opportunity to achieve very significant and exciting accomplishments for the fiscal year. These are later summarized in the section titled "Construction in Progress." Mid-Dakota will continue to deliver quality drinking water to five community systems and approximately 600 rural customers. Mid-Dakota estimates that an additional 550 rural customers along with six more community systems will be receiving project water at the close of contracts awarded in fiscal year 1999. The generosity of the subcommittee has already had a deep and favorable effect on the lives of nearly 10,000 South Dakotans.

PRESIDENT'S FISCAL YEAR 2000 BUDGET REQUEST

In February the President's Budget recommendations to Congress were released. Mid-Dakota Rural Water was included in the proposed budget at a level of $5 million for fiscal year 2000. This represents a 50 percent decrease in the President's funding recommendation and a 67 percent decrease from what Congress appropriated in fiscal year 1999. It is the only time the President has lowered his recommendation from one year to the next. The Mid-Dakota Project will not be able to make any significant progress in fiscal year 2000 at this level of funding. In fact, it would not be an overstatement to say that Mid-Dakota may have to suspend construction activities for fiscal year 2000, if the $5 million is not significantly increased.

As in previous years, Mid-Dakota is in "catch-up" mode, due to lower than expected appropriations in prior years. The $28 million request for fiscal year 2000 will help the project maintain an acceptable construction schedule. The $5 million budget request by President Clinton would have profound and devastating effects, pushing the completion of the Project to the year 2015. Under the Clinton Administration's proposal, thousands of South Dakota citizens will be forced to wait an estimated 13 years until they can be connected to the Mid-Dakota Project. The President's budget, if ultimately implemented will provide an extended delay of Project benefits.

The following table demonstrates the effect of the President's budget request for the Mid-Dakota Project as compared to other larger appropriation levels. The table also demonstrates the significant cost increases expected (using a conservative two-percent inflation (indexing) factor):

MID-DAKOTA RURAL WATER PROJECT COST AND TIMELINE TO COMPLETION [1]

[In millions of dollars]

Fiscal Year	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	Cost to Finish
Approp. $5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	78
Approp. $10	10	10	10	10	10	10	10	2	....	....	....	....	....	....	....	....	72
Approp. $15.	15	15	15	15	10	....	....	....	....	....	....	....	....	....	....	....	70
Approp. $20	20	20	20	9	....	....	....	....	....	....	....	....	....	....	....	....	69
Approp. $25	28	25	15	....	....	....	....	....	....	....	....	....	....	....	....	....	68

[1] Data in table is based upon various leveled annual appropriations, an estimated $67.17 million authorized unappropriated federal funds and two-percent inflationary indexing.

As is evident by the foregoing table, the President's budget recommendation will have an effect of significantly delaying water service to those who need it most.

By its actions the Administration raises the potential of increasing the total cost of the Mid-Dakota Project by more than $10 million. The federal government would not be alone in absorbing negative impacts of funding shortfalls. In addition to making the Mid-Dakota Project more expensive to the federal government, the resulting delays would also have a direct and proportional effect on the rate of debt service to be paid by the Project and ultimately the water users. The repayment agreement entered into by Mid-Dakota and the federal government (the Bureau of Reclamation acting on the Government's behalf), demands that Mid-Dakota's "minimum bill" increase proportionally with the indexing applied to the Project. This is done by establishing the ratio of the federal authorization at the time Mid-Dakota submitted its Final Engineering Report (FER) in 1994, compared to the authorized ceiling today with indexing applied. This same ratio is then applied to Mid-Dakota's "minimum bill" as was identified at the time of execution of the repayment agreement. The following table is offered as an example:

Mid-Dakota's "minimum bill" rate at the time of signing the repayment agreement = $32.50

Leveled annual appropriations of $5 million—estimated increase to minimum bill: 21 percent

Leveled annual appropriations of $10 million—estimated increase to minimum bill: 16 percent

Leveled annual appropriations of $15 million—estimated increase to minimum bill: 15 percent

Leveled annual appropriations of $20 million—estimated increase to minimum bill: 14 percent

Leveled annual appropriations of $25 million—estimated increase to minimum bill: 13 percent

By the Bureau of Reclamation's own design, slowing down the development of the Mid-Dakota Project will ultimately make the Project more expensive, in terms of; rates paid by water users construction costs, total debt of the Project and Reclamation's oversight costs.

IMPACTS OF AWARD

The most obvious impact of any significant reduction from Mid-Dakota's request will be the delay of construction of one or more Project components. The $28 million dollar request will allow the Project to proceed with construction of multiple contracts summarized later in this testimony. An award of less than our request will result in the deletion or reconfiguration of one or more of these contracts from the fiscal year 2000 construction schedule. Further, reduced appropriations have the effect of adding more cost to the amount needed for completion of the Project.

Mid-Dakota has consistently informed members of Congress and appropriate federal agencies, about the detrimental effects insufficient funding has on the Project and ultimately the people who are to receive the water. In previous years Mid-Dakota and the public, which we will serve, have been able to make the most of the resources provided the Project. However, failure to provide full funding has had profound consequences.

CONSTRUCTION IN PROGRESS

Mid-Dakota began construction in September of 1994, with the construction of its Water Intake and Pump Station. Since that eventful day of first construction start, we have bid, awarded, and completed seven [2] project components and are into construction on two other major Project components. The following table provides a synopsis of each major construction contract:

Cont. No./Description	Cont. budget [3]	Cont. Bid Award	Final Cont. Price	Over (under) Budget	Percent over (under) budget
1–1, Oahe Water Intake and Pump Station	4.662	3.959	3.945	(0.717)	(15)
2–1, Oahe Water Treatment Plant	13.361	9.920	10.278	(3.083)	(23)
3–1A, Raw Water Pipeline	1.352	1.738	1.719	0.367	27
3–1B, Main Pipeline to Blunt, SD	7.823	6.916	7.024	(0.799)	(10)
3–1C, Main Pipeline to Highmore, SD	5.439	4.791	4.798	(0.641)	(12)
3–2A, Main Pipeline to Ree Hights, SD	3.261	3.155	3.155	(0.106)	(4)
3–2B, Main Pipeline to St. Lawrence, SD	3.691	3.349	3.349	(0.342)	(9)
4–1A/B (1–5), Rural Service Area Contract	9.169	9.983	10.601	[4] 1.432	16
5–1, Highmore Water Storage Tank	1.545	1.434	1.433	(0.108)	(7)
5–1A, Onida Water Storage Tank	0.471	0.395	0.395	(0.075)	(16)
Totals	50.774	45.640	46.697	(4.077)	(8)

[3] Contract budget is determined by Mid-Dakota's estimate for the contract at the time of bidding.
[4] A significant portion of cost increases are attributable to the placement of additional users as construction proceeds.

As is evident by the foregoing table, Mid-Dakota has been very successful in containing Project costs. Currently the construction of major Project components are approximately 8 percent under budget , providing an estimated saving of over $4 million. The savings are an example of sound engineering, good management and advantageous bid lettings. While we can't guarantee future contract bid lettings will continue to provide the level of savings currently experienced, we do think it speaks well of the Mid-Dakota Project and how we've managed Project funding to date.

Mid-Dakota also provided the solution to a number of emergency situations in fiscal year 1998. The "rescue" effort to the City of Gettysburg, SD provided the town with a dependable, quality water supply (Mid-Dakota) just as they were about to lose their existing water intake, due to sluffing of the hillside at that location. The town of Virgil, SD will have a new distribution system for the town, replacing the old one that was in disrepair and draining the town coffers to keep it running and supply drinking water to Virgil residents. Mid-Dakota has verbally agreed to takeover the operations of the Southern Spink and Northern Beadle Rural Water System (SSNB). SSNB is a small community water supply system that lacks the necessary resources to properly operate a potable water supply system. Mid-Dakota replaced approximately eight miles of pipeline along U.S. Highway 212. The Highway

[2] Contract 4–1A/B (schedules 1–5) should be complete in May, 1999.

is scheduled for improvements in the Spring of 1999. A water pipeline located in the Highway right-of-way would have to be relocated increasing the cost of the Highway improvement. Mid-Dakota instead placed its pipeline (that would have been constructed in the future) out of the way of the Highway improvement. This lessened the cost of the Highway project and provided for an uninterrupted supply of water to people along the pipeline route.

TENTATIVE FISCAL YEAR 2000 CONSTRUCTION SCHEDULE [5]

Mid-Dakota has developed an aggressive construction schedule for fiscal year 2000, with plans to install nearly 900 miles of pipeline to serve an estimated 3,250 more people than are currently receiving or scheduled to receive Project drinking water. Our construction schedule will also provide the necessary main pipeline infrastructure to move forward with many more rural and community connections in the future. Federal funding allocated in any given fiscal year is always the limiting factor that drives Mid-Dakota's construction schedule.

CONSTRUCTION SCHEDULE, FISCAL YEAR 2000

Project Feature	Estimated Cost	Estimated number of meters connected	Estimated population to be served
Gettysburg Service Area & Tower [6]	1.500	300	1,600
Highmore Central Service Area	3.575	180	500
Mac's Corner Service Area & Tower	3.210	110	350
Rezac Lake Service Area & Tower	2.767	60	175
Collin's Slough Service Area & Tower	1.958	60	175
Cottonwood Lake Service Area & Tower	3.203	155	450
Main Pipeline to St. Lawrence, SD [6]	2.187		
Administration	.460		
Engineering & Legal	2.116		
Inspection	1.135		
Bureau of Reclamation oversight	.460		
Other costs	2.760		
Wetland component	1.000		
Totals	[7] 26.331	865	3,250

[6] Project components footnoted are part of fiscal year 1999 construction schedule. Costs shown in the table are needed to complete construction of that particular component.

[7] Mid-Dakota's request of $28 million anticipates that 6 percent of any appropriation will be deemed unavailable by the Bureau of Reclamation by application of ''under-financing.'' This level of ''under-financing'' would effectively reduce a $28 million appropriation to $26.4 million.

CLOSING

Mid-Dakota is intensely aware of the difficult funding decisions that face the Energy and Water Appropriations Subcommittee and we do not envy the difficult job that lies ahead. We strongly urge, the Subcommittee to look closely at the Mid-Dakota Project and recognize the dire need that exists. Consider the exceptionally high level of local and state support. And lastly our readiness, our credibility and our ability, to proceed.

Again, we thank the Subcommittee for its strong support in the past.

PREPARED STATEMENT OF THE MNI WICONI PROJECT

FISCAL YEAR 2000 CONSTRUCTION BUDGET REQUEST

The Mni Wiconi Project beneficiaries (as listed below) respectfully request appropriations for construction in fiscal year 2000 for the project in the amount of $34,144,000 as follows:

[5] Project features listed in table are subject to rescheduling based upon funding provided and readiness to proceed and other factors. Actual construction activities, therefore, may not coincide exactly with schedule presented here.

Oglala Sioux Rural Water Supply System:	
Core Facilities (Treatment Plant, Pipelines)	$11,895,000
Distribution System on Pine Ridge	6,138,000
West River/Lyman-Jones Rural Water Systems	9,916,000
Rosebud Sioux Rural Water System	3,762,000
Lower Brule Sioux Rural Water System	2,433,000
Total Mni Wiconi Project	34,144,000

The Oglala, Lower Brule and Rosebud Sioux Tribes were consulted as required by the Indian Self-Determination Act (Public Law 93–638, as amended) when the Administration arrived at its fiscal year 2000 construction budget of $23.9 million for the Mni Wiconi Project. This budget, however, does not address the needs of the project in fiscal year 2000 or in fiscal year 2001, a major target year for the project.

The principle element in the budget for fiscal year 2000 is $11.895 million for the Oglala Sioux Rural Water Supply System (OSRWSS) core. The OSRWSS core system funds are needed to complete the project to Murdo by fiscal year 2001, where water can be delivered to the largest areas of demand in the West River/Lyman-Jones service area and all of the Rosebud service area. By completing the project to Murdo, all of the interconnection points for the Lower Brule Sioux Tribe will also be provided. Only the Pine Ridge Indian Reservation and parts of West River/Lyman-Jones will be without points of interconnection to the OSRWSS core. This landmark in progress on the project by the end of fiscal year 2001 is the most significant event in the project to date. The requested funding level is needed for the next two years to achieve the objective.

Important to note is the fact that in fiscal year 1999 the intake and treatment plant on the Missouri River will be concluded. Completion of the OSRWSS core pipeline system to Murdo is necessary to utilize, to any significant degree, those completed facilities. Also, noteworthy is the fact that major segments, but not all segments, of the core pipeline will be completed in fiscal year 1999 between the treatment plant and Murdo. The funding request for fiscal year 2000 will continue the core pipeline construction, and the funding request in fiscal year 2001 will permit us to conclude the necessary construction to Murdo, thereby providing interconnection to a population of 26,000, 50 percent of the project population. Absent sufficient funds in fiscal year 2000 and fiscal year 2001, only 8,000 persons will be provided with interconnection to the OSRWSS core to receive water from the Missouri River.

All proposed sponsor construction activity will build pipelines that will provide project water immediately to beneficiaries. In many cases, construction is ongoing, and fiscal year 2000 funds are required to complete those projects. In the absence of fiscal year 2000 funds requested for the distribution systems, it will be necessary to discontinue some on-going construction contracts and reinitiate them at a later time. This will raise project costs. It will also lower faith of contractors in the project, which will affect future bid prices.

Funding for OSRWSS core and distribution facilities are necessary to bring the benefits of the Empowerment Zone designation to the Pine Ridge Indian Reservation, one of five rural designations across the Nation. There is great anticipation on the Pine Ridge Indian Reservation. The federal projection that as much as $.5 to $1.0 billion in economic activity can be generated, however, is largely dependent on the timely completion of a water system, which depends on appropriations for this project.

UNIQUE NEEDS OF THIS PROJECT

Your consideration in this most important project, a project that brings hope, dignity and a spirit of cooperation between Indian and non-Indians, will be greatly appreciated. This subcommittee has provided us with considerable support for which we are grateful. This year the Administration has provided a decreased and inadequate budget. It is necessary for the project to petition the subcommittee for the appropriate level of funding to build the OSRWSS core to Murdo by year 2001, a major accomplishment that will provide interconnections from the core system to nearly 50 percent of the project population or about 26,000 persons.

The possibility of a lower level of appropriations in fiscal year 2000 would be hurtful. Each year our testimony addresses the fact that the project beneficiaries, particularly the three Indian Reservations, have the lowest income levels in the Nation. The health risks to our people drinking unsafe water are compounded by reductions in health programs. We respectfully submit that our project is unique and that no other project in the Nation has greater human needs. Poverty in our service areas is consistently deeper than elsewhere in the Nation. Health effects of water borne diseases are consistently more prevalent than elsewhere in the Nation, due in part

to (1) lack of adequate water in the home and (2) poor water quality where water is available. Higher incidences of impetigo, gastroenteritis, shigellosis, scabies and hepatitis-A are well documented on the Indian reservations of the Mni Wiconi Project area. At the close of the 20th century one cannot find a region in which social and economic conditions are as deplorable. These circumstances are summarized in Table 1. Mni Wiconi builds the dignity of many, not only through improvement of drinking water, but through employment and increased earnings during planning, construction, operation and maintenance.

TABLE 1.—1990 BUREAU OF CENSUS ECONOMIC STATISTICS

Indian Reservation/State	Per Capita Income	Families Below Poverty Level (percent)	Unemployment (percent)
Pine Ridge (Shannon County)	$3,029	59.6	32.7
Rosebud (Todd County)	4,005	54.4	27.3
Lower Brule (Lyman County)	4,679	45.0	15.7
State of South Dakota	10,661	11.6	4.2
National	14,420	10.0	6.3

Financial support for the Indian membership has already been subjected to drastic cuts in funding programs through the Bureau of Indian Affairs and through Welfare Reform. This project, progressing through the budget fighting efforts at the National level, was a source of strong hope that would off-set the loss of employment and income in other programs and provide for a healthier environment. Tribal leaders anticipate that Welfare Reform legislation and other budget cuts nation-wide will create a crisis for tribal government when tribal members move back to the reservations in order to survive. This movement has already started. Recent Census Bureau data indicate that the population of Shannon County (Pine Ridge Indian Reservation) increased over 21 percent between 1990 and 1997. The population of Todd County (Rosebud Indian Reservation) has increased over 11 percent in the same time period. Those population increases are greater than anticipated and will create water needs that will more than utilize the benefits of the Mni Wiconi Project Act. Public policy has resulted in accelerated population growth on the reservations. The Act mandates that:

> . . . the United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply and public health needs of the Pine Ridge, Rosebud and Lower Brule Indian Reservations . . .

Indian support for this project has not come easily because of the historical experience of broken commitments to the Indian people by the Federal Government. The argument was that there is no hope and the Sioux Tribes would be used to build the non-Indian segments of the project and the Indian segments would linger to completion. These arguments have been overcome by better planning, an amended authorization and hard fought agreements among the parties. The Subcommittee is respectfully requested to take the steps necessary the complete the critical elements of the project proposed for fiscal year 2000.

The following sections describe the construction activity in each of the rural water systems.

OGLALA SIOUX RURAL WATER SUPPLY SYSTEM—DISTRIBUTION

Attachment A summarizes the status of the Oglala Sioux distribution system on the Pine Ridge Indian Reservation. All projects rely on groundwater. Pine Ridge and parts of West River will be the last project sponsors to interconnect with the OSRWSS core to receive Missouri River water. With projects now designed and proceeding under construction award there are 932 services and 402.2 miles of distribution and service pipelines, down from earlier projections due to the pace of funding. We continue to extent the start of new projects. Two projects were bid in 1998 and will require 2000 funds for continuation. The Manderson Loop has been under construction since fiscal year 1996, and the fifth of five phases will be scheduled for completed with fiscal year 2000 funds. The Red Shirt Project in the northwest corner of the Reservation will be started in fiscal year 1999, and is scheduled for completion in fiscal year 2000. Parts of the project have been deferred due to shortage of funds and higher costs than anticipated on other project segments. Of special im-

portance to the Oglala Sioux Tribe is the start of the main transmission system from the northeast corner of the Reservation to Kyle in the central part of the Reservation. This transmission line is needed to interconnect the OSRWSS core system with the distribution system within the Reservation in order to deliver Missouri River water to the populous portions of the Reservation. If adequate funds were available, this segment of the project would be initiated in fiscal year 2000. However, this critical component of the Oglala system has been deferred to later years.

WEST RIVER/LYMAN-JONES RURAL WATER SYSTEM—DISTRIBUTION

Appropriations received by WR/LJ have been applied to five service area construction projects that now serve a significant percentage of our membership. A summary of project status, members services and miles of pipeline is provided in Attachment A. Construction funds obtained from the fiscal year 2000 appropriation will be used to construct those projects on which design is on going.

WR/LJ priorities in fiscal year 2000 are for construction of distribution facilities that will receive project water delivered by OSRWSS and LB core pipeline and treatment projects now under construction and completed portions of the RST core pipeline. These projects will bring needed water to the Ft. Pierre area of Stanley County, rural users and the City of Presho in Lyman County and rural residents of eastern Mellette County.

The project in eastern Mellette County is a joint undertaking with the RST. The water source is the RST core pipeline. Distribution pipeline constructed by WR/LJ will serve their membership and have capacity for and deliver water to RST tribal members. A similar project is now under construction to serve WR/LJ and RST members in western Mellette County.

ROSEBUD RURAL WATER SYSTEM

Fiscal year 2000 is turning point for the Sicangu Mni Wiconi. The work proposed will build on the projects completed or initiated in 1998 and 1999 and prepare for the OSRWSS reaching Murdo in 2001.

The improvements to the community system at St. Francis initiated in 1999, will be used to distribute water to rural homes in the surrounding area. The rural distribution project will connect numerous additional rural residences to previously constructed distribution pipelines. The work planned in the Mission/Antelope area will further improve the reliability of the water supply to the area.

Fiscal year 2000 will also be a year of preparation for the construction of the Rosebud core line to Murdo in fiscal year 2001. Pre-construction work in design and right-of-way acquisition is needed to insure timely and efficient construction of this major transmission pipeline in the following year. After the Rosebud core pipeline is constructed to White River, high quality water will be available for both Indian and non-Indians in Mellette County and Northern Todd County where the water is needed most.

LOWER BRULE RURAL WATER SYSTEM—DISTRIBUTION

The core system pipeline from West Brule to Reliance has been installed and tested, using the systems West Brule booster station, which has also been completed. The new water treatment plant is under construction, using a combination of funding from numerous sources. These include HUD/IHS, EPA, USDA-RD, Mni Wiconi/LBRWS, and Tribal. A second 300-gpm treatment unit has been ordered, giving the new plant two-microfiltration units with a total winter capacity of 600 gpm. Of the total $1,800,000 funding, $145,000 will come from tribal funds and the Rural Development funds are a $150,950 grant and a $145,238 loan, to be repaid from the rural water system operating revenues. The balance of the funds is all grant funds, with $250,000 of those funds anticipated to be Mni Wiconi/LBRWS funds. The second water treatment unit will allow LBRWS to provide water to their members in the communities of Lower Brule and West Brule, and until the Lower Brule core system is completed from Vivian to Reliance, services will be provided to West River/Lyman Jones Rural Water System for their members in the Reliance North, Reliance South and town of Reliance sub-systems. LBRWS also has under construction the reservoir located just North of Medicine Butte as a part of this West Brule to Reliance core system.

Fiscal year 1999 funds will also be used, as set forth in that fiscal year budget, to construct the Fort George Butte/County Road core pipeline, and to design and construct a new administration building. The pipeline project will provide water to approximately twenty-four WR/LJ members along that route and, ultimately, to the LBRWS Fort George Butte distribution sub-system, although those sub-system funds have not been budgeted at this time.

Budgeted fiscal year 1999 funds will also be used to complete design for the Vivian to Presho segment of the Vivian to Reliance to West Brule LBRWS core system.

LBRWS requests fiscal year 2000 funding in the amount of $2,433,000. These funds will be used for the following projects:

A. for purchase and installation of the second water treatment unit.

B. for completion of the administration building.

C. for construction, including related engineering services, for construction of the Vivian to Presho LBRWS core pipeline.

As shown above, LBRWS is continuing its obligation to complete the basis core pipeline from Vivian to Reliance and from Kennebec North to the reservation boundary by the legislatively mandated year 2003. In order to accomplish that goal, appropriations to LBRWS must be adequate to plan and construct, with all related costs, at least one major core pipeline project each year. Funding at a level inadequate to accomplish that will cost an additional $340,000 in administrative cost for each year of inadequate funding, thus removing those funds from our total authorized expenditure and, very possibly, depleting authorized funding available for construction to a level which will not allow full completion of the LBRWS core pipeline.

ATTACHMENT A.—PROGRESS ON MNI WICONI DISTRIBUTION SYSTEM

Project/Status	Rural Residential Population (number)	Constructed Pipeline (miles)
OSRWSS:		
White Clay/Wakpamni, Operating	991	65
Slim Buttes, Operating	403	42
Kyle North, Operating	408	28
Kyle to Sharps Corner, Operating	583	44
West Boundary, Operating	16	10
Manderson Loop I, Operating	562	42
Manderson Loop II, Operating	292	31
Manderson Loop III, Operating	530	24
Manderson Loop IV, Construction Awarded	530	32
Manderson Loop V, Design OnGoing	398	27
Rockyford to Redshirt, Construction Awarded	228	57
Subtotal	4,940	402
WR/LJ:		
Creighton Area, Operating	238	179
Elbon Area, Operating	363	274
Kaodaka Area, Operating	318	247
Grindstone South, Operating	195	128
Reliance Area, Operating	267	115
Vivian North, Construction Awarded	240	135
Mellette County West, Construction Awarded	214	171
Draper City Distr, Bid	152	3
Ft. Pierre West, Design OnGoing	246	115
Mellette County East, Design OnGoing	147	103
Presho, Design OnGoing	240	100
Subtotal	2,619	1,570
RS RWS:		
He Dog/Upper Cut Meat, Operating	450	35
Soldier Creek/Ring Thunder, Operating	215	18
Phase III, Operating	510	27
Phase IV, Under Construction	20	21
N Parmalee/Black Pipe, Design OnGoing	40	12
Mission/Antelope/Ring Thund, Design OnGoing	125	6
St. Francis, Design OnGoing	1,200	15

ATTACHMENT A.—PROGRESS ON MNI WICONI DISTRIBUTION SYSTEM—Continued

Project/Status	Rural Residential Population (number)	Constructed Pipeline (miles)
Rural Distribution, Design OnGoing	250	15
Subtotal	2,810	149
LB RWS:		
West Brule to Reliance, Operating		14
County Line Road Pipeline, Bidding		14
Vivian to Presho, Design OnGoing		11
Presho to Kennebec, Design OnGoing		9
Subtotal		48
Totals	10,369	2,169

PREPARED STATEMENT OF ROBERT J. BYRNES, MAYOR, CITY OF MARSHALL, MN

Chairman Domenici and Members of the Appropriations Subcommittee, I appreciate the opportunity to submit this testimony on behalf of the City Council and the citizens of Marshall. Minnesota. We are requesting $2.275 million in Federal funds for the construction of Stage II of the flood control project authorized in the Water Resources Development Act of 1986. This is the funding level that the U.S. Army Corps of Engineers has determined is essential for Stage 2 work on the Marshall, Minnesota Flood Control Project in fiscal year 2000. The Assistant Secretary of the Army (Civil Works) has ask Congress to provide $2.275 million for the Marshall project in his Budget Request for the U.S. Army Corps of Engineers for fiscal year 2000.

The Conference Committee designated $1.5 million for the Marshall project in the fiscal year 1999 Appropriations Bill. These funds were augmented by $700,000 transferred to the project by the Corps of Engineers, and $750,000 appropriated by the Minnesota State Legislature in 1998. In addition, the City of Marshall has allocated cash funds of nearly $1 million to the project, financed the dredging and reconstruction work required on the diversion channel at a cost of $350,000, and purchased property and easements at a cost of about $1 million.

The plans and specifications for the construction work have been completed, and the project advertised for construction bids. All the necessary property and easements have been purchased by the City. The preparation work in Stage 1 of the project has been completed including the dredging and enlargement of the diversion channel and the repair or replacement of gates. The Ditch 62 project has been completed which provides for the storm water collection system for about 60 percent of the City. Bids for Stage 2 construction are scheduled to be opened today, March 24, 1999, with construction scheduled to begin in April, 1999.

PROJECT LOCATION AND DESCRIPTION

The project is located in Lyon County in the Southwest corner of the State of Minnesota, about 145 miles southwest of St. Paul. It is near the center of the Redwood River basin. Southwest State University, the business district, and most of the homes of the nearly 13,000 citizens are located in the floodplain of the Redwood River. Marshall serves as the county seat of Lyon County, and is the commercial and agricultural center for the region.

The Redwood River, a tributary of the Mississippi, enters the southwest corner of the City, winds its way through the City, exiting at the northeast boundary near the University campus. The Redwood River basin serves an elongated drainage area of approximately 743 miles. The river's elevation drops at the significant rate of 19 feet per mile until it reaches the City. There the river slope flattens out to an average of about 4 feet per mile. The lack of a confining valley, and the reduction in grade on the plain, contributes significantly to overland flooding in the Marshall area.

The geological decline in the elevation in the 50 miles from the watershed area to the City of Marshall is greater than the Mississippi River elevation decline from Minneapolis to New Orleans.

A federally constructed flood control project was completed in 1963. While it is successful in protecting much of the City during frequent, smaller floods, the upstream and downstream channels were not effective during major flood events. At those times, the Redwood River overflows a county highway, bypasses the diversion control structure, and floods the inter city area.

The project is designed to protect the City of Marshall from major flood events. Briefly, the authorized plan calls for channel improvements, drainage facilities, the construction of 4.7 miles of additional levees, 3.8 miles of bank protection, 0.3 miles of new high-flow diversion channel, an inter basin overflow structure, modifications to the existing diversion channel and drop structures, and limited recreation trails, picnic and rest area facilities.

PROJECT AUTHORITY, FUNDING, AND STATUS

The Marshall Flood Control Project was authorized in the Water Resources Development Act of 1986, and reauthorized in the Water Resources Act of 1988. Funds were allocated in fiscal year 1984 to initiate preconstruction engineering and design work. The total project is estimated to cost $10.75 million of which Federal costs are estimated to be $7.85 million, and non-Federal costs of $2 million. The non-Federal costs have been provided through the State flood mitigation grant program, and by bonding by the City of Marshall. The Design Memorandum and Environmental Assessment were completed and approved in 1987.

Summarized Federal Financial Data

Estimated Federal Cost	$7,850,000
Estimated non-Federal Cost	2,900,000
Total Project Cost	10,750,000
Federal Allocations to Date	4,397,000
Balance of Federal funds to Complete Project	3,453,000
Benefit-cost Ratio (8 percent)	1.10

FLOW AGREEMENT SIGNED

A major issue to be resolved in the Marshall Flood Control Project was the flow rate of the Redwood River during major flood conditions.

A portion of the Redwood River basin waters are diverted into the Cottonwood River basin. The project will require that historic overflows are maintained between the two watershed districts. After numerous public meetings, a flow distribution agreement was executed on February 22, 1998, by the City of Marshall, Lyon County, the State of Minnesota, and the Corps of Engineers.

PROJECT BACKGROUND

Water and land related problems in the Minnesota River basin were first investigated by the St. Paul District Engineer in 1934, but his study did not address the flooding and related problems in Marshall. In 1960, after the severe floods of 1957, improvements were recommended by the Corps which included the construction of levees and a floodwater diversion channel.

This flood control project was completed in 1963, by the U.S. Army Corps of Engineers to, "provide protection for the people and property of Marshall from the frequent flood risks." The major feature of the project was a 2.4 mile diversion channel around the west and north sides of the City, a 1,840 foot levee at the upstream end of the project, and other features. The channel was designed to handle a 6,500 CFS flow. The overflow, then, would move naturally into the Cottonwood River Watershed south of Marshall.

In 1969, a flood of 8,090 CFS was experienced in Marshall. The river channel both upstream and downstream from Marshall was inadequate to convey the 1963 design flows either to or from the diversion channel. At flows greater than 3,500 CFS, floodwaters bypass the diversion channel and flood the inner City of Marshall.

As a result of the failure of the 1963 flood control project to protect the City, other studies were conducted by a private engineering firm under the direction of the Corps in 1974. The Corps completed a flood control report in 1976, and a feasibility study in 1979. This report was updated by a reevaluation of the problems in 1984. The current project was then authorized in the 1986 Water Resources Development

Act. It is important to note that the project as constructed in 1963, has worsened the potential of flooding for the City. The rate of flow is not adequate to move the flood waters through the diversion channel, and other problems.

The three "Holiday Floods of 1993" (Mother's Day, Father's Day and Independence Day) occurred at both ends of the diversion channel, causing hundreds of thousands of dollars in damages to homes, businesses, and the City's infrastructure. As the water levels remained at flood stage throughout the summer, it created an atmosphere of fear and unrest among the citizens of Marshall.

In 1995, the Redwood River was again flowing at capacity, and the City of Marshall narrowly avoided a disaster worse than the floods of either 1969 or 1993. From 9 to 15 inches of rain fell near Montevideo, Minnesota, less than 40 miles from the Redwood Watershed District.

If the storm had moved only a few miles to the southwest, the flood waters would have engulfed the City at a rate of 8,000 to 12,000 cubic feet of water per second. This is a much greater water overflow than that which occurred in the disastrous flooding of 1969, and as much as three times greater than the 1993 floods.

The District Office of the Corps of Engineers provided estimates stating that the City would have incurred millions in property damage, and that flash flooding of this nature could well have resulted in the loss of lives. Corps officials stated that flash flooding of this magnitude would have made most emergency measures futile. As a result of the flat terrain in and around the City, and much of the Marshall community would have been under water.

STAGE 2—CORPS SCHEDULE FOR MARSHALL FLOOD CONTROL PROJECT

Activity	Beginning date	Completion date
Plans & Specs Initiated	2/28/96	Complete
Plans and Specs Submitted	2/28/98	Complete
Plans & Specs Approved	3/31/98	Complete
Real Estate. Acquisition	12/31/98	Complete
Certification of Real Estate	1/15/99	Complete
Construction Contract Advertised	2/24/99	Complete
Construction Contract Awarded	3/24/99	3/24/99
Construction Contract Completion	3/24/99	4/6/99
Construction Stage 2 Completion	4/25/99	11/30/01

COUNTY DITCH NO. 62 DRAINAGE SYSTEM

In addition to the Marshall Flood Control Project, the overall protection of the City required the reconstruction and modification of the storm sewer drainage system. The examination of the drainage problems was acknowledged in the General Design Memorandum developed by the Corps for Marshall, but is not included, nor is it a part of the funding of this project.

County Ditch No. 62 serves as the storm sewer drainage system for about 60 percent of the City's corporate limits. The Ditch extends along the northeast part of the City, in close proximity to the levee construction required for the Corps flood control project, and feeds into the Redwood River. With the growth of the community, and the development of property and the University campus, since the construction of the Ditch in 1958–9, the flooding problems in the City have been exacerbated by the lack of drainage and poor water movement in a system that is no longer adequate for the community. Construction was completed in 1998.

The City of Marshall, in cooperation with Lyon County and the State of Minnesota, a comprehensive storm water system was planned, designed, and jointly funded by FEMA, the State of Minnesota, Lyon County and the City governments at a total cost of slightly more than $3 million. There are elements of the Storm Sewer/Ditch Project that are closely associated with the Flood Control Project.

STAGE 2—CONSTRUCTION AND FUNDING NEEDS

The Corps of Engineers has accepted bids for construction work that spans both fiscal year 1999 and fiscal year 2000. The Congressional appropriation for fiscal year 1999, Non-Federal funds, and fund transfers by the Corps have, in combination, provided sufficient dollars to move ahead aggressively on Stage 2 construction this Spring. An appropriation of the $2.275 requested by both the Corps and City is critical to the project.

Without full funding by Congress this Session for fiscal year 2000, construction work will come to a halt in October, 1999, causing delays that will substantially in-

crease the cost of the project. Of even greater importance is the risk of severe flooding that will confront the citizens of Marshall another year. A half completed construction project will provide very little protection for the City.

It has been noted by City officials that as soon as construction work begins, some citizens are lulled into a sense of false security. A number of homeowners have called the City asking to drop their costly flood insurance, assuming their homes are protected by the unfinished flood control project. Delays in the completion of the project results in a lack of preparation and a state of readiness by some citizens. It is these precautions and preparations that have prevented major disasters in past flood events.

For these reasons, we respectfully request this Subcommittee to appropriate $2.275 million of Federal funds in the fiscal year 2000 Appropriations Act to continue the work required under Stage 11 of the Marshall Flood Control Project. This action will prevent further delays in the completion of the project, and avoid the over budget costs that inevitably occur when construction is stopped in the middle of a project.

Thank you for the opportunity to bring this critical matter to your attention through this statement. I will be delighted to respond to any questions you may have about the project.

PREPARED STATEMENT CHAIRMAN HAROLD MILLER, CHAIRMAN, CROW CREEK SIOUX TRIBE

The Crow Creek Sioux Tribe respectfully requests funds in fiscal year 2000 to complete the feasibility study and for predesign activities for the Crow Creek Sioux Rural Water System, in the amount of $235,000. The funds requested will complete the feasibility study currently underway, including the preparation of an Environmental Assessment and Class I Archaeological survey, and provide for the purchase of Geographic Information System (GIS) hardware to enable the Tribe to plan for the development of a Municipal, Rural and Industrial Water System for the Crow Creek Indian Reservation.

BACKGROUND—COMPLETION OF NEEDS ASSESSMENT

The Crow Creek Sioux Tribe resides on the Crow Creek Indian Reservation in central South Dakota on the eastern bank of the Missouri River, a virtually unlimited water supply (Figure 1). Table 1 presents the findings of our investigations of water needs to date.

Crow Creek has completed a Needs Assessment Report for the Municipal, Rural and Industrial Water System. The report addresses needs of a water project throughout the Crow Creek Indian Reservation with a total cost of $24,750,000. The system would be designed to serve a future population of 2,843 persons, primarily members of the Crow Creek Sioux Tribe. Because the Crow Creek Sioux Tribe is youthful, with median age of 18.9 years, the population is growing at a moderately high rate, and the need for drinking water facilities will grow as time passes.

Existing facilities include the Fort Thompson, Crow Creek, Big Bend and Stephan public water systems, which serve an estimated population of 1,520. Distribution facilities in the public water system would be incorporated into the new project and improved upon where necessary. The existing intake and treatment plant with 450 gpm capacity at Fort Thompson would likewise be retained. Existing storage facilities with 241,000 gallons of capacity would be incorporated.

Quality of water in the public drinking water systems ranges from good to poor. The Fort Thompson and Crow Creek systems, for example, have total dissolved solids (TDS) within the range of acceptable limits, but the Stephan and Big Bend water systems have total dissolved solids that exceed suggested limits of acceptability, (Table 1). Some of the individual rural wells, not connected to public water systems, have acceptable water quality, but the majority of individual wells has poor water quality with total dissolved solids ranging as high as 4,440 milligrams per liter.

The Missouri River is a source of dependable water supply for a municipal, rural and industrial water project on the Crow Creek Indian Reservation. The average annual streamflow at Fort Randall Dam is 18,214,000 acre feet. Streams crossing the Crow Creek Indian Reservation, such as Campbell Creek, Elm Creek and Crow Creek, are not dependable supplies of water.

Groundwater may be a reliable source of supply in the southeast corner of the Crow Creek Indian Reservation. Sufficient exploration of the terrace gravels at these locations has not been undertaken to determine the long-term availability of water and its quality.

Need for a municipal, rural and industrial water project on the Crow Creek Indian Reservation averages 262 gallons per capita per day, including 48 gallons per capita per day for heavy water using industry, such as a meat packing plant. The average need reflects system losses of 38 gallons per capita per day, 15 percent of demand, an acceptable level of leakage in transmission, distribution and in-house fixtures. The average 262 gallons per capita per day reflects water uses for full employment, commercial and industrial development of the Reservation, provisions for livestock and moderate water conservation practices, the latter reflecting a future plumbing code requiring the use of water conserving fixtures in the home. Provision is also made for lawns and gardens surrounding each of the 978 households projected for the Reservation in year 2020 (Table 1).

The average future water need is 743,748 gallons per day. On days of the year when maximum water use is approached, needs will rise to 1,926,000 gallons, approximately 2.59 times the average day requirement . These values are equivalent to a maximum day flow of 1,338 gpm, of which 450 gpm will be provided from the existing system at Fort Thompson.

Construction costs of the water project are estimated at $24,750,000. Twenty nine (29) pumping stations would be required throughout the system with a total of 463 horsepower. Electrical costs, based on 1996 dollars, would average $58,430 annually. Operation and maintenance costs of the pumping stations have been estimated at $17,000 annually, (Table 1–1). The project will require 181 miles of pipeline (985,000 feet).

STATUS OF FEASIBILITY STUDY

The Crow Creek Sioux Tribe obtained language in the fiscal year 1998 budget as follows:

> . . . the Secretary of the Interior may use $185,000 of the funding appropriated herein for a feasibility study of the alternatives for the Crow Creek Rural Water Supply System to meet the drinking water needs on the Crow Creek Indian Reservation.

105th Cong., 1st Sess., Amendment No. 872, Congressional Record, p. S7506 (July 15, 1997).

The Tribe entered a Cooperative Agreement with Reclamation on September 28, 1998 for the preparation of a Special Study of Feasibility Considerations for the Crow Creek MR & I Water System. This requires compliance with the National Environmental Policy Act (NEPA), National Historic Preservation Act, section 404 of the Clean Water Act for wetlands protection, and a detailed demonstration of the construction and operational costs. Rights of way, easements, licenses and other required permits shall be addressed.

The Bureau of Reclamation retained $20,000 of the $185,000 provided in fiscal year 1999 for federal administrative expenses associated with the Special Study. Reclamation's detailed review and comments shall extend the originally contemplated period of time to complete the Study. Consequently, an additional $75,000 is required to complete the Feasibility Study.

In addition, the sum of $85,000 is required for the acquisition of Geographical Information System (GIS) computer hardware, and $60,000 is required for two full time employees (FTE), a Project Coordinator and a GIS Technican. The sum of $15,000 is needed for training the GIS Technician.

The sum of $235,000 is required in fiscal year 2000 for the Crow Creek MR & I Water System.

CONCLUSION

The project as proposed will provide safe and adequate drinking water to the Crow Creek Indian Reservation for the projected population, the development of commercial and business activities, development of a heavy-water using industry and the support of all livestock within the Reservation. The sum of $235,000 is required in fiscal year 2000 to complete the Feasibility Study and enable the Crow Creek Sioux Rural Water System to acquire the GIS computer hardware needed for predesign activities.

TABLE 1–1.—STATISTICAL SUMMARY CROW CREEK SIOUX MUNICIPAL, RURAL AND INDUSTRIAL WATER PROJECT

	1990 Census	2020 Projected
Crow Creek Population	1,756	2,843
Indian	1,532	2,775
Non-Indian	224	68
Median Age:		
Crow Creek	18.9	.....
South Dakota	32.6	.....
Crow Creek School Enrollment:		
Ages 3 and 4	40	73
Ages 5 to 14	416	765
Ages 15 to 17	97	179
Ages 18 to 19	17	58
Over 20	42	122
Total	612	1,197
Housing:		
Households	434	948
Persons per Household	4.05	3.00

	Crow Creek	South Dakota
1990 Household Income	$12,673	$22,503
1990 Family Income	13,125	27,602
1990 Per Capita Income	3,717	10,661
Percent Families Below Poverty Level	49.5	11.6
1990 Labor Force	480	342,112
Unemployed	139	13,938
Percent in Labor Force	55.7	74.3
Percent Unemployed	29.0	4.1

	Value
Existing Public Water Systems:	
Population Served	1,520
Service Connections	305
Flow Capacity, gpm	535
Storage Capacity, gallons	241,000
General Water Quality, TDS, mg/l:	
Secondary Suggested Limit	500
Fort Thompson	479
Crow Creek	706
Stephan	1,500
Big Bend	1,928
Rural Wells:	
Maximum Observed	4,440
Average Observed	702
Water Availability:	
Missouri River Streamflows, af/year	18,214,000
Campbell Creek Streamflows, af/year	2,669
Elm Creek Streamflows, af/year	5,169
Crow Creek Streamflows, af/year	13,749
Missouri River Monthly Minimum, af/month	260,668
Tributary Monthly Minimum, af/month	.....
Groundwater	Goof to Poor
Design Needs, gallons per capita per average day:	
In-Residence	81
Lawns and Gardens	62
School Enrollment	7
Labor Force	11

Commercial and Industrial	13
Heavy Industry	48
Livestock	14
System Losses	38
Water Conservation	−12
Total	262
Design Needs:	
Average Day, gallons	743,748
Maximum Day, gallons	1,926,308
Maximum Day, gpm	1,338
Annual, af	833

PREPARED STATEMENT OF JAY L. KIMBLE, MAYOR, CITY OF STILLWATER, MN

Chairman Domenici and Members of the Appropriations Subcommittee, I thank you for the opportunity to submit this testimony requesting the remaining $1.2 million needed to complete Stage 2 of the Stillwater, Minnesota flood control project. Construction of Stage 2 extension of the levee system will commence in late June or early July of 1999, and is scheduled for completion by November 30, 2000, river levels permitting.

The project was delayed first by the floods of 1997, and secondly, the soil beneath the planned levee extension was very unstable, requiring a revision of plans and the addition of another stage in the construction process.

The flood waters of the St. Croix River did.not recede until August of 1997. The construction area remained under water preventing construction work to proceed as scheduled. Work on Stage 1 was completed in late Summer of 1997, and additional soil borings were taken for Stage 2. The soil was found to be very unstable, and unable to support the levee system designed for Stage 2 of the project. The construction of Stage 2 is requiring remedial action, and has been designated as Stage 2S.

Phase I, the repair and reconstruction of the old levee wall was completed in the Summer of 1998. A contract was awarded for Phase 2S in November, 1998, and is expected to be completed in June, 1999. Phase 2 will begin the latter part of June or early July of this year, and will be completed in fiscal year 2000. Stage 3 is scheduled for completion in fiscal year 2002.

THE ADDITION OF STAGE 2S TO THE PROJECT

Nine sawmills dotted the St. Croix River waterfront at Stillwater during the lumbering days in the 1st half of the 19th Century. Billions of feet of lumber were processed and shipped all over the growing Midwestern part of the U.S. The current levee wall system was constructed in 1938, in anticipation of the backup of the St. Croix when Lock and Dam #2 was completed on the Mississippi. This Corps project resulted in the widening of the River at Stillwater, covering the sawdust and wood debris created by the sawmills a half Century earlier.

U.S. Army Corps of Engineers reports prior to the authorization of this project stated, ". . . Subsurface soils investigations along the waterfront in Stillwater identified pieces of glass, wood and/or layers of sawdust to depths of more than twenty feet below the ground surface as remnants of the early logging and sawmill activities."

Another Corps report stated, ". . . The extent of the wood and sawdust precludes the economics of excavating to remove these materials and backfilling with satisfactory soil."

Additional soil borings taken during and after Stage 1 to depths of 70 feet without finding stable soil conditions. To construct a new cement levee wall system on an unstable base would result in a degree of settling of the structure that would result in cracking and breaking of the levee wall. To establish a firm base for the structure is economically unfeasible feasible since the depths of such a base would have to be more than 70 feet. How much deeper is unknown.

The third option was to pre-load the construction site with a soft, organic silt material equal to, or greater than the weight of the levee wall system. This process, over a period of time, will compact the unstable soil, and allow the construction of the levee wall after the soil has been compacted.

The surcharge embankment (see Figure 1) was constructed between October and December of 1998. The Corps used 25,000 cubic yards of granular fill the City of Stillwater had saved from the temporary levee constructed during the floods of 1997. The surcharge embankment extends about 1,100 feet, and is between 10–15 feet in height. Settlement plates and vibrating-wire piezometers were installed in

order to monitor the settlement of the subsurface soils. The engineers predict the settling process of the riverfront will take about six months.

PROJECT OVERVIEW

The purpose of the Stillwater project is to provide flood control and protection to the City of Stillwater, Minnesota's oldest city. The project is divided into three stages. Stage 1 is the repair and reconstruction of the existing floodwall (about 1,000 feet in length.) Stage 2 will extend the floodwall North of the existing wall 1,100 feet to prevent the annual flooding that occurs in that area. Stage 3 includes the expansion of the flood wall protection along the West side of Lowell Park

STAGE 1 CONSTRUCTION COMPLETE

Stage 1 included the repair and reconstruction of the existing 1,000 foot levee wall system where severe deterioration of the lower wall has occurred, the development of the plans and specifications for Phase I, the preliminary design work for Phases II and III, and a rip rap treatment of the South end of the levee. The rise in elevation to the South of the old levee permits rip rap to be used rather than extending the levee wall system.

The original levee wall was constructed in 1938, under the auspices of the Public Works Administration (WPA), and is on the register of the U.S. Department of Interior's list of National Historic Sites.

The community is delighted with the Corps' work in the restoration, repair and reconstruction of the old levee wall system.

But even more important, the erosion of the water front underneath the structure has been halted. This levee not only protects the water front, but a major trunk sewer line that carries 3 million gallons of raw sewage each day to the Stillwater water treatment plant. The engineers have warned that extensive, long-term flooding would result in the rupturing of the trunk sewer line, and release of raw sewage into the St. Croix River, one of the Nation's "Wild and Scenic Rivers" designated by Congress.

While the repair and reconstruction work in Phase I of the project substantially reduces the risk of a failure of the wall, it can not be eliminated until the levee is extended and the annual flooding of the area diminished.

STAGE 2 CONSTRUCTION

Bids for Stage 2 construction, the extension of the levee wall system, are expected to be awarded in July, 1999. This is an area North of the reconstructed levee wall in Stage 1 of the project. The Stage 2 area is always the first area to flood, and where the most severe flooding occurs during Spring run offs and heavy rains. Flooding occurs annually at this location causing the emergency roadway adjacent to the levee to become impassable for 4–6 weeks each Spring.

The Army Corps of Engineers has projected that $1.2 million will be required to complete the work on the Stage 2 floodwall extension. These funds will be needed in the Spring of fiscal year 2000, to avoid the stoppage of construction work in the middle of Stage 2. Without funding at the appropriate time, contractors would remove their equipment, including barges used for heavy equipment, and reassign personal, thus, increasing the cost of the project to both the City and the Federal government. The United States Congress appropriated $2 million in fiscal year 1999 to initiate work on Stage 2.

STAGE 2S IN PROCESS

Stage 2S ("S" for surcharge) was commenced in October, 1998 and the surcharge placement was completed in December, 1998. It is anticipated that the surcharge will need to be in place for approximately six months, and that the process will compress the subsoil from 18–24 inches. This will enable construction of the flood wall to begin in mid Summer, and continue in the early Spring of 2000. The cost of the placement of the surcharge was $255,000. Additional costs will be incurred with the monitoring and removable of the surcharge embankment in the Summer of 1999.

STAGE 3

Stage 3 consists of the construction of a secondary flood wall 125 feet inland from the existing levee. The wall will extend about two feet above the ground. Sheet piling will be driven 15 to 20 feet below the surface to prevent the seepage through the porous soil that occurs during flood conditions. The secondary flood wall will provide the City with a 50-year flood protection plan, and with the use of sandbags, a 100 year protection program. The seepage which now occurs with sandbagging

during flood events will be resolved by the deployment of the sheet piling as a part of the flood wall.

The U.S. Army Corps of Engineers is preparing a decision document to validate the economic feasibility of the construction of the low floodwall along the Western side of Lowell Park. The cost estimate for Stage 3 is $4.25 million.

PROTECT SCHEDULE

Stage 1—Construction Completed—October, 1997.
Stage 2—Project design, plans and specifications—Complete.
Stage 2S—In process. Completion date—July 1999.
Stage 2—Award bid for construction—July 1999.
Stage 2—Construction complete on Stage 2—October 2001
Stage 3—Study on for flood wall economics on October 1999.
Stage 3—Construction—April 2001.

LEGISLATIVE HISTORY

This project was authorized for $3.2 million in the Water Resources Development Act of 1992. Both the House and the Senate Energy and Water Development Appropriations Subcommittee designated $2.4 million in Federal funds for the purpose of designing, repairing, extending, and expanding the levee wall system in the fiscal year 1994 Appropriations Act. Additional Congressional appropriations were made for fiscal year 1997, fiscal year 1998, and fiscal year 1999 totaling $4.2 million.

The Minnesota Legislature has provided half of the required non-Federal matching funds totaling $1.525 million for all three stages of the project. The City of Stillwater has contributed $950,000 in project funds, and has set aside the remaining funds required for Stages 1, 2, and 3. To date, all non-Federal matching funds for all Stages of the project are either in the escrow account, or available for transfer to the escrow fund from the State account.

Recognition that additional funds would be required to complete the project, the U.S. Congress amended the authorization in the Water Resources Development Act of 1997, and increased the project's authorization to $11.6 million. This level of funding will permit the reconstruction of the existing levee, the extension of the levee to the North, and the expansion of the levee wall by the construction of a flood wall. The completion of Stage 3 is contingent on the decision document in preparation by the Corps.

Summarized Financial Data [1]

Federal Cost	$6,670,000
Non-Federal Cost	2,670,000
Total Project Cost	8,893,000
Allocations to Date	5,652,000
Balance to Complete	1,118,000

[1] Does not include costs for Stage 3.

HISTORICAL SIGNIFICANCE OF THE PROJECT

The historic implications of the retaining wall system, and its' solution, are extremely important to the entire State. In recognition of the historic significance of Stillwater as the "Birthplace of Minnesota," the U.S. Army Corps of Engineer conducted an excellent study completed in July, 1985, entitled, "Historical Reconstruction of the Riverfront: Stillwater, Minnesota."

The purpose of the study was to provide the Corps of Engineers with information to be used in the review of options for flood control of the downtown area of the City. The research identified 117 sites in the floodplain as being significant to the entire State. Twenty-three of these sites are listed on the "National Register of Historic Places" by the U.S. Department of Interior. All are threatened by the lack of an effective flood control system for the community.

The U.S. Army Corps of Engineers is obligated to protect the cultural or man made environment according to the Corps 1985 study. The obligation is embodied in these laws that set forth Federal leadership in locating, inventorying, and protecting such sites. The proposed reconstruction and extension of the retaining wall system does not threaten, damage, nor destroy any of the identified historical sites in the area.

The project as authorized in 1992 and 1996 in the Water Resources Development Acts provide the protection necessary to preserve these historic structures for future generations.

ACTION REQUESTED

Based on the information and data from the "Design Memorandum" and information prepared by the U.S. Army Corps of Engineers, $1.2 million in Federal support will be needed in fiscal year 2000, and is requested from this Committee. In recognition of the urgent need for the completion of this project, Congress increased the authorization in the Water Resources Development Act of 1996 to provide for the completion of Phase II, and the opportunity to provide flood control measures in Phase lilt

The project is in full compliance with the National Environmental Protection Act, the National Historic Preservation Act (16 U.S.C. 470 (f) and Section 110 (f), 16 U.S.C. 470h–2 (f), the Minnesota State Historic Preservation Office, and have met the special provisions and requirements of Federal and State laws that protect the wild and scenic rivers, and other State and Federal laws enacted to protect the environment and historic sites. We have been working with these agencies for many years in anticipation of the construction and extension of the levee system, and have a summary listing of their letters of support for the project.

For these reasons we respectfully request that this Subcommittee appropriate the sum of $1.2 million for the completion of Phase II construction in the Energy and Water Development Appropriations Bill for fiscal year 2000. Thank you for the opportunity to bring this critical matter to your attention through this statement. We would be pleased to respond to any questions the Members of this Committee may have.

PREPARED STATEMENT OF THE MINNESOTA-WISCONSIN BOUNDARY AREA COMMISSION

CORPS OF ENGINEERS—CONSTRUCTION GENERAL BUDGET

The Minnesota-Wisconsin Boundary Area Commission operates under interstate compact to assist its sponsor states in coordinating public policies and programs on the Mississippi and St. Croix Rivers, which together comprise 265 miles of their bistate boundary. One of its tasks is to assist in the participation by the two states in federal programs which relate to the protection, use and development of the waters, lands and river valleys.

The Commission has ten citizen commissioners, five from each state, appointed by their respective governor. The Commission has long been a champion of the Upper Mississippi River Environmental Management Program (EMP) and urged and assisted Congress to create it the Water Resources Development Act of 1968. Because the Upper Mississippi River has such complex ecological and economic resources under the jurisdiction of many agencies and units of government, our Commission has fostered and been a part of numerous partnership efforts on the river in its 33 years of service.

The Commission recommends appropriation of the full amount recommended in the President's Budget [$18,995,000] for the Upper Mississippi River EMP in fiscal year 2000.

The Upper Mississippi River System EMP has become the primary means by which the federal agencies and states are working together to restore habitat, to gain a better understanding of how the Upper Mississippi River System functions as an ecosystem, and how it would be likely to respond in future management scenarios.

The EMP's habitat rehabilitation and enhancement and long term resource monitoring programs cover the entire 1,300 miles of the Upper Mississippi River and Illinois River/Waterway from the Twin Cities and Chicago, respectively, down to the confluence with the Ohio River. This is the only inland river in the Nation designated by Congress as both a major national wildlife refuge system and a major commercial navigation system. Through more than two decades of cooperative partnership work among the five basin states and the Corps of Engineers and Department of the Interior, co-managers of federal river missions here, a management strategy where the ecosystem and navigation purposes complement one another has been worked out and implemented. This success story needs to be continued without interruption. We respectfully urge the Congress to again support this appropriation as being in the national interest on "The Nation's River."

SOUTHWEST U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF WILLIAM D. HODGES, PRESIDENT, BOARD OF DIRECTORS, TRINITY RIVER AUTHORITY OF TEXAS

Thank you for this opportunity to submit testimony for consideration in regard to fiscal year 2000 budget preparation. The Trinity River Authority of Texas requests that this letter and the requests included herein be included in the formal record for the fiscal year 2000 budget hearings.

Federal participation in Trinity River watershed water resource projects has contributed substantially to Texas' economic development and represent some of the soundest investments ever made with federal funds. We respectfully request your committee's continuing support on the following projects within the Trinity River basin:

Wallisville Lake, Texas.—After decades of delay, this most important project at the mouth of the Trinity River is nearing completion. The Galveston District of the U.S. Army Corps of Engineers has expressed the capability of beneficially spending $4,756 million that will complete this project. The need for completion has been more pronounced because of the drought conditions experienced in 1997 and 1998. The operation of Wallisville will eliminate the need to release fresh water from Lake Livingston to keep saltwater out of the rice fields of the lower Trinity River valley. Enough water to supply approximately 40 percent of Houston's needs was released for the past two years. The President's budget message did not contain any funds for this activity, but we ask that you take all actions necessary to have this level of funding added to the final fiscal year 2000 budget.

Upper Trinity River Basin, Texas.—The North Central Texas Council of Government is the sponsor of this project. With the assistance of nine cities, two counties and one special purpose district the NCTCOG is contributing matching funds for this widely supported study. TRA strongly supports the recommended appropriation of $720,000 included in the President's budget message. If funded by Congress, these funds will be used to design necessary improvements to the existing Dallas Floodway.

Dallas Floodway Extension.—The City of Dallas is the local sponsor of this project. In the past year the city has passed a major bond issue intended to pay the local share of development costs. This project will extend the existing floodway approximately eight miles downstream and provide flood protection to a large flood-prone section of the city. The area within the levees will be available as a linear greenbelt that will be subject to extensive recreational use by the public. The President's budget message for fiscal year 2000 includes $1.553 million to continue preconstruction and design activities. TRA encourages your support for this appropriation.

Navigation to Liberty.—The City of Liberty and the Chambers-Liberty Counties Navigation District are the local sponsors of an existing six-foot federal channel to the Port of Liberty at river mile 45. This channel is in need of maintenance dredging, but no funds have been included in the President's budget message. The Corps of Engineers estimates that an additional $900,000 will be necessary to complete the channel to Smith Point which was funded this year. The Corps estimates that an additional $1.5 million would be necessary to maintain the channel to Liberty. We request that your committee include a total of $2.4 million in the fiscal year 2000 budget for these purposes and direct the Corps of Engineers to complete this work.

Operations and Maintenance.—Other funds are included in the President's budget for operations and maintenance for a series of federal Trinity River watershed lakes for which TRA serves as local sponsor. These projects include Lakes Bardwell, Navarro Mills, Joe Pool and Wallisville.

I would like to express our appreciation for this committee's historic support for water resource development in the Trinity River watershed. I can assure you that it is money well spent.

PREPARED STATEMENT OF RICHARD CASTRO, CHAIRMAN, EL PASO WATER UTILITIES PUBLIC SERVICE BOARD

Mr. Chairman, thank you for the opportunity to testify before this committee in support of the one million dollar appropriation request for the El Paso Wastewater Reclamation program. My name is Richard Castro. I am Chairman of the El Paso Water Utilities Public Service Board which is responsible for developing and operating the wastewater and water supply system in the City of El Paso.

The City of El Paso, Texas is located in the desert at the junction of the Texas, New Mexico and Mexican borders. It is Texas' fourth largest city, and the third fast-

est growing metropolitan area in the United States. The El Paso, Texas and Ciuadad Juarez, Mexico, area forms the largest international border community in the world with shared water supply sources.

El Paso faces a serious future water supply shortage with its arid climate and depleting underground aquifers, and water conservation is essential to preserving the City's future. Since 1991, when a water conservation ordinance was adopted by the City, year-round conservation measures have been strictly enforced, including restrictions on residential watering, non-commercial car washing, and incentives to prevent water flowing into streets and leaks. Over the past eight years this conservation program has reduced the per capita use of water from 203 gallons per day to 162 gallons per day. Despite this success, the City of El Paso and Ciuadad Juarez, Mexico, will deplete their groundwater supplies within the next 25 years.

The El Paso Reclaimed Water Project will serve the central El Paso area and will provide reclaimed water to serve a variety of needs. These include several large turf areas, including the Ascarate Municipal Golf Course, the Chamizal National Park, local schools and cemeteries, and City parks. Government users include the El Paso Community College and a Juvenile Detention Center located in the central part of El Paso. The project will also serve the Chevron refinery, which is expected to be the largest reclaimed water customer in El Paso, requiring one million gallons a day.

Given the density of the potential customers within the project area, the project is the most cost-effective reclaimed water distribution system within the City of El Paso. Three different alternatives for delivering reclaimed water have been developed and are being analyzed using a hydraulic computer model. Each alternative includes in its schematic a single distribution system, dual independent systems, and a single system constructed in two phases.

The proposal was authorized under Public Law 104–266 in 1996 and received $750,000 for the cost of initial planning and design in the fiscal year 1999 Bureau of Reclamation budget. The one million dollars requested for fiscal year 2000 will allow for construction to begin on the project. As with other Title XVI projects, 75 percent of the project funding will be provided by our local government.

The past support of this Committee and the U.S. Bureau of Reclamation has allowed the City to initiate the largest and most efficient water reuse project in the state of Texas. Additional funding and other support have been given to the project by the state, the North American Development Bank and the Border Environment Cooperation Commission. However, the City is to the point where expansion of water reuse is now needed on an even larger scale. Reclaimed wastewater is the essential element and is at the core of our long term water conservation and water supply plans and programs. Only with your help will we be able to move forward in a timely manner. We greatly appreciate the assistance provided by this Committee in the past and we respectfully urge your support and assistance in allocating one million dollars in fiscal year 2000 for the El Paso Reclaimed Water Project.

PREPARED STATEMENT OF H. THOMAS KORNEGAY, EXECUTIVE DIRECTOR, PORT OF HOUSTON AUTHORITY

On behalf of the Port of Houston Authority (PHA) and the over 204,000 Americans whose jobs depend upon activity at the Port of Houston, we extend gratitude to Chairman Domenici, and members of the subcommittee for the opportunity to submit testimony in support of several important navigation projects included in the U.S. Army Corps of Engineers Civil Works budget for fiscal year 2000.

For many years, the Port of Houston Authority has provided testimony to this subcommittee expressing appreciation for providing the funds necessary for the Houston Ship Channel (HSC) to remain fully functional by maintaining proper dredge depths and dewatering of dredge disposal sites. Most importantly, we are grateful for this subcommittee's support through the funding request for the required studies prior to the authorization of the improvement project to deepen and widen the Houston Ship Channel. We are deeply grateful for this support and are particularly excited about the partnership of this subcommittee, the Army Corps of Engineers and the Port Authority in marching forward with an insightful view of the future of one of our Nation's busiest ports in foreign commerce.

We express full support of the fiscal year 2000 Corps of Engineers' budget request in the following amounts:

Houston Ship Channel (O&M)	$13,011,000
Houston-Galveston Navigation Channels (Construction)	60,000,000

Each of these funding requests is important to ensure the continuous flow of commerce through this very busy waterway.

THE PORT OF HOUSTON—ONE OF THE NATION'S BUSIEST PORTS

Port of Houston commerce generates over $7.7 billion annually to the Nation's economy and over 204,000 people work in jobs that are directly related to the Port of Houston's activity. Moreover, the port generates nearly $500 million in customs fees and over $525 million annually in state and local taxes.

It is no exaggeration to say that the Houston Ship Channel is one of the most important economic lifelines between our Nation and the world. Houston's favorable geographic location provides easy access to the entire world business community through key ocean, land, and air routes. More than 100 shipping lines connect Houston with more than 700 world ports and 200 countries. Three major railroads provide cargo distribution throughout the United States with the intermodal link of more than 160 trucking lines. The Port of Houston forms the core of the Houston international community which includes more than 350 U.S. companies with global operations and Houston offices for more than 45 of the world's largest non-U.S. companies. In addition, Houston is the home of one of the largest consular corps in the Nation, with over 70 foreign governments represented. These factors have made the Port of Houston a preferred gathering and distribution point for shippers transporting goods to and from the Midwestern and Western United States.

THE PORT OF HOUSTON—PROTECTING OUR NATION

During the Desert Shield/Desert Storm operation, the U.S. government deployed 106 vessels carrying 458,342 tons of government cargo and military supplies from the Fentress Bracewell Barbours Cut Terminal at the Port of Houston. In fact, between August of 1990 and October of 1991, the Port of Houston was the second busiest port in the Nation in support of our troops. We are proud that the strategic location of the Port of Houston allows us to play such an important role in the defense of our Nation and the world.

MODERNIZATION & THE ENVIRONMENT—SUCCESSFUL PARTNERSHIP

The Houston Ship Channel, which opened in 1914, is believed to be the result of the first-ever federal/local cost-sharing agreement. At that time, the channel was 18½ feet deep. It was subsequently deepened to its current depth of 40 feet with a width of 400 feet. This last improvement was completed in 1996. While Houston is one of our Nation's busiest ports, it is also one of the narrowest deep draft channels. As you can imagine, ships and shipping patterns have dramatically changed to meet the demands of world trade over the last 30 years. Yet, this busy waterway has not been widened or deepened to accommodate these changes. As the local sponsor for the Houston Ship Channel, the Port Authority began its quest to improve the channel in 1967. For reasons of safety, environment, and economics, the Houston Ship Channel is long over-due to be improved. The Port of Houston, and its partner in maintaining this federal waterway—the Corps of Engineers—are leading the way to a unique approach to addressing the environmental interests in the improvement of the Houston Ship Channel. In the late 1980's, the Port Authority and the Corps of Engineers joined with federal and state agencies to form an Interagency Coordination Team (ICT) in a cooperative effort to address environmental concerns with the project—a process advocated by environmental groups and various resource agencies. The ICT included: the U.S. Army Corps of Engineers (USACE), the U.S. Fish and Wildlife Service (USFWS), the U.S. Natural Resources Conservation Service (USNRC), the U.S. Environmental Protection Agency (EPA), the Texas General Land Office (GLO), Texas Parks and Wildlife (TPWD), the Texas Natural Resources Conservation Commission (TNRCC), the Texas Water Development Board (TWDB), the Galveston Bay National Estuary Program (GBNEP), National Marine Fisheries Service (NMFS), the Port of Galveston, and the Port of Houston Authority. Several committees were established by the ICT. One of the most important committees established was the Beneficial Uses Group (BUG). The BUG, chaired by the Port, was charged with developing a disposal plan to utilize dredged material in an environmentally sound and economically acceptable manner that also incorporated other public benefits into its design. Most important was the Port Authority's committed objective that the final plan would have a net positive environmental effect over the life of the project.

We are pleased to report that the ICT unanimously approved the beneficial use plan for disposal of dredged material from the HSC project as one that will have a net positive environmental effect on Galveston Bay, while significantly increasing the net economic benefits to the region and to our Nation. Three basic principles

guided the BUG in their efforts: dredged material should be considered a potentially valuable resource; development of an environmentally acceptable disposal plan is intrinsic to the approval of the project; and, the adopted disposal plan must have long term environmental benefits for the Galveston Bay system. The approach utilized by the BUG for Galveston Bay made this effort unique and precedent setting. What was attempted had never been done before. The BUG developed a preferred disposal plan rather than reviewing a proposal in a regulatory setting. The BUG also addressed one of the largest navigation projects in recent years (approximately 62 Million Cubic Yards (MCY) of new work material and an estimated 200 MCY of maintenance material over the next 50 years. Most importantly, the BUG actively solicited beneficial use suggestions from environmental interests and bay user groups whose collective ideas were given full consideration during the development of the recommended plan. In fact, the community identified more beneficial uses than the material available from the project plus 50 years of maintenance dredging. The result was the identification of beneficial uses for the material to be dredged from the improvement project. The final plan includes the creation of 4,250 acres of marsh—a bird island, boater destination, restorations of two islands lost over the years due to erosion, and subsidence. In addition, an underwater berm will be constructed to provide storm-surge protection and habitat.

PORT OF HOUSTON—LOOKING TOWARD THE FUTURE

The voters of Harris County in 1989 committed significant local funding to support these improvements. By a 2 to 1 vote, citizens approved a measure that will provide the local funding ($130,000,000) to deepen the channel to 45 feet and widen it to 530 feet. The Corps of Engineers and resource agencies involved in the ICT and BUG process have worked diligently to address all concerns and to develop a truly unique approach. The Port Authority heartily commends the cooperation and hard work of the Corps of Engineers and the state and federal agencies who have participated in the process that has this project being applauded across maritime and environmental communities. This project is the first in history to have netted no negative comments during the public review phase of the Supplemental Impact Statement (SIS).

HOUSTON-GALVESTON NAVIGATION CHANNELS (CONSTRUCTION)

From fiscal year 1990 through fiscal year 1999, Congress has appropriated nearly $93,000,000 toward the project to deepen and widen the Houston Ship Channel. The Port Authority has also contributed substantially to support this effort.

Based on our cooperative and productive discussions with the Corps of Engineers, we are convinced that the optimal timeline for completing the navigation portion of this project is four years. A four year schedule will accelerate the benefits of the project and reduce its costs. Each year in reduction construction time adds more than $81 million in benefits, reduces escalation costs by $4.562 million and drives down investment costs by more than $17 million. This subcommittee has agreed that this fiscally sound reasoning is good public policy and accordingly has provided the necessary funding to keep this project at the optimum schedule.

This year, the Administration has included in the Corps of Engineers' construction budget the $60 million request needed to keep this project on the optimum schedule for completion of the navigational portion of the project. We understand that the budget allocations are predicated on anticipated revenue from the Administration's Harbor Services Fund proposal which includes controversial user fees. We fully recognize the challenges of this subcommittee in being responsible to the fiscal needs of the Nation and yet trying to satisfy the many demands on the budget for critically needed water improvement projects. In a recent study conducted by the Texas Transportation Institute, the Port of Houston was evaluated as a prototypical next generation megaport. The port identified channel and berth depths as a major impediment to accommodating ships of the future. Further, in this era of environmental sensitivity, the Houston Ship Channel improvement project is a beacon of light. The improvements to the environment that will be reaped from this project cannot be ignored. The Port of Houston Authority's Demonstration Marsh, utilizing dredged material for beneficial uses, has been included in the Audubon Society's Christmas Bird Count. Over 155 species of birds have been identified on this marsh built entirely with material dredged from the Houston Ship Channel.

The Port Authority has a responsibility to the citizens of Harris County to operate the port in a cost-effective and efficient manner. We would not be fiscally responsible if we did not strive to realize the benefits of the project as soon as humanly feasible and at a most-efficient cost to the partners involved. We urge the members of this subcommittee to fully fund this important project. In doing so and in re-

affirming the subcommittee's commitment to our Nation's port system, we urge the subcommittee to include the $60 million necessary to keep the Houston Ship Channel project on its current optimal, cost-effective schedule. We look forward to your leadership on this vitally important matter.

HOUSTON SHIP CHANNEL—OPERATIONS & MAINTENANCE

The Corps' fiscal year 2000 request for operations and maintenance funding includes $13,011,000 for maintenance dredging of key stretches of the channel, mosquito spraying, protection of various disposal areas, and dewatering of dredge disposal sites. These include the critical maintenance of channel depths at the Bayport flare—essential to safety; removal of existing shoaled material in the Upper Bay; dredging of Boggy Bayou to Greens Bayou; and dewatering of east and west Jones disposal area.

CONCLUSION

We greatly appreciate your support in past years and urge you to include the funds requested to fully support these projects in this busy federal waterway. These maintenance projects, and particularly the funds necessary to continue construction of the HSC improvement project at an optimal schedule are vital, not only to the Port of Houston's continued ability to move the Nation's commerce in a safe, efficient, and economical manner, but also to ensure the competitiveness of this waterway in the world marketplace—an absolute necessity in this global economy.

PREPARED STATEMENT OF FREDERICK A. PERRENOT, P.E., GENERAL MANAGER, CITY OF HOUSTON

WALLISVILLE SALTWATER BARRIER PROJECT

We would like to express our appreciation and thank the Chairman and this Subcommittee for their longstanding support for funding for the Wallisville project. This request is for the final appropriation necessary to complete the project.

The Wallisville project represents the culmination of 40 years of cooperative efforts by the City of Houston, the Trinity River Authority, the Chambers Liberty Counties Navigation District and the U.S. Army Corps of Engineers (Corps). The Corps currently estimates that it will take approximately $5,000,000 to complete the project. If appropriated, that amount will be spent to rehabilitate the locks at the saltwater barrier, complete construction of the upstream overflow barrier ("Control Structure A"), breach an old unused dam and construct certain environmental enhancements to the project site.

With the Wallisville Saltwater Barrier in place, up to 260 million gallons per day of freshwater held in the Lake Livingston reservoir, becomes available as part of the drink water supply to address the needs of about four million Texas Gulf Coast residents. Houston serves as the regional supplier of surface water to meet the needs of Pasadena, Baytown, Friendswood, Webster, South Houston, La Porte, Clear Lake and Galveston, Texas, among others, as well as several hundred municipal utility districts and industries.

When completed, the water users in the greater Houston area will have provided a local share of approximately 66 percent of the total costs of the co-dependent and interrelated Wallisville Saltwater Barrier and Lake Livingston Reservoir projects. We urge you to closely consider this final appropriation request of $5,000,000 in fiscal year 2000 so that the Wallisville project can be completed.

Again, we want to thank this Subcommittee for its support for funding this project and request that this letter become part of the record of testimony before the Subcommittee.

PREPARED STATEMENT OF DOUGLASS W. SVENDSON, JR., EXECUTIVE DIRECTOR, GULF INTRACOASTAL CANAL ASSOCIATION

This testimony for the record, March 26, 1999, before House and Senate Energy and Water Development Appropriations Subcommittees is submitted by Douglass W. Svendson, Jr., Executive Director of the Gulf Intracoastal Canal Association. Ours is the oldest of the regional waterway associations, having been established in Victoria, Texas in 1905. The Gulf Intracoastal Waterway transports 121 million tons of freight annually, the third highest volume among our inland and coastal waterways after the Mississippi and Ohio Rivers.

GICA's membership includes both shallow draft and deep draft ports, port commissions and navigation districts, barge and towing companies, petroleum refineries, chemical manufacturers, shipyards, marine fabricators, fuel terminal facilities, and individuals whose businesses are waterway related and dependent. We have 180 members in the five states of Texas, Louisiana, Mississippi, Alabama, and Florida served by the Gulf Intracoastal Waterway. In addition, the GIWW is the link that binds the North-South rivers to the canal, the coastal ports, and ultimately the heartland of America. The Mississippi River intersects the GIWW at New Orleans, one of our busiest ports, and the Tennessee-Tombigbee Waterway intersects the GIWW at Mobile.

THE OVERALL CIVIL WORKS BUDGET OF $4.2 BILLION

During at least the last 4 years as the Administration has proposed smaller Civil Works budgets, most organizations who file testimony with your subcommittee, including ours, have expressed very strong concern about these reductions, whether in flood control, operations and maintenance, construction, or other. We were heartened when the final appropriated level for fiscal 1999 was approved at $1.653 billion for operations and maintenance.

Because the fiscal year 2000 operations and maintenance budget allowance consolidates $692 million in port O&M with O&M, General, expenditures for the preservation, operation, and maintenance and care of existing river and harbor, flood control, and related works may actually receive less than the recommended $1.835 billion in the President's year 2000 budget.

This same concern applies to funds for construction in the year 2000 budget. If we underfund normal construction schedules that are obviously within the U.S. Army Corps of Engineers' capabilities, we (a) deny our nation the timely use of more modern locks, affecting our international competitiveness, and (b) add to the ultimate cost of construction.

THE PORT FEE AND HARBOR SERVICES FUND

The combination user fee and Harbor Services Trust Fund for port maintenance proposed by the administration in its budget raises several very serious issues for waterborne transportation, our domestic economy, and international trade.

Whatever the constitutional infirmities of the previous harbor maintenance tax, it was spread over a large base of commerce. This fact alone helped mitigate a potentially harsh economic impact which might otherwise have been injurious to many of our ports, our trade, and our economic jobs base.

The proposed fee will be based on volume or tonnage, not value. Those most injured will be our ports that ship large volumes of commodities. This negative impact will ultimately fall on farmers, mine operators, chemical and petroleum sectors, and all commodities producers. Farmers and other producers have historically benefited economically by retaining more of the ultimate sales price in their own pockets, as a result of water transportation efficiencies.

A user fee, as proposed, is much more likely, we believe, to be port and/or vessel specific, thus location dependent, and harm many but the very largest ports. Even large ports stand to lose as a result of the fees that could be levied on many bulk commodities which are routinely traded on world markets. For commodities, successful trades often are determined by pennies per unit of measure, or less. Margins are exceedingly thin and relatively large fees will easily disrupt normal buyer-seller patterns. Our commodities producers such as coal, chemicals, and agricultural products stand to lose sales and market share.

A related problem involves the nature of our ports in the overall economy. Ports generate jobs themselves and also provide the impetus for related industries to establish themselves adjacent or nearby. Benefits of port spending are therefore quite broad in terms of regional and national economies. Port related growth is not characterized by only a few, specific identifiable beneficiaries we usually associate with the obligation to pay user fees. Port beneficiaries, including jobs creation and revenue enhancement, are the thousands of citizens in the affected locale or region. The numbers involved are broad and diverse—just such a class of people we usually call the general population. General revenues are employed to fund programs for this large a segment of the population

Thus, the national benefits and economic significance associated with the sum total of port activities places these entities in a category which is easily able to justify the use of general revenues in support of broad, general economic benefits. Our association recommends that the Congress look seriously at funding port activities from general revenues, as was done prior to WRDA 1986.

SPECIFIC BUDGET REQUESTS FOR FISCAL YEAR 2000

The Gulf Intracoastal Canal Association supports the Administration's budget request of $60 million for deepening and widening the Houston—Galveston Ship Channel. This project has enormous favorable economic implications for the regional and national economy. It also offers an opportunity to increase deep draft/shallow draft navigation safety.

Approximately 100,000 barge tows and 20,000 ships transit the Houston Ship Channel each year. In response to the last major barge and ship collision causing a serious oil spill in 1992, the Houston Galveston Area Navigation Safety Committee (HOGANSAC) began studying how to prevent ship/barge collisions on the Channel. With the work of a broad coalition of deep and shallow draft mariners, shippers, the Houston Pilots, environmental groups, the Corps and the Coast Guard a solution was developed. The plan was to move the beacons to a straight line 500 feet either side of the centerline of the channel between Bolivar and Morgans Point and dredge the area between the beacons and the deep draft channel to a depth of 12 feet to allow barge tows to operate outside the deep draft channel.

We also support funding for the GIWW Section 216 Studies in the President's budget, identified as RCP, Review of Completed Projects. They are Brazos River to Port O'Connor, Texas, High Island to Brazos River, Texas, and Port O'Connor to Corpus Christi, Texas. Within the Brazos River to Port O'Connor study, we urge the committee to specifically direct the secretary to re-route the GIWW across Matagorda Bay.

Besides increasing safety, re-routing the GIWW across Matagorda Bay will save substantial federal outlays. The re-route would enable barge traffic to cross Matagorda Bay farther north than the existing alignment. The existing channel is much closer to the Gulf, which subjects our vessels to serious shoaling and very dangerous currents. The Corps of Engineers recommended plan is not scheduled for implementation until 2003 to 2005. At least $7 million (and possibly as much as $9 million) will be spent during that time period compared to $2 million to establish the re-route across Matagorda Bay now.

These two improvements will constitute the most significant physical and environmental safety enhancements along the Texas coast in years, and are supported by the environmental community. They will also save scarce federal dollars.

Our association also endorses the President's budget request of $8.7 million for construction of the channel to Victoria, Texas. This project was delayed in last year's budget because of funding levels and we urge the committee to provide funds for completion as soon as possible, consistent with the Corps' full capability.

We support surveys funding in the President's budget for Calcasieu Lock, Louisiana ($691,000), and Intracoastal Waterway Locks Study, Louisiana ($700,000).

We support funding for the replacement of the Inner Harbor Navigation Canal Lock to the extent of the Corps' full capability. We encourage the committee to make certain this project is expedited, rather than stretched out.

The Gulf Intracoastal Canal Association also supports the operations and maintenance funding request for Tri Rivers Waterway Development Association. We support sound economic development efforts to improve the ACF waterway as a vital link for southeast Alabama, southwest Georgia, and northwest Florida to export goods to other national and international markets via the Gulf Intracoastal Waterway.

We support inland waterway navigation as an environmentally sound and cost effective transportation mode in the Gulf South region, helping to reduce freight rates and promoting trade and development.

In addition, we support the President's budget request for Pascagoula, Mississippi harbor project ($7,792,000) and Mobile, Alabama harbor project ($700,000).

This concludes our prepared testimony. We appreciate the opportunity to provide this statement for the record.

PREPARED STATEMENT OF ERNIE ZIESCHANG, PRESIDENT, PORT OF LIBERTY COMMISSION

Thank you for the opportunity to submit testimony for consideration in regard to fiscal year 2000 budget preparation. The Port of Liberty Commission requests that this letter and the appropriation requests included herein be included in the formal record for the fiscal year 2000 budget hearings.

The Port of Liberty, Texas is located at river mile 45 on the lower Trinity River. Navigation to the Port of Liberty is "run of the river" and can be very difficult during low flow conditions. At the present time, because maintenance dredging has not been completed in the wake of a series of high flow events, navigation is impossible.

We, the people of the lower Trinity River valley, have a compelling economic need to have our lifeline to the industrial complex on the upper Gulf Coast of Texas reopened.

There are no funds earmarked in the President's budget message for fiscal year 2000 for maintenance dredging of the federal government's channel to the Port of Liberty. The Corps of Engineers has estimated that it will cost $1.5 million to open this channel. The Corps has also estimated that an additional $900,000 will be required to finish dredging the channel to Smith Point in Chambers County. We request that this committee include funds in fiscal year 2000 budget in the amount of $2.4 million for these purposes.

The Port of Liberty Commission also supports an appropriation of $4.756 million for the completion of the Wallisville Saltwater Barrier. The Wallisville project includes among its facilities a navigation lock that will facilitate navigation on the lower river during low flow conditions.

We appreciate all of the fine work this committee has done for interests in the lower Trinity River area over the years, and request your support for federal maintenance and construction projects in our area.

PREPARED STATEMENT OF GALE WM. FRASER, II, P.E., GENERAL MANAGER/CHIEF ENGINEER, CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

Presented herewith is testimony in support of a $35,000,000 construction appropriation necessary for the U.S. Army Corps of Engineers to continue the Tropicana/Flamingo Washes flood control project and testimony to support $2,105,250 reimbursement to the non-federal sponsors, Clark County and the Clark County Regional Flood Control District, for work performed in advance of the federal project pursuant to Section 211 of the Water Resources Development Act (WRDA) of 1996. This project is located in the rapidly growing Las Vegas Valley in Southern Nevada.

The Las Vegas Valley has experienced unprecedented growth over the past twenty-five years and all signs indicate that this growth will continue for several more years. People have moved into the area from all parts of the nation to seek employment, provide necessary services, and become part of this dynamic community. It is estimated that 5,000 people relocate to the Las Vegas Valley every month of the year. Currently the population is over 1.2 million. The latest statistics show that nearly 30,000 residential units are built annually. Once all these factors are combined, the result is that the Las Vegas Valley is one of the fastest growing areas in the nation.

The Federal project proposed by the Corps of Engineers (Corps) is designed to collect flood flows from a 160 square mile contributing drainage area. The plan identified in the Corps' Feasibility Study for the Tropicana and Flamingo Washes Project includes four debris basins, four detention basins, 28 miles of primary channels, and a network of lateral collector channels. The debris basins are designed to collect flood flows from undeveloped areas at the headwaters of the alluvial fans and trap large bedload debris before it enters the channels and causes erosion damage. The detention basins will function to greatly reduce the magnitude of the flood flows so that the flows can be safely released through the developed urbanized area at non-damaging rates. The outflow from the debris basins and the reduced flows from the detention basins will be contained in the primary channel system which will also serve as outfalls for the lateral collector channels. While this latter element is considered to be a non-federal element of the entire plan, it is a necessary element for the plan to function properly. Because flow over the alluvial fans which ring the Las Vegas Valley is so unpredictable in terms of the direction it will take during any given flood, all of the components of the Corps' plan are critical.

The Feasibility Report for this project was completed in October 1991, and Congressional authorization was obtained in the WRDA of 1992. The first federal appropriations to initiate construction of the project became available through the Energy and Water Resources Development Appropriations Bill signed into law by the President in October 1993. The Project Cooperation Agreement was fully executed in February 1995. Appropriations to date have totaled $71,045,000, which has allowed for the continued implementation of the project. The total cost of the project is now estimated at $266,000,000, primarily due to the delay in anticipated federal appropriations.

Certain elements of the Corps' plan have already been constructed by the local community but require modifications in order to fit into the Corps' plan and fulfill the need for a "total fan approach" to the flooding problems of the Las Vegas Valley. The Red Rock Detention Basin was constructed by Clark County in 1985 and modifications by the U.S. Army Corps of Engineers were recently completed in December

1996. The release from the basin has been reduced and its capacity to hold flood waters were enhanced, thereby increasing the level of downstream protection provided by this feature. Although this was the first feature completed, the immediate benefit realized was the removal of approximately five square miles and 4,754 parcels from the alluvial fan flood zones.

The non-federal sponsors also constructed the Upper Flamingo Detention Basin. This facility was completed in February 1992, and is one of the main components of the program. Under the Corps' plan, the releases from this feature will also be reduced and its storage capacity increased. We have been working with the local development community in an effort to have them remove the excess sand and gravel from the impoundment area of this facility. Our goal is to have local contractors remove this surplus material for their own use at no cost to either the federal or local governments, thus providing a significant cost savings to the total project as well as maintaining the construction schedule.

As local sponsors for this important flood control project, both the Clark County Regional Flood Control District and the Clark County Public Works Department anxiously anticipate the construction start of each feature of this project.

Details of the Administration's fiscal year 2000 Civil Works Budget Request indicate that $20,100,000 is proposed for the continued construction of this project. The Los Angeles District of the U.S. Army Corps of Engineers informs us that their capability for fiscal year 2000 is $40,000,000. Funding at the $35,000,000 level will allow the project to begin to return to the schedule as originally envisioned when the Project Cooperation Agreement was executed. Furthermore, funding at this level will allow: completion of construction of the Tropicana Outlet Channel, Lower Red Rock Complex, Las Vegas Beltway Channel (Section 10A), Blue Diamond Detention Basin; and the start of construction for the Flamingo Diversion Channel and R–4 Debris Basin and Channel. The non-federal sponsors are anxious to see these flood control facilities installed. Any further delays places portions of the federal project, and non-federal projects, both at risk.

In 1996, the Regional Flood Control District was notified by the District Engineer of the Los Angeles District, U.S. Army Corps of Engineers, that due to reduced federal budget expenditures, expected and subsequent years of anticipated federal funding would be greatly reduced. The delay in funding, in the fastest growing community in the nation, will mean increased costs due to lost opportunities and inflation. The net result of the reduction in funding is currently expected to delay the completion of the project from year 2001 to year 2006, a five-year delay.

In order to provide the required flood protection in a timely fashion, the non-federal sponsors are implementing certain features in advance of the federal government by pursuing the provisions of Section 211 of the WRDA 1996. An amendment to the Project Cooperation Agreement to implement Section 211 of the WRDA 1996 is in its final review stages. It is anticipated that the amendment will be approved within the next two months. Further, Section 211(f) of the WRDA 1996 identifies this project as one of eight projects in the nation, to demonstrate the potential advantages and effectiveness of non-federal implementation of federal flood control projects. To date the non-federal sponsors have designed and constructed features at Russell Road, Valley View Boulevard, Dewey Drive, and Decatur Boulevard; and designed the Las Vegas Beltway (Section 7A), which the federal government has constructed, and Las Vegas Beltway (Section 7B, 8 and 9). The work performed pursuant to Section 211 of the WRDA 1996 totals approximately $2,807,000. Therefore, the reimbursement for the federal share is estimated at $2,105,250. The non-federal sponsors are continuing to pursue the design and construction of additional features with the primary purpose of providing flood protection in as timely a fashion as possible at an estimated additional cost of $28,000,000. While the non-federal sponsors are not asking to be reimbursed the federal proportionate share at this time, the non-federal sponsors ask that the committee support the execution of the amendment to the Project Cooperation Agreement that institutes the language in Section 211 of the WRDA 1996 for this project.

This is an important public safety project designed to provide flood protection for one of the fastest growing urban areas in the nation. We ask that the committee provide the Secretary of the Army with $35,000,000, the Corps of Engineers' capability in fiscal year 2000, in order to allow the U.S. Army Corps of Engineers to continue the design and construction of additional phases of this desperately needed flood control project.

As the committee is aware, proactive flood control is the investment required to prevent loss of life and damages. Flood control is a wise investment that will, in the long run, pay for itself by preserving life and property and reducing the probability of repeatedly asking the federal government for disaster assistance. Therefore, when balancing the federal budget, a thorough analysis should prove that

there will be substantial future federal savings in disaster assistance that will warrant the continued level of funding through Civil Works Budget appropriations.

PREPARED STATEMENT OF GEORGE RENNER, PRESIDENT, BOARD OF DIRECTORS, CENTRAL ARIZONA WATER CONSERVATION DISTRICT

The Central Arizona Water Conservation District (CAWCD) is pleased to offer the following testimony regarding the fiscal year 2000 Energy and Water Development Appropriations Bill.

The Central Arizona Project or "CAP" was authorized by the 90th Congress of the United States under the Colorado River Basin Project Act of 1968. We thank the Committee for its continuing support of the CAP. The CAP is a multi-purpose water resource development project consisting of a series of canals, tunnels, dams, and pumping plants which lift water nearly 3,000 feet over a distance of 336 miles from Lake Havasu on the Colorado River to the Tucson area. The project was designed to deliver the remainder of Arizona's entitlement of Colorado River water into the central and southern portions of the state for municipal and industrial, agricultural, and Indian uses. The Bureau of Reclamation (Reclamation) initiated project construction in 1973, and the first water was delivered into the Phoenix metropolitan area in 1985. The CAP delivered over 1 million acre-feet of water to project water users in 1998 and anticipates delivering 1.4 million acre-feet in 1999.

CAWCD was created in 1971 for the specific purpose of contracting with the United States to repay the reimbursable construction costs of the CAP that are properly allocable to CAWCD, primarily water supply and power costs. In 1983, CAWCD was also given authority to operate and maintain completed project features. Its service area is comprised of Maricopa, Pima, and Pinal counties. CAWCD is a tax-levying public improvement district, a political subdivision, and a municipal corporation, and represents roughly 80 percent of the water users and property taxpayers of the state of Arizona. CAWCD is governed by an elected 15 member Board of Directors from each of the three counties it serves. CAWCD's Board members are public officers who serve without pay.

Project repayment is provided for through a 1988 Master Repayment Contract between CAWCD and the United States. Reclamation declared the CAP water supply system (Stage 1) substantially complete in 1993, and declared the regulatory storage stage, or Plan 6 (Stage 2), complete in 1996. No other stages are currently under construction. Project repayment began in 1994 for Stage 1 and in 1997 for Stage 2. To date, more than $489 million of CAP construction costs have been repaid to the United States.

CAWCD and Reclamation disagree about the amount of CAWCD's repayment obligation for CAP construction costs. This dispute is the subject of ongoing litigation in United States District Court in Arizona. In Phase One of the litigation, which was completed in 1998, the District court ruled that CAWCD's construction cost repayment obligation for CAP Stages 1 and 2 under the 1988 Master Repayment Contract was limited to no more than $1.781 billion. In addition, the court prohibited Reclamation from denying CAWCD the use of project facilities. Phase Two of the litigation addressed Reclamation's cost allocation procedures for CAP. Trial of Phase Two was completed in December 1998, but the court has not yet issued a ruling.

In its fiscal year 2000 budget request, Reclamation is requesting $27,326,000 for the CAP. Of this amount, $11,153,000 is requested for the construction of Indian distribution systems, and $2,220,000 is requested for completion of construction of sulfur dioxide scrubbers at the Navajo Generating Station (NGS). The balance, $13,953,000, is sought for other CAP activities, many of which would be partially reimbursable by CAWCD if the repayment ceiling had not been exceeded. Reclamation estimates that $8,810,000 of the $27,326,000 would be subject to partial reimbursement resulting in a $6 million increase in total reimbursable costs.

Reclamation's Project Repayment Appendix to the fiscal year 2000 budget justification documents indicates that a "residual" amount of $401,535,392 is currently not covered under the repayment contract as ruled by the court in Phase One of the CAP repayment litigation and may not be repaid to the Federal Treasury. While CAWCD has challenged the adequacy of Reclamation's cost allocation procedure from which this residual amount was derived, we are concerned that Reclamation's budget request would result in an additional $6 million of reimbursable costs for which no repayment contract presently exists. In addition, CAWCD questions Reclamation's authority to spend CAP appropriations in the absence of an amendatory contract to cover repayment of the reimbursable portion. CAWCD has met with Reclamation and has offered to amend its repayment contract to cover an appropriate share of Reclamation's cost overruns, provided that CAWCD's repayment obligation

is reduced by an appropriate amount to reflect the value of CAP water which has been transferred from non-Federal to Federal uses since the 1988 Master Repayment Contract was signed. Reclamation has rejected these offers. Thus, CAWCD believes it has no repayment responsibility for any further funds Congress may provide that would otherwise have been characterized as reimbursable.

Of the total $27,326,000 requested, $3,237,000 is earmarked to fund activities associated with implementation of a 1994 biological opinion of the U.S. Fish and Wildlife Service (FWS) pertaining to delivery of CAP water to the Gila River Basin. These funds are requested for construction of fish barriers ($2,612,000), payments to FWS for non-native fish eradication and native fish conservation ($500,000), Reclamation's non-contract costs ($100,000), and public information program ($25,000). Litigation brought by a local environmental organization remains unresolved, and it is likely that it will be at issue for some time. CAWCD continues to believe that Reclamation should cease spending in this area until the pertinent issues are resolved. For the past three fiscal years, Congress has cut all funding for these activities; however, Reclamation continues to spend other CAP appropriations for these purposes. In fact, language in the Conference Report regarding the fiscal year 1999 Energy and Water Development Appropriations Bill provided specific direction to the Secretary of the Interior not to spend any current or previously appropriated funds for this program. Yet, Reclamation's spending continues. As in prior years, CAWCD recommends that Congress not appropriate funds in fiscal year 2000 to support any Reclamation activities under the 1994 Gila River Biological Opinion issued by the FWS.

CAWCD continues to support appropriations necessary to ensure timely completion of all CAP Indian distribution systems. However, Reclamation's fiscal year 2000 budget request of $11,153,000 for CAP Indian distribution systems is less than half of the FY1999 appropriation for this item. Reclamation has indicated to CAWCD that the fiscal year 2000 funding request will be sufficient to maintain current development schedules, but CAWCD is concerned that the reduced funding request is an indication that Indian distribution systems are being delayed.

CAWCD also supports the continuation of funding for the Tucson Reliability Division. The requested $150,000 will allow planning work to continue and will assist Tucson in developing and implementing a plan including adequate reliability for putting its CAP water allocation to use.

Finally, CAWCD supports increased funding for Reclamation's West Salt River Valley Water Management Study. Reclamation's South/Central Arizona Investigations Program includes a $200,000 line item to support a continuing planning effort to study the integration and management of water resources in the West Salt River Valley, including the use of CAP water. CAWCD supports increasing this line item to $400,000 for fiscal year 2000.

CAWCD welcomes this opportunity to share its views with the Committee, and would be pleased to respond to any questions or observations occasioned by this written testimony.

PREPARED STATEMENT OF GEORGE MILLER, MAYOR, CITY OF TUCSON

The people of Tucson greatly appreciate the funding support your Committee has given over the years to the Central Arizona Project. A crucial element of Tucson's planning for long-term reliance on CAP water has been the provision of delivery reliability for Southern Arizona through the construction of a storage reservoir and related facilities as part of the Project. This feature of the Project is commonly known as Terminal Storage. In the past five years, quality problems with CAP water have caused the City to suspend direct delivery of the water to customers. However, the City is taking steps to resolve those problems. Until these problems are resolved, the City will be storing CAP water underground and recovering it for delivery to customers in lieu of direct delivery. Even after the problems with the treatment and direct delivery of CAP water are resolved, the City will not be able to shift to direct deliveries unless it is assured that delivery of CAP water will be reliable.

I am writing to urge that the Bureau's ongoing environmental, design and planning work for Terminal Storage be continued—so that the City can be assured of CAP delivery reliability to assist the City in maintaining direct delivery of CAP water as a future option. The Bureau has requested that $150,000 be appropriated for the Bureau's ongoing environmental and planning work for Terminal Storage. The City supports the Bureau's request and urges that the requested funds be included in the fiscal year 2000 appropriation so that our City can be assured of CAP delivery reliability as the City works to shift its water supply from groundwater to

CAP water. We understand that the Central Arizona Water Conservation District has no objection to this request because Terminal Storage repayment is not included in the current contract repayment ceiling of $1.781 million.

BACKGROUND RE CAP IN TUCSON

Until the arrival of Colorado River water through the CAP aqueduct in late 1992, Tucson was one of the largest metropolitan areas in the United States wholly dependent upon groundwater. Since the early 1900s, Tucson has been forced to mine groundwater—withdraw more groundwater than is naturally replenished to the basin—to provide water to its growing population. Recognizing the finite nature of the groundwater resource, Tucson committed in the 1970s to a strong conservation ethic. Over the years this has resulted in significant reductions in per capita groundwater use. Nonetheless, current demands for water in this basin exceed renewable supplies by a ratio of nearly two to one.

For many decades, Tucson has been a major supporter of the Central Arizona Project to import Colorado River water to the metropolitan areas of the state. Tucson recognizes that CAP water will be the most viable long-term water source to sustain Tucson's economic and population growth, meet the Arizona groundwater code requirements, and conserve and preserve the City's groundwater resource for the future. In 1988, the City entered into a subcontract for 148,420 acre feet of CAP Municipal and Industrial water, the largest CAP M&I subcontract in the state.[1] Tucson is paying the annual capital charges on this water and in 1999 will pay nearly $7 million to the Central Arizona Water Conservation District in capital charges.

In 1989, after a lengthy process of study and public input, Tucson adopted a long range Water Resources Plan. As part of that Plan, Tucson made a policy decision of rapid transition from mined groundwater to surface water, much earlier than required by Arizona's Groundwater Management Code. In preparing for the use of CAP water, Tucson shifted its economic resources from drilling new wells and maintaining the well fields, to reorienting the water delivery system, and to the construction of a large treatment plant capable of delivering sufficient treated CAP water to substitute renewable water for nearly all of the groundwater the City was delivering. Tucson invested over $160 million in the facilities required for reliance on CAP water.

Unfortunately, when Central Arizona Project water arrived in the Tucson area, the interaction between treated surface water and old galvanized steel pipes in some portions of the city resulted in the delivery of discolored water to seven percent of our customers who received the water. Although major efforts were undertaken to correct the problem, progress was slow. In November 1995, the city's voters passed an initiative measure, Proposition 200, which bars Tucson Water from making direct delivery of CAP water unless it receives enhanced treatment to substantially reduce the total dissolved solids in the water. In 1997, a privately sponsored initiative attempted prematurely to convince the people of Tucson to allow resumption of direct delivery and was defeated at the polls.

Consequently, Tucson is planning to recharge and recover a significant portion of its CAP water until the problems associated with direct delivery have been resolved. Because the direct delivery of CAP water has been delayed, questions have been raised concerning the need for Terminal Storage. A purpose of my testimony today is to assure you that Tucson plans to solve the water quality problems and in the long term to resume direct delivery of CAP water. Tucson needs Terminal Storage.

Growth projections put the Tucson area's population at 1.2 million by 2025, and at 2.5 million 100 years from now. Tucson Water delivered approximately 115,000 acre-feet of water in 1997. Tucson Water's service area is projected to need approximately 170,000 acre-feet in 2025, and nearly 250,000 acre-feet in the year 2100. Regional needs are even greater. Tucson's subcontract for CAP water is 138,920 acre feet. An additional 25,000 acre feet is allocated to private water companies and state

[1] In recent years the Town of Oro Valley and the Metropolitan Domestic Water Improvement District (MDWID) have become water providers. The service areas of both entities were included in Tucson's service area when CAP allocations were made, since the City, in the Northwest Area Agreements, had contracted to provide CAP water for these service areas. Recently the City, as part of a settlement of litigation over MDWID's obligations under the Northwest Area Agreements, transferred to MDWID 9,500 acre feet of the City's CAP entitlement. An additional amount of CAP entitlement may in the future be transferred to the Town of Oro Valley in connection with the settlement of the obligations of Oro Valley and the City under the Northwest Area Agreements. Consequently, both MDWID and Oro Valley also have concerns over the long-term reliability of CAP deliveries in Southern Arizona.

land in the area. It appears that this area's current CAP allocations will be totally utilized by the year 2025.

Tucson is, and must remain, committed to the Central Arizona Project to support the City's existing population as well as its future growth. I assure this Committee that Tucson's long-term commitment to the CAP remains intact, despite the water quality problems experienced by the City when it directly delivered CAP water to its customers. After describing these problems, I will address our support for $150,000 of the proposed appropriations for the Tucson Reliability Division of the CAP for fiscal year 1999.

TECHNICAL CAP IMPLEMENTATION PROBLEMS IN TUCSON

Conversion of Tucson Water's service area population of nearly 600,000 people from groundwater to surface water has been a significant challenge for the City. In order to comply with anticipated new stringent EPA requirements, Tucson constructed a state-of-the-art water treatment plant. We operated a pilot plant in Phoenix to identify and deal with the problems that could be encountered when CAP water was introduced in Tucson. A major public relations campaign was implemented to prepare our customers for the changes they might encounter when CAP water arrived. When the first 84,000 customers were transferred from groundwater to CAP water in early 1993, 7 percent of those customers experienced problems on a scale that had not been anticipated. The surface water caused encrusted materials in old galvanized steel pipe to break loose and resulted in the delivery of discolored water to approximately 6,000 customers. The City established a special office to deal with customer complaints and employed nationally recognized experts to help solve the problem. However, a quick solution could not be achieved, so the areas experiencing major quality were returned to groundwater deliveries.

During 1994, the City continued to deliver treated CAP water to customers in areas with newer pipelines. However, after the CAP aqueduct was closed down in November and December, 1994 for siphon repair, the Mayor and Council decided that deliveries of treated CAP water would not be resumed to any customers until the problems with direct delivery were fully resolved.

To assure that direct delivery of CAP water would not resume until the quality of the water improved, the voters of the city approved a citizens' initiative known as Proposition 200 in November 1995. It provides that CAP water cannot be directly delivered to Tucson Water customers unless the quality is equivalent to high quality groundwater in Avra Valley west of Tucson. Enhanced treatment will be needed if CAP water quality is to be improved to Avra Valley standards.

In 1996 the City contracted with the Bureau of Reclamation to conduct pilot plant tests of enhanced treatment techniques and estimate costs. This study is not yet complete. Meanwhile the City is developing ways to continue to purchase CAP water and store it for future use. The Mayor and Council have been clear and united in continuing their commitment to taking substantial quantities of CAP water each year. However, the City must deal with the quality issues which have arisen because of the interaction between CAP water and the City's older pipe system. Economic consequences will include pipeline repair and accelerated replacement, costs for homeowner damages, and, as described above, the possible construction of a new enhanced treatment plant.

We will preserve our basic conservation ethic, and our long-term need for CAP water to meet the needs of Tucson's growing population will continue. The CAP Use Study for Quality Water by Dames & Moore, completed in the Fall of 1996, reported on alternatives for utilization of the City's CAP allocation. Its long-term recommendation included direct delivery of substantial quantities of treated CAP water. Terminal Storage is critically necessary for such direct delivery.

To address its problem with corroded pipes, the City is accelerating its main replacement program. More than half of the 200 miles of old galvanized water pipes have been replaced. The City is also conducting a major new program to determine the level of water quality acceptable to our water customers and the methods for assuring that this level is maintained. A pilot program to deliver blended CAP and groundwater to volunteer neighborhoods is under way.

TERMINAL STORAGE

The problems Tucson has had switching from groundwater to CAP water highlight the need for a storage facility near the terminus of the aqueduct—Terminal Storage, as the final element of the Central Arizona Project in Southern Arizona. A reliable supply of CAP water is very important to Tucson. It is also quite important to the Tohono O'odham Nation. The Nation has a contract for 37,800 acre feet of CAP water, and is to receive an additional 28,200 acre feet of water under the

terms of the Southern Arizona Water Rights Settlement Act of 1982. This may also be CAP water. The Nation has urged that Terminal Storage be provided as part of the Central Arizona Project so that a reliable supply of water will be provided to the Nation and its people.

The Bureau has been doing detailed planning and continuing the NEPA processes on a terminal storage proposal that has been approved by the City and the CAWCD board. The principal elements of the proposal are as follows:

1. A 15,000 acre foot surface storage reservoir with 350 cfs gravity flow to the Tucson Water Treatment plant;
2. Joint CAP recharge facilities with the CAWCD;
3. Recovery of recharged water from: a. Two of Tucson Water's existing exterior wellfields, Avra Valley and Santa Cruz, with the flexibility to introduce flows either at the treatment plant or into the surface reservoir; and b. A new Central Avra Valley wellfield, located on City-owned property with the pumped supply introduced directly into the CAP canal on the discharge side of the Brawley Pumping Plant.
4. Operation of the Tucson wellfields to be turned over to the CAWCD, under a cooperative agreement, during any CAP outages.

The estimated cost of the federal portion of this project is $70 million for the storage facility; the cost of the local portion is approximately $50 million for existing and new wellfields and pipelines. The draft Environmental Impact Statement for Terminal Storage was completed in April 1995. The final EIS was completed last year.

We have urged the Bureau to continue the environmental work and planning for Terminal Storage and the Bureau plans to do so, albeit at a reduced level. Its appropriation request seeks $.12 million for work in fiscal year 2000 related to Terminal Storage. The City respectfully asks that this request be approved so that Terminal Storage can remain alive while Tucson resolves its CAP problems and develops its long term programs to return to direct delivery of CAP water.

PREPARED STATEMENT OF BERNADINE BOYD, PRESIDENT, FORT MCDOWELL TRIBAL COUNCIL, FORT MCDOWELL INDIAN COMMUNITY

On behalf of the Fort McDowell Indian Community [Community], I request that the sub-committee appropriate a supplement to the fiscal year 2000 budget for the Bureau of Reclamation in the amount of $3.2 million, representing the cost of environmental mitigation associated with a loan pursuant to the Small Reclamation Projects Act, 43 U.S.C. § 422a [small project loan], authorized and funded as part of the Community's 1990 water settlement.

THE FORT MCDOWELL WATER SETTLEMENT

As part of the Community's 1990 water settlement, Congress directed that the Secretary provide the Community a $13 million small project loan, to be repaid at no interest over a fifty year period. *Id.*, § 408(e). The Congress further provided that, "The Secretary [of Interior] is directed to carry out all necessary environmental compliance . . ." and further "authorized to be appropriated such sums as may be necessary to carry out all necessary environmental compliance associated with this settlement, including mitigation measures adopted by the Secretary." *Id.*, § 410 (a) & (b). To date, the environmental mitigation required by the Secretary as part of the small project loan has been undertaken largely by and at the expense of the Community. The Congress has not appropriated funds necessary to allow the Secretary to assume these burdens. That is the purpose of this request.

During the negotiations leading to the 1990 water settlement, the Community made it clear that it required wet water, not simply a paper water right: that is, the practical ability to deliver the necessary water for full development of the reservation. The Community's water budget was based on this principle. Most importantly for present purposes, the federal cost sharing in the settlement was as well. In correspondence between the Community and the Department, the Community laid out its proposal regarding federal cost sharing as follows: the Community required sufficient funding to enable it to beneficially use its entire water budget; the Community determined those costs to be approximately $38 million, in consultation with its engineer and agricultural economists; the Community agreed to the $13 million small loan for its agricultural development and agreed to apply that amount against development costs, resulting in the Community's proposed development fund of $25 million. In the final settlement, the State of Arizona contributed $2 million to the development fund and the United States contributed $23 million. *Id.*, § 408.

Clearly, the development anticipated through the small project loan at the time of the settlement was a key component of the overall settlement. As stated in the

Community's testimony in support of the bill, the small project loan was expected to develop approximately 1,600 acres of the reservation. Once finalized, the loan application showed development of 1,584 acres, with state of the art drip irrigation for permanent crops.

ENVIRONMENTAL MITIGATION COSTS OF THE SMALL LOAN PROJECT

At the time of the settlement, the parties anticipated little, if any, environmental mitigation would be required as part of the small project loan. The Secretary was directed to undertake any required environmental mitigation and the Congress authorized appropriations to pay for such. However, these costs were not appropriated at the time since the nature and extent of environmental mitigation, if any, were unknown.

As the project progressed, the Fish and Wildlife Service and Bureau of Reclamation [Bureau] required substantial environmental mitigation. Two of these mitigation requirements imposed obligations with significant negative economic impacts on the Community.

First, before land clearing for the project began, six significant cultural (archaeological) sites were identified by the Bureau archaeologists. These sites could have been cleared for development through excavation recovery. To avoid the substantial delay in the project this would cause and the substantial cost of excavation to the Bureau, the Bureau proposed and the Community agreed to simply avoid these sites. These six sites are now fenced off and are surrounded by developed fields. The irrigation system is built around these sites but does not include them. Principally because these sites were excluded, the total acreage developed by the project is 1,357, rather than the 1,584 expected at the time of the settlement.

At the time the cultural sites were fenced, it was estimated that mitigation of the sites by excavation would have cost approximately $3 million. Recently, the Community obtained an estimate from Archaeological Consulting Services, Ltd., for the excavation and recovery of these cultural sites. Their more current estimate shows that the cost could now exceed $9 million. The Secretary saved literally millions by avoiding the sites rather than excavating them. However, the effect of this approach was to impose mitigation related costs on the Community. Even if the Secretary were to undertake the excavation of these sites now, the cost to place those sites into development would be prohibitive. It would require redesign of the entire project and the extension of laterals within these isolated pockets. For all practical development purposes, these sites are now isolated and forever lost to the Community.

Second, for the project to move forward, the Bureau and Fish and Wildlife Service required biological or habitat mitigation. Because it simply took the project lands out of desert habitat, the Community was obliged to set aside other land as desert habitat. The Bureau could have set aside land off reservation for this purpose. Instead, the Bureau required that the Community set aside 330 acres of Verde River front property on the reservation as permanent desert habitat in 1992. This 330 acres cannot be developed or even used by Community members. The Community recently obtained an appraisal of these 330 acres, which showed a market value of $4.9 million.

Apart from the obvious costs to the Community summarized above, these steps for environmental mitigation have affected overall value of the project to the Community as well. As a result of the environmental mitigation, the project is reduced in size from 1,584 acres to 1,357 acres. The Bureau has worked with the Community to identify additional reservation land that can be developed to make up for this acreage shortfall. However, these replacement lands are class III lands, much lower quality and productivity than the class I lands that were withdrawn from the project for environmental mitigation purposes. In addition, these substitute class III lands have higher development costs. An additional $1.9 million, over and above the original $13 million loan, will now be required to place these substitute lands into development.

Even more disturbing is the reduction in the expected economic benefits from the project. Under the project as originally approved in 1990 (1,584 acres in development with no environmental mitigation costs imposed on the Community), the Community expected an internal rate of return of 6.6 percent. As the project now stands, there are 1,357 acres developed, with $4.9 million in costs for habitat mitigation, resulting in an internal rate of return of less than 2 percent.

Clearly, this is not the bargain struck by the Community in the 1990 water settlement. By reducing the developed acreage, the Community has fallen short of the full development goal upon which the settlement was premised. By imposing the environmental mitigation burden on the Community rather than the Secretary, the eco-

nomic value to be derived from the developed acreage is dramatically reduced. In fact, the combined environmental mitigation costs and obligations imposed on the Community may actually exceed the present value of the loan.

THE APPROPRIATION PROPOSED BY THE COMMUNITY

As the project neared completion last February, the Community presented this problem to the Department of the Interior. The Community made a proposal to the Department that, in its view, would place the Community roughly in the position contemplated at the time of the water settlement. Specifically, the Community proposed that the Department forgive repayment of the small project loan. This would, in turn, have released an escrow account of $1 million, plus interest, that was set aside by the Community in 1990 to guarantee repayment of the loan. The Community proposed to complete the project to the full 1,584 acres with its own funds, a cost now estimated at $1.9 million. Finally, the Community proposed that restrictions on the 330 acre habitat mitigation area be lifted, in favor of regulation by Community under its own land use plan that restricts development on a much larger part of the reservation. Significantly from the Community's point of view, the Community land use plan does not restrict members' use of the area, as does the present restriction.

The Department studied the Community's proposal for months and informally decided that, for technical budgetary reasons, it could not solve the problem administratively. Although the Department acknowledges its responsibility for environmental mitigation under the water settlement act, Congress must appropriate the funds authorized by the act so that the Department can fulfill its responsibility.

The Community proposes that its original proposal to the Department be implemented through an appropriation for the environmental mitigation costs already authorized in the water settlement. The Community believes these costs can be calculated as follows:

—$3.2 million is a conservative estimate of the direct costs to the Community of environmental mitigation: the Community proposes to pay the $1.9 million necessary to complete the project to 1,584 acres; the Community will also suffer a long term reduction in the value of the project because of the substitution of class III for class I lands, estimated at $1.3 million (calculated by subtracting present value of project as originally approved from present value of project as completed with substitute lands, or $8.735 million minus $7.474 million calculated at 6 percent interest; these calculations reflect a delay in achieving full benefits as well as a reduction in annual crop benefits);

—$3.2 million also approximates the present value of the $13 million small loan repayment, using an interest rate of 6 percent;

—Congress should appropriate $3.2 million to the Bureau of Reclamation, as representing the reasonable costs of environmental mitigation, with direction that the Bureau use the appropriation to close out the Community's small loan and forgive repayment, thereby lifting all Bureau restrictions and responsibility for the project, subject of course to full payment of any unused portion of the original $13 million to the Community for use in completing the project;

—with the small loan closed out, the escrow account held by the Community to guarantee repayment will be closed, which funds can be dedicated, along with other necessary Community funds, to complete the project to the originally contemplated 1,584 acres;

—with the small loan closed out, all restrictions imposed on reservation land by the Department as part of the loan must be lifted, with the 330 acre habitat mitigation area reverting to the Community's land use plan.

These steps will place the Community in the same approximate position as that anticipated at the time of the settlement—sufficient funding to apply its full water budget to beneficial use. The circumstances here arguably support direct monetary compensation to the Community, in light of the Department of the Interior's failure to comply with its obligation to assume responsibility for all environmental mitigation under the water settlement. However, the Community does not propose that here. Rather, the Community proposes that funding representing the Community's costs of environmental mitigation be appropriated for the Bureau so that the Bureau can close out the loan. Done any other way, the United States' costs will be much higher and the final completion of the project, up to the anticipated 1,584 acres, will be greatly delayed.

The Fort McDowell water settlement was a turning point for the Community. The irrigation project funded by the small project loan has been constructed and 86,000 pecan and citrus trees have been planted. The reservation has literally begun to bloom as these permanent crops reach fruition. By any measure, the water settle-

ment in general and the small project loan in particular are successful. With this appropriation, the final touches will be put on the settlement and the United States and the Community can be proud of the result. As always, the Community appreciates your support and wishes to thank the Arizona congressional delegation in particular for its efforts on the Community's behalf.

PREPARED STATEMENT OF CAROL W. WEST, EXECUTIVE DIRECTOR, TUCSON REGIONAL WATER COUNCIL

The Tucson Regional Water Council (TRWC) thanks you for the opportunity to provide testimony concerning the Bureau of Reclamation's fiscal year 2000 budget request. TRWC is a non-profit organization in Tucson, Arizona whose members are water providers, business and professional people, and concerned citizens dedicated to ensuring a long-term stable, quality water supply for Tucson and the surrounding region. Our members appreciate the Committee's long support of the Central Arizona Project (CAP), and we owe a debt of gratitude to you and your colleagues for your years of dedication to this project.

TRWC wishes to address the specific Bureau of Reclamation budget line item: Tucson Reliability Division, which refers to system reliability to utilize CAP water. In view of the importance to the Tohono O'odham Nation, the towns of Marana and Oro Valley, Metropolitan Domestic Water Improvement District, and the City of Tucson, TRWC requests that the Committee support the Bureau's small request for funding ($150,000) in the fiscal year 2000 bill.

There is widespread recognition among regional water providers that the Tucson area will eventually find it necessary to directly utilize CAP water for municipal purposes. The present move to recharge much of the CAP water has been in response to customer dissatisfaction with the initial treatment and delivery provided by Tucson Water. However, recharging all the CAP water will not efficiently supply municipal needs for the long-term.

Extensive testing conducted over the past five years shows that the problems experienced by water users in 1992–94 can be avoided with the proper pH adjustment and the addition of the corrosion inhibitor polyphosphate. A voluntary neighborhood demonstration project sponsored by the City of Tucson will be implemented shortly to show that a blend of groundwater and recharged CAP water can produce water of acceptable quality. The next logical step is to demonstrate to the community that a blend of groundwater and properly treated CAP water is also an acceptable, and more affordable option.

TRWC believes that providing reliability for the Tucson region is critical to completing the Central Arizona Project and reducing reliance on our dwindling groundwater supplies. Unless this region has system reliability, it cannot achieve the most efficient uses of its CAP allocations . . . not for municipal uses or other uses such as mining. Direct utilization requires a stable and sure supply, and funding the Bureau of Reclamation's request will enable the agency to continue efforts to provide our region with the reliability that will be vitally needed.

TRWC respectfully requests that this specific Bureau of Reclamation budget line item Tucson Reliability Division be approved. Thank you for your serious consideration of this request.

PREPARED STATEMENT OF SKIP RIMSZA, MAYOR, CITY OF PHOENIX

On behalf of the City Council and the residents of Phoenix, the sixth largest city in the country, I would like to present the following testimony. I am pleased to present this testimony in support of appropriations to help our city and region continue to foster a partnership with the federal government to achieve our shared objectives. We have been working with our delegation, this Committee, the Corps of Engineers, the Bureau of Reclamation, and other federal agencies to promote environmental restoration and flood control needs in the most effective and economical way. We sincerely appreciate the past support of this Committee and trust we will continue our partnership to see several critical projects through to a successful conclusion.

There are three initiatives under way which this Committee has supported in the past and are included in the President's Budget. Continued support is essential to achieve the public benefits for which the projects are being designed.

RIO SALADO AND RIO SALADO PHASE II

We have been working for nearly five years with the Corps of Engineers in a cost-shared partnership to study a project to restore riparian wetlands along the Salt River in downtown Phoenix and Tempe. The wetlands were lost over many years as a result of diversion of Salt River flows for irrigation of the surrounding region.

In cooperation, the Corps, the City of Tempe, and we have developed a cost-effective plan called Rio Salado to restore about seven miles of the lost riparian wetlands. The plan has been approved by the Secretary of the Army and the Administration and was included for authorization in the Senate passed Water Resources Development Act of 1998. Even though the House did not act on the bill, we are hopeful that Congress will pass a WRDA 99 that will include authorization for the Rio Salado project. In the meanwhile, preconstruction engineering and design is continuing.

The Rio Salado project is the centerpiece of our efforts to revitalize the environment and the economy of a part of our city that has not enjoyed the fruits of progress as have other parts of the city. The President's budget request is both sufficient and essential to keep this project on schedule. We urge you to support the appropriation of $1,545,000 for design of the Phoenix section of the project and the $100,000 for the Tempe section. We also seek $100,000 to begin Rio Salado construction subject to WRDA 1999 authorization. This funding is critical if the Corps is to accelerate its schedule and begin to contract construction in late fiscal year 2000.

The Rio Salado Phase II portion of this environmental restoration project was included in the Corps of Engineers Reconnaissance Study in 1996 which led to the Rio Salado project. It is essentially a continuation of the Rio Salado project and would connect the Rio Salado project either to Tempe or to Tres Rios. We are seeking $200,000 for the Corps to begin the feasibility study of this portion of the project which will determine if the project moves upstream or downtstream in the next phase. Completion of the study and construction of the project would make much of the corridor whole. We strongly urge your support for this appropriation.

TRES RIOS

This is a truly unique project the outcome of which holds promise to benefit the entire nation as well as the Phoenix region in particular. The Bureau of Reclamation has constructed a demonstration project, which uses wastewater from the regional wastewater treatment plant to create wetlands near the discharge location. The Corps of Engineers is studying expansion of those wetlands and the Bureau is looking at ways to reuse the wastewater once again for groundwater recharge in the Agua Fria River after it has flowed through the wetlands. The demonstration project to date has exceeded all expectations.

It is critical that we continue this project at full pace. The President's Budget includes $486,000 for the Corps to complete its feasibility study to expand the demonstration project and $50,000 to begin preconstruction engineering and design. We believe this is sufficient for the Corps.

The Bureau's budget contains $400,000 for its share of the effort, which we support. We are seeking an additional $200,000 to allow the Bureau to begin studies on the Agua Fria River groundwater recharge portion of the project. This work should be undertaken under the separate authority for a Metropolitan Phoenix Water Reclamation and Reuse project under section 1608 of the Bureau's Title XVI Reclamation and Reuse Program. It is important to have that portion of the study completed in about the same time frame as the rest of the study and design work to avoid losing the water coming from the wetlands restoration project.

GILA RIVER, NORTHEAST DRAINAGE AREA

This is another innovative study designed to anticipate potential flood control problems from the rapidly expanding development on the alluvial plains in the Northeast section of the greater Phoenix area. The results of the study will allow local jurisdictions to plan and regulate development in a coordinated way throughout the region to avoid creating flooding problems as has happened in many other rapidly growing areas in the nation. We believe that spending a little time and planning effort now will reap large savings in flood control costs and flood damages in the future. The Corps budget contains $342,000 for this study that we believe is enough to keep it on schedule.

SUMMARY

All three projects, Rio Salado with its Rio Salado Phase II extension, Tres Rios, and the Gila River, will act in synergy to restore lost environmental quality and pro-

vide for creative management, conservation, and reuse of scarce water quantities in the Phoenix metropolitan area. In summary, we are requesting that you retain $1,645,000 for the Rio Salado project ($1,545,000 for the Phoenix reach and $100,000 for the Tempe reach), add $100,000 in construction funds for Rio Salado, include $200,000 to extend the Rio Salado study to Phase II, that you retain the $486,000 for the Corps of Engineers feasibility study of the Tres Rios project and $50,000 for Corps preconstruction engineering and design, that you include $400,000 for the Bureau's portion of Tres Rios, and that you include $200,000 for the Bureau to proceed with the groundwater recharge study at the Agua Fria.

We sincerely appreciate the opportunity to present this request and thank you very much for your courtesy and consideration. We would be pleased to provide any additional information you may need.

PREPARED STATEMENT OF JACK A. BARNETT, EXECUTIVE DIRECTOR, COLORADO RIVER BASIN SALINITY CONTROL FORUM

COLORADO RIVER SALINITY CONTROL PROGRAM

This testimony is in support of funding for the Colorado River Basin salinity control program. Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. This role and the authorized program were refined and confirmed by the Congress when Public Law 104–20 was enacted into law. A total of $17,500,000 is requested for fiscal year 2000 to implement the needed and authorized program. Failure to appropriate these funds will result in significant economic damage in the United States and Mexico and threaten compliance with adopted basin-wide water quality standards in the future. The President's request of $12.3 million is a level funding request and the Forum appreciates this Administration's support of the program. Nonetheless, studies have shown that implementation of the program has fallen behind the needed pace to prevent salinity concentrations from exceeding numeric criteria adopted in connection with water quality standards for the River Basin while the Basin states continue to develop their Compact apportioned waters of the Colorado River. Concentrations of salts in the water above the criteria would cause hundreds of millions of dollars in damage in the United States and result in poorer quality water being delivered by the United States to Mexico. For every 30 mg/l increase in salinity concentrations, there is $100 million in additional damages in the United States. The Forum, therefore, believes a rate of implementation of the program beyond that requested by the President is necessary.

The program authorized by the Congress in 1995 has proven to be very successful and very cost effective. Proposals from the public and private sector to implement salinity control strategies have far exceeded the available funding. Hence, Reclamation has a backlog of proposals and is able to select the best and most cost-effective proposals. Funds are available for the Colorado River Basin states' cost sharing at the level requested by the Forum. Water quality improvements accomplished under Title II of the Colorado River Basin Salinity Control Act also benefit the quality of water delivered to Mexico. Although the United States has always met the commitments of the International Boundary & Water Commission's (Commission) Minute 242 to Mexico with respect to water quality, the United States Section of the Commission is currently addressing Mexico's request for better water quality at the Southerly International Boundary. Consideration of all of this argues for a higher level of funding than requested by the President.

OVERVIEW

The Colorado River Basin Salinity Control Program was authorized by Congress in 1974. The Title I portion of the Colorado River Basin Salinity Control Act responded to commitments that the United States made, through Minute 242, to Mexico concerning the quality of water being delivered to Mexico below Imperial Dam. Title II of the Act established a program to respond to salinity control needs of Colorado River water users in the United States and to comply with the mandates of the then newly legislated Clean Water Act. Initially, the Secretary of the Interior and the Bureau of Reclamation were given the lead federal role by the Congress. This testimony is in support of funding for the Title II program.

After a decade of investigative and implementation efforts, the Basin states concluded that the Salinity Control Act needed to be amended. Congress revised the Act in 1984. That revision, while keeping the Secretary of the Interior as lead coordinator for Colorado River Basin salinity control efforts, also gave new salinity control responsibilities to the Department of Agriculture, and to a sister agency of the

Bureau of Reclamation—the Bureau of Land Management. Congress has charged the Administration with implementing the most cost-effective program practicable (measured in dollars per ton of salt removed). The Basin states are strongly supportive of that concept as the Basin states consider cost sharing 30 percent of federal expenditures up-front for the salinity control program, in addition to proceeding to implement their own salinity control efforts in the Colorado River Basin.

The Colorado River Basin Salinity Control Forum (Forum) is composed of Gubernatorial appointees from Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Forum has become the seven-state coordinating body for interfacing with federal agencies and Congress to support the implementation of a program necessary to control the salinity of the river system. In close cooperation with the Environmental Protection Agency (EPA) and under requirements of the Clean Water Act, every three years the Forum prepares a formal report analyzing the salinity of the Colorado River, anticipated future salinity, and the program necessary to keep the salinities at or below the levels measured in the river system in 1972.

In setting water quality standards for the Colorado River system, the salinity levels measured at Imperial, and below Parker, and Hoover Dams in 1972 have been identified as the numeric criteria. The plan necessary for controlling salinity has been captioned the "plan of implementation." The 1996 Review of water quality standards includes an updated plan of implementation. The level of appropriation requested in this testimony is in keeping with the agreed upon plan. If adequate funds are not appropriated, state and federal agencies involved are in agreement that the numeric criteria will be exceeded and damage from the high salt levels in the water will be widespread in the United States as well as Mexico and will be very significant.

JUSTIFICATION

The $17,500,000 requested by the Forum on behalf of the seven Colorado River Basin states is the level of funding necessary to proceed with Reclamation's portion of the plan of implementation. This funding level is appropriate if salinity in the Colorado River is to be controlled so as not to exceed the established numeric criteria and threaten the associated water quality standards. In July of 1995, Congress amended the Colorado River Basin Salinity Control Act. The amended Act gives Reclamation new latitude and flexibility in seeking the most cost-effective salinity control opportunities, and it provides for proposals and more involvement from the private as well as the public sector. Early results are indicating that salt loading is being prevented at costs often less than half the cost under the previous program. Congress's recent review of the program and the amendments it authorized have made the program more effective in removing salt from the Colorado River in a most cost-effective manner.

The Basin states have agreed to cost sharing on an annual basis, which adds 43 cents for every federal dollar appropriated. The Colorado River Basin Salinity Control Forum, working with EPA, has agreed upon a plan of implementation for salinity control, and that plan justifies the level of funding herein supported by the Forum to maintain the water quality standards for salinity adopted by the Basin states. The federally chartered Colorado River Basin Salinity Control Advisory Council, created by the Congress in the Salinity Control Act, has met and formally supports the requested level of funding. The Basin states urge the Subcommittee to support the funding as set forth in this testimony.

ADDITIONAL SUPPORT OF FUNDING

In addition to the dollars identified above for the implementation of the newly authorized program, the Salinity Control Forum urges the Congress to appropriate necessary funds, as identified in the President's budget, to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of the project and other completed projects will be funded through Operation and Maintenance funds.

In addition, the Forum supports necessary funding, as identified in the President's budget, to allow for continued general investigation of the salinity control program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various federal and state agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality

standards for salinity so that the Basin states can continue to develop the Compact apportioned waters of the Colorado River.

PREPARED STATEMENT OF LARRY LIBEU, PRESIDENT, WESTERN COALITION OF ARID STATES (WESTCAS)

The Western Coalition of Arid States (WESTCAS) is pleased to submit comments for the record, regarding programs contained in the U.S. Bureau of Reclamation's (Reclamation) fiscal year 2000 budget, for the hearing on Energy and Water Appropriations. WESTCAS is an organization of cities, towns, water and wastewater districts and associate agencies from the states of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, and Texas and who are dedicated to environmentally conscientious planning of water resources and development of water quality standards for the unique ecosystems of the arid West. Of particular interest to WESTCAS and its member agencies are the federal programs that can further our goals through partnerships and scientifically sound regulation and guidance concerning our most precious resource—water.

COLORADO RIVER BASIN SALINITY CONTROL PROGRAM

Since 1974, federal agencies and the seven basin states have been working together to maintain the Colorado River's salinity levels within a range which does not limit the economic, recreational, and environmental uses of the river. The Colorado River is a major source of water supply for the urban and agricultural regions of Utah, Nevada, Arizona, and Southern California. It is important that Congress continue to fund the federal portions of this successful program. With continued development of water sources in the Upper Colorado Basin and continued shortfalls in salinity control funding, the salinity levels will continue to increase in the Lower Colorado River Basin. The increased salinity in the Lower Colorado River Basin will have a long-term detrimental financial impact on agricultural and urban activities in the areas dependent on the Lower Colorado River water.

The Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin states' salinity control efforts, issued its 1996 Review, Water Quality Standards for Salinity, Colorado River System (1996 Review) in June 1996. The 1996 Review found that additional salinity control was necessary beginning in 1994 to meet the numeric criteria in the water quality standards adopted by the seven Colorado River Basin states and approved by the U.S. Environmental Protection Agency, with normal water supply conditions. For the last four years, federal appropriations for Reclamation have not equaled the Forum-identified funding need for the portion of the program the Federal Government has the responsibility to implement. It is essential that implementation of Reclamation's basinwide salinity control program be accelerated to permit the numeric criteria to be met again under average annual long-term water supply conditions, making up the shortfall. To assist in eliminating the shortfall, the Forum once again recommends that Reclamation utilize up front cost sharing from the Basin states to supplement federal appropriations. This concept has been embraced by Reclamation and is reflected in the President's proposed budget.

The President's proposed fiscal year 2000 budget contains funding of $12 million for implementation of the basin-wide program. WESTCAS requests that Congress appropriate $17.5 million for implementation of the basin-wide program, an increase of $5.5 million from that proposed by the President. This level of funding is necessary to meet the salinity control activities schedule in order to maintain the state adopted and federally approved water quality standards.

WATER RECYCLING AND GROUNDWATER RECOVERY

Projects funded under Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102–575) will greatly improve water supply reliability and the environment. Title XVI projects authorized by the Reclamation Recycling and Water Conservation Act of 1996 (Public Law 104–266), but not included in the President's proposed fiscal year 2000 budget for the U.S. Bureau of Reclamation, are considered to be equally important. Implementation of such projects is difficult without combined federal, state and regional assistance.. These authorized projects will greatly improve water supply reliability and the environment through effective water recycling and recovery of contaminated groundwater in the arid west. WESTCAS strongly requests that Congress increase the appropriation level for Reclamation's Title XVI program from $31,514 million to $100 million in order to proper fund all of these authorized projects.

WESTCAS supports the funding in the President's proposed fiscal year 2000 Budget for the following programs which are important to ongoing activities in our region:

EFFICIENCY INCENTIVES PROGRAM

Reclamation is encouraging innovation in water resources management to help meet the water conservation objectives of the Reclamation Reform Act of 1982. The program provides partnership capability for Reclamation and its customers, in cooperation with States and other entities, in seeking solutions to water use efficiency and conservation. The program supports technical assistance to districts in planning, evaluating, and implementing efficiency measures. Activities are located within all Federal water projects in the 17 Western States.

ENDANGERED SPECIES RECOVERY IMPLEMENTATION

Reclamation is designated as a cooperative participant in recovery measures to minimize the potential effects of Reclamation actions upon listed or candidate species and reduce the potential for more stringent requirements being imposed upon Reclamation projects as a result of formal consultation pursuant to Section 7(a)(2) of the Endangered Species Act. Activities are located throughout the region including the Upper and Lower Colorado River basins.

NATIONAL FISH AND WILDLIFE FOUNDATION

This program operates under a delegated grant of authority for fish and wildlife assistance programs from the Secretary to the Commissioner of the Bureau of Reclamation. Reclamation's funds are used for fish and wildlife restoration projects in partnership with local, state, tribal, and/or nongovernmental organizations. Funding for the Foundation, and the Foundation's support for programs like the Lower Colorado River Multi-Species Conservation Program, are extremely important to the development of comprehensive solutions to the complex endangered species issues.

DESALINATION RESEARCH DEVELOPMENT PROGRAM

This program addressees problems and technology needs for water supply augmentation, water quality improvement and protection. Studies are directed at reducing costs and minimizing environmental impacts from salt removal, developing commercially attractive technologies, improving surface and groundwater quality, and facilitating cost-effective conversion of previously unusable water resources to usable water supplies.

WATER MANAGEMENT CONSERVATION PROGRAM

This program provides for a water quality monitoring program in cooperation with state and local entities. Funding requests provide for the coordination of water management and conservation efforts with the water users and other non-Federal entities. It also provides for water conservation centers and training, improvements in water measurement and accounting.

WETLANDS DEVELOPMENT PROGRAM

The Wetlands Development Program allows for the development of design criteria, strategies, and implementation of wetland enhancement projects which provide for water quality, wildlife habitat, and aesthetic purposes. Projects are located throughout the 17 Western States and include demonstration projects using reclaimed wastewater from existing treatment facilities in Arizona and wetlands and wildlife habitat in Nevada.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

The Bay-Delta system provides habitat for fish and wildlife and is also critical to California's economy serving as the hub of California's water system, supplying more than two-thirds of the State's 32 million residents with a portion of their drinking water and irrigating 45 percent of the nation's produce. In September 1996, the President signed the California Bay-Delta Environmental Enhancement Act which authorizes $143.3 million per year in Federal funding for Bay-Delta ecosystem restoration activities in 1998, 1999, and 2000. Federal money for the Bay-Delta will fund an array of critical ecological improvements, including habitat restoration, watershed protection, fishery enhancement and water quality improvement.

Recently your Subcommittee was provided with a report by the Bureau of Reclamation "Annual Costs of Bureau of Reclamation Project Operation and Maintenance for Fiscal years 1993–97". WESTCAS has not had the time to adequately review the report, however, several of our members have raised the issue for our Budget Committee to review the report because of the tight budget constraints their district's are confronted with and the possibility of having inappropriate costs being passed on in their own operating budgets. We will forward our comments on to your subcommittee in the near future and would ask that your subcommittee look further into the details contained in the report.

CONCLUSION

Thank you for your consideration of our testimony. We believe our comments emphasize the importance of continued funding for Reclamation water resources management and ecosystem restoration programs that are critical for water supply reliability in the arid West.

PACIFIC NORTHWEST WATER RESOURCE PROJECTS

PREPARED STATEMENT OF THE NORTHWEST POWER PLANNING COUNCIL

The Northwest Power Planning Council appreciates the opportunity to submit written testimony in support of the Clinton Administration's fiscal year 2000 budget request for programs under the jurisdiction of the Energy and Water Development Subcommittee.

The Council was established by Congress in 1980, and created as an interstate compact by the states of Idaho, Montana, Oregon and Washington. Its purpose is to develop a 20-year regional electric power plan to assure for the Pacific Northwest an adequate supply of power at the lowest possible cost, and to develop a major program to protect and rebuild fish and wildlife resources harmed by hydroelectric development in the Columbia River Basin. The Council carries out its responsibilities under the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act), Public Law 96–501.

Three federal agencies under the jurisdiction of the Subcommittee, the U.S. Army Corps of Engineers, Bureau of Reclamation, and the Bonneville Power Administration, administer programs critical to the Columbia River Basin. The Council works closely with all three agencies in fulfilling its statutory responsibilities.

U.S. ARMY CORPS OF ENGINEERS

Columbia River Fish Mitigation Program

The Council continues to support the Corps' Columbia River Fish Mitigation Program. The focus of the program is to reduce the mortality of both juvenile and adult salmon and steelhead during their migration through the projects and reservoirs comprising the Federal Columbia River Power System. The Corps' fiscal year 2000 budget proposal for the program is $100 million, and includes funding for several critical studies and activities that are crucial to recovering, rebuilding and maintaining the anadromous fish runs in the Columbia River Basin. The Council supports the Corps' full $100 million budget request.

Significant amounts have been appropriated for the program for more than a decade, and a recent study by the National Marine Fisheries Service suggests that juvenile salmon survival through the four lower Snake River hydro projects and reservoirs has improved. Although the data has not been independently verified, NMFS scientists believe that survival conditions may have improved over pre-project conditions. While it remains unclear whether increases in juvenile survival through the Snake River projects leads to increases in adult returns, it is reasonable to assume that the installation and improvement of fish passage at the projects under the Corps' Columbia River Fish Mitigation Program will make the federal hydroelectric system less lethal. Accordingly, it is critical that the Corps' Columbia River Fish Mitigation Program be fully funded in fiscal year 2000 to ensure that the effort continues to make the mainstem Columbia and Snake rivers safer for juvenile and adult salmon.

Council Review of the Columbia River Fish Mitigation Program

In the Subcommittee's fiscal year 1998 Conference Report, a provision in the Joint Explanatory Statement was included directing the Council, with assistance from the Independent Scientific Advisory Board (ISAB), to conduct a review of the Corps' Columbia River Fish Mitigation Program. Given the magnitude of the task, the Coun-

cil agreed with the ISAB's recommendation to conduct the review in three phases, including an overview of the entire Columbia River Fish Mitigation Program.

The first phase dealt with the proposed installation of extended length bar screens at John Day Dam and the construction of a new juvenile bypass outfall at Bonneville Dam. The scientists believed that the small increases in survival to specific species from installation of the screens were not justified. The ISAB felt that limited funds should be used for "pursuing existing surface spill alternatives and funding research toward possible deployment of a surface-flow bypass system" at the dam instead of installing screens. Given the uncertainty identified by the ISAB on the benefits of screens, the Council has called for further research and testing of screen prototypes that take into consideration the scientists' concerns, prior to recommending any further major investments in screen installation at John Day Dam.

In addition, at Bonneville Dam, the ISAB stated "the high mortality inflicted upon juvenile salmon by predators at the present bypass outfall locations justifies relocation of the outfalls to locations and habitats where predation rates are expected to be significantly reduced." In addition to relocating the bypass outfalls, the scientists encouraged "integrated, long-term planning and study of other planned alterations" at Bonneville Dam. The Council transmitted the ISAB's report to the Subcommittee on July 1, 1998.

In the ISAB's second phase report, the scientists reviewed the development and testing of surface bypass systems and the dissolved gas abatement program. The ISAB concluded that over 20 years of work to improve turbine intake screen technology has yet to result in a turbine intake screen that can achieve the 80 percent fish passage efficiency standard for all species and stocks. Therefore, efforts to develop other juvenile fish bypass alternatives that can achieve the 80 percent goal for all species and stocks should be pursued. Surface collection and bypass continue to show promise; however, the scientists caution that substantial uncertainties remain regarding the level and changes in survival of juvenile salmon that can be provided by surface bypass facilities. Given the uncertainty, the ISAB recommended that all juvenile passage alternatives be evaluated against the baseline of spill, since spill more closely mimics natural processes than any other bypass alternative. Spill should be considered the alternative when improvements anticipated from other bypass technologies do not meet passage goals. The Council continues to support the federal spill program for juvenile passage through the federal hydropower system.

In its report on dissolved gas abatement, the scientific board concluded that the Corps' program is important for rectifying supersaturation of waters of the Snake and Columbia rivers, and that it should continue with high priority. Attainment of the Clean Water Act total dissolved gas standard of 110 percent throughout the hydropower system will be difficult under involuntary spill conditions with the majority of dams in place. The current program of modifications of dams to reduce gas supersaturation should have benefits to salmon and other components of the ecosystem, the scientists said. The Council transmitted the ISAB's second report to the Subcommittee on January 11, 1999.

The third phase of the ISAB's review addressed adult fish passage at the dams and also included an overview of the entire Columbia River Fish Mitigation Program. On March 2, 1999, the Council released the report to the public for review and comment. In this report, the ISAB concluded that the subject of adult passage at Columbia and Snake River dams has not been adequately dealt with, that returning adults to spawning grounds may be more important than juvenile survival, and that the Corps' planned site-specific measures may be supportable but probably are not sufficient to ensure that adult spawning migrations are unimpeded. The ISAB recommended that additional evaluation, field research, and capital projects will be needed to address the adult passage issues.

Next month, the Council will review the comments submitted by the public and finalize a comprehensive report to Congress that will include not only the ISAB's findings, but also the Council's final recommendations to Congress on the program. We intend to transmit the final report to the Subcommittee no later than early May 1999.

The Council has learned a great deal during this review process, both about the current configuration of the fish passage facilities at the federal dams on the Columbia and Snake rivers, and with regard to new principles and guidelines that should be considered by the Corps in planning additional passage improvements. Developing fish passage systems is not an exact science, but one that is continually evolving. As we increase our knowledge of the behavior patterns of anadromous fish, and river processes, and improve our understanding of the need to protect biodiversity, we will develop more effective fish passage alternatives. These alternatives likely will be implemented to benefit the range of species and stocks in the river, and may

result in providing multiple passage solutions at individual projects. They also will reflect that the best passage solutions are those that take into account and work with the behavior and ecology of the species using the river system.

The Council realizes that the Columbia River Fish Mitigation Program has enjoyed high funding levels for several years. Continuation of the program at its full capability is necessary to ensure that critical improvements to the system are implemented, and important studies and tests completed so that fish survival through the dams can continue to improve.

Willamette River Temperature Control, Oregon

The Willamette River Basin is located in northwestern Oregon. During the last 40 years, 13 Corps of Engineers reservoirs have been constructed in the basin to control floods, generate electricity and provide water for navigation, irrigation, improved water quality, recreation, and fish and wildlife. Studies over the last 15 years have demonstrated that the temperature at which water is released from these reservoirs is a key limiting factor for survival of anadromous and resident fish in the Willamette basin. Local, state and federal agencies, including the Council, have been seeking modification of water temperature in the McKenzie River downstream from Blue River and Cougar reservoirs to achieve more beneficial temperatures for wild spring chinook salmon, bull trout and rainbow trout. The Corps' feasibility study for the project was completed in 1995. An Environmental Impact Statement was completed, and a Finding of No Significant Impact was signed by the Division Commander on April 24, 1996. In March of this year, Willamette spring chinook and winter steelhead were listed as threatened by the National Marine Fisheries Service under the Endangered Species Act; the last significant wild stock of spring chinook in the Willamette is in the McKenzie River. The current estimated cost to install multi-level intake towers at the two projects is $70.6 million.

Due to cost limitations associated with the project's authorization, the Corps' current focus is on the Cougar Lake reservoir intake tower, which has a total estimated cost (including future inflation) of $50.077 million. In its fiscal year 2000 budget, the Corps is proposing Cougar Lake for a new construction start, and has requested $1.7 million in funding. The Council supports this project and the requested funding level, and urges the Subcommittee to include it in its fiscal year 2000 funding recommendations.

BUREAU OF RECLAMATION

The Bureau is proposing to spend $11.734 million in fiscal year 2000 on the Yakima River Basin Water Enhancement Project. The Council supports this project, which will employ structural and non-structural water conservation measures to increase the reliability of the irrigation supply and enhance streamflows in the Yakima River. In addition, Yakama tribal water supply facilities will be improved and tribal economic development, fish and wildlife, and cultural programs will be enhanced.

The Council also strongly supports the Columbia and Snake River Salmon Recovery Project, which the Bureau is proposing to fund at $13.122 million for fiscal year 2000. The funds are used for important purposes in the Snake River Basin, such as acquiring water through leasing or on a willing-seller basis for flow augmentation to aid migrating salmon and steelhead, and to address Endangered Species Act requirements.

BONNEVILLE POWER ADMINISTRATION

The Bonneville Power Administration is the primary implementor of the Council's fish and wildlife program. In the fall of 1995, the Administration and Congress agreed on a fixed budget for Bonneville's fish and wildlife recovery efforts in the Columbia River Basin. Under the terms of that agreement, which was further defined and formalized in September 1997 in a memorandum of agreement signed by the secretaries of the Army, Interior, Commerce and Energy, Bonneville will incur costs, on average, of $435 million per year for five years on fish and wildlife activities. These funds fall under a number of different categories, including direct expenditures on fish and wildlife projects, power purchases, reimbursements of appropriated funds to the Corps of Engineers and the Bureau of Reclamation, capital repayment and foregone revenues. For fiscal year 2000, Bonneville estimates that its total fish and wildlife budget will be $403.6 million.

In the Energy and Water Development Appropriations Act for fiscal year 1997, the Committee added a new section, 4(h)(10)(D), to the Northwest Power Act, which requires the Council to appoint an 11-member Independent Scientific Review Panel (ISRP) to review fish and wildlife projects proposed to be funded through Bonne-

ville's direct program. For fiscal year 2000, Bonneville expects to commit $100 million to its direct program, and use up to $27 million of its borrowing authority.

The Council shares the Committee's objective that all fish and wildlife funds be spent judiciously after thorough independent scientific review. We are continuing to work with the region to fully and fairly implement the requirements of section 4(h)(10)(D), which will help ensure that Bonneville's ratepayers' funds are spent on projects that have the greatest value in recovering and providing mitigation for the Columbia River Basin's fish and wildlife populations.

Thank you for this opportunity to share our views with you. We sincerely appreciate the thorough consideration that this subcommittee has given to the needs of the Pacific Northwest over the years.

PREPARED STATEMENT OF GLENN VANSELOW, EXECUTIVE DIRECTOR, PACIFIC NORTHWEST WATERWAYS ASSOCIATION

Mr. Chairman and members of the Subcommittee: My name is Glenn Vanselow. I am Executive Director of the Pacific Northwest Waterways Association. We appreciate the opportunity to present our views on appropriations issues to the Committee. The PNWA membership includes nearly 120 organizations and individuals in Washington, Oregon and Idaho. PNWA represents public port authorities on the Pacific Coast, Puget Sound, and Columbia/Snake River System; public utility districts, investor-owned utilities, electric cooperatives and direct service industries; irrigation districts, grain growers and upriver and export elevator companies; major manufacturers in the Pacific Northwest; forest products industry manufacturers and shippers; and tug and barge operators, steamship operators, consulting engineers, and others involved in economic development throughout the Pacific Northwest.

PNWA has a long history of working with the Committee and the U.S. Army Corps of Engineers (Corps) on projects of regional and national importance, sharing the challenge to maintain and develop our transportation infrastructure. Our members wish to thank the Committee for its support of Pacific Northwest transportation, hydropower and salmon enhancement programs and projects.

APPROPRIATIONS REQUEST

Fiscal year 2000 Civil Works Budget.—The maintenance of channels and harbors serving all currently authorized Pacific Northwest deep draft and coastal ports is a top priority for PNWA. We urge Congress to provide sufficient funding to meet national needs for both operations and maintenance (O&M) and new construction. The Administration's fiscal year 2000 budget request for navigation O&M in Idaho, Oregon and Washington and the request for preconstruction, engineering and design for the Columbia River Channel Deepening appear to be adequate, but the request for new construction is not sufficient. We oppose the overall level of the request for civil works because it is provides inadequate funding for crucial Corps waterways programs nationwide. While the request of $3.9 billion for the Corps is on par with fiscal year 1999 appropriated levels, the proposal would only fund inland navigation and flood control construction projects at about 50 percent of their optimal schedule. We believe that a level of funding closer to $4.7 billion is needed to maintain the integrity of the civil works program. We strongly oppose the Administration's proposed Harbor Services Fund proposal. We believe Congressionally appropriated funding from the general treasury is the best and most appropriate way to meet both routine maintenance and unexpected dredging needs. We also oppose new taxes on National Oceanic and Atmospheric Administration services and plans for taxes to recover the cost of Coast Guard navigation services.

We support continued federal funding for operations and maintenance to present authorized depths of federally authorized navigation channels at shallow coastal harbors in Oregon and Washington. We support the current method of funding new project starts.

Regional Navigation Operations and Maintenance.—We would like to thank the Committee for its previous support of navigation O&M (operations and maintenance) in the region's shallow, deep draft and inland navigation system.

Navigation is the least cost, most fuel efficient and least polluting mode of transportation. Navigation is the critical link that keeps the Northwest and the nation competitive in domestic and international trade and supports the commercial and recreational fishing industry. It provides significant numbers of jobs and other economic benefits both within the region and nationally. We support maintaining a strong federal role in planning, construction, operation, maintenance and funding of navigation on the inland waterways, deep draft ports and shallow draft ports. We ask the Committee for full funding for ongoing operations and maintenance (O&M)

of the federally authorized navigation channels in the Columbia/Snake river system, the Oregon and Washington coastal ports and Puget Sound. Maximizing O&M is a cost-efficient means of fully utilizing the federal government's investment in channel operations.

Some 20 percent of the employment in the Northwest states is directly related to international trade. Navigation projects are among the few federal programs that are analyzed to ensure that economic benefits exceed the costs. Eliminating these programs would not be cost-effective.

Navigation Feasibility Studies and Construction.—We wish to thank the Committee for appropriating funds last year for feasibility studies on the Columbia River and in Puget Sound. We are opposed to the downward trend in funding included in the President's fiscal year 2000 budget request.

The Columbia River deep draft channel is the lifeblood of the Columbia/Snake River System, which serves shippers from more than 40 states. To protect future growth and development of the River System, we ask the Committee to fund the requested $892,000 preconstruction engineering and design for the lower Columbia River Navigation Channel Deepening. This funding would pay for the federal government's share of work necessary to investigate improving the existing 40-foot navigation channel by increasing the channel depth to 43 feet. We support completing the feasibility study for channel improvements of the Blair Waterway Navigation Channel at Tacoma. We also support the Administration's $3.4 million request to complete construction of the East Waterway Channel Deepening at Seattle, which is proposed to be carried out during O&M dredging.

Lower Columbia River Ecosystem Restoration.—PNWA encourages the Committee to appropriate $100,000 to begin a study that would focus on ecosystem restoration opportunities within the Lower Columbia River. The study is strongly supported by the Lower Columbia River Estuary Program, and the States of Oregon and Washington have jointly agreed to non-Federal sponsorship of the study.

Portland Harbor Environmental Dredging Project.—PNWA encourages the Committee to appropriate $100,000 for the Corps to undertake a reconnaissance study for an environmental dredging project at Portland Harbor.

Minimum Dredge Fleet.—We encourage the Committee to maintain the currently active hopper dredges operated by the US Army Corps of Engineers and to reject any additional future set-aside for private dredges. We oppose legislation that places artificial limits on the federal hopper dredges by directing increasing amounts of maintenance dredging to private dredges. Federal hopper dredge costs are artificially higher than necessary because of that set aside. We believe that Congress should reduce or eliminate the set aside to increase the efficiency of the Corps hopper dredges. We also encourage the Committee to find ways to make the Corps dredges less expensive to operate by examining recent increases in depreciation and plant increment payments.

We believe that the presence of the federal dredges keeps bids for dredging work competitive and lower in cost. We are concerned that the low number of private industry bids for work in our region could force dredging costs higher were it not for the availability of the federal dredges.

Operations and Maintenance of the Region's Hydropower System and the John Day Drawdown study.—We are concerned that the President's fiscal year 2000 Budget request for construction on the Bonneville Dam powerhouse phase II and The Dalles powerhouse is insufficient. We encourage the Committee to increase funding for the Bonneville powerhouse construction to $16.3 million. We also encourage the Committee to increase funding for The Dalles powerhouse construction to approximately $3.3 million. We support the President's requests for Operations and Maintenance at these and other regional projects.

We have testified in previous years that we do not believe there is biological justification for drawdowns. Just this year, the National Marine Fisheries Service testified before the Northwest Power Planning Council that salmon smolt survival through the four dams on the lower Snake River (Ice Harbor, Little Goose, Lower Monumental and Lower Granite) is as high or higher than it was before those dams were built. It is also clear that drawdown would have serious economic impacts on the region and the nation. Drawdown would eliminate important authorized purposes on the system, including navigation, hydropower production and irrigated agricultural production. The committee also should be aware that we believe that drawdown would reduce the Bonneville Power Administration's revenue generating capacity and jeopardize BPA's ability to repay its debt to the US treasury after the next subscription process expires. The four lower Snake dams and John Day provide 20 to 25 percent of BPA's total energy production.

Salmon Recovery Decision Authority and Funding.—First, we support efforts to establish priorities for funding and implementation of fish and wildlife recovery

projects in the Columbia River Basin Fish and Wildlife Program. Second, we support selected salmon recovery actions such as improved and enhanced smolt transportation, surface collection and other smolt by-pass facilities, fish-friendly turbine programs and habitat restoration and protection. Third, we oppose funding to carry out Phase II of the John Day drawdown study, and we do not support funding to study drawdown of McNary. These programs and others are included in the Administration's $100 million budget request for Columbia River Fish Mitigation. We encourage the Committee to redirect the $5.5 million proposed for these studies toward fish recovery programs for which there is broad regional support.

We support the Senator Slade Gorton's 1996 amendment to the Northwest Power Act, approved during consideration of the fiscal year 1997 Energy and Water Appropriations bill, which establishes a panel of scientists to establish priorities for funding and implementation of fish and wildlife recovery projects in the Columbia River Basin Fish and Wildlife Program. We hope that this, with the Independent Economic Analysis Board, will result in programs that will provide maximum biological benefits to listed salmon stocks and are more cost-effective.

Regional Governance.—The discussion about regional cooperation in developing salmon recovery objectives and programs in the Columbia Basin has been expanded significantly through the establishment of the Columbia Basin Forum, formerly known as the Three Sovereigns Forum. A memorandum of agreement establishing this new body was recently signed by the federal agencies, tribes and states. This process was created without consulting affected stakeholders, and the participants do not intend to include stakeholders in the consensus process. PNWA believes that effective fish and wildlife programs can be implemented without a new governance body. If a new management structure is necessary for addressing the Endangered Species Act, the Northwest Power Planning Council offers an appropriate model. Federal, state and tribal agencies and regional stakeholders should work cooperatively to develop solutions that maintain Congressional authority over navigation and the other authorized purposes of the federal projects and state authority over water and land use. If PNWA urges the Committee to support collaboration in the Columbia Basin within the existing authorities of the federal agencies, states and tribes, and, in the strongest terms possible, we urge Congress to retain exclusive authority over the authorized purposes of the federal projects within the Columbia Basin.

Demolition of the former U.S. Army Corps of Engineers' Complex at Walla Walla.—We ask the Committee to appropriate $4.7 million to remove asbestos and lead paint and to tear down the former Corps complex at the Walla Walla Regional Airport, Washington.

Columbia River Channel Designation, Interstate 5 Bridge between Vancouver and Portland.—We ask the Committee to appropriate $50,000 to designate a new navigation channel under the high span of the I–5 bridge. We hope that this action will be authorized in the Water Resources Development Act of 1999. This new channel will connect to the existing channel upstream of the bridge, allowing for more efficient use of the Columbia River and the I–5 bridge for navigation and surface transportation.

Hanford Cleanup.—We ask the Committee to continue to adequately fund the Department of Energy cleanup of 45 years of accumulated defense waste currently stored at the Hanford site. We recognize that defense waste cleanup is a long-term project that will be most cost effective and most rigorously pursued if Hanford is a viable, operating site. Therefore, we strongly urge the Committee to support a complete, ongoing Hanford scientifically and technologically based research and operations program in order to ensure long-term funding for waste cleanup. PNWA also supports a complete and ongoing scientifically and technologically based research and operations program, including the restart of the Fast Flux Test Facility for the joint missions of national defense and medical research and isotope production to meet the demands for more effective cancer treatments.

Conclusion.—On behalf of nearly 120 members from throughout the Pacific Northwest, we thank the Committee for giving us this opportunity to review a number of issues important to the environmental and economic prosperity of our region.

PREPARED STATEMENT OF MERV GEORGE, JR., CHAIRMAN, HOOPA VALLEY TRIBE

On behalf of the Hoopa Valley Tribe of California, I express our appreciation for the opportunity to submit testimony regarding the fiscal year 2000 Bureau of Reclamation (BOR) budget. A summary of our fiscal year 2000 funding request follows:

1.Support Administration's position that existing laws provide authority to support Trinity River Division fish and wildlife management and restoration activities.

Further, the Hoopa Valley Tribe supports the Administration's position that Central Valley Project Improvement Act (CVPIA) funds are authorized for expenditure in the Trinity River Basin.

2. Request that $13,000,000 be provided for Trinity River fishery management requirements within the Trinity River Division of the Central Valley Project for continuing fish and wildlife management programs of tribal, state, federal and local entities and for the Comprehensive Co-Management Agreement between Hoopa Valley Tribe and BOR.

3. Support proposed funding increase for the Klamath Project and request an additional $750,000 for the Karuk and Klamath Tribes.

4. Request $150,000 from the General Activities Planning budget for a feasibility study for upgrading the Lewiston generator, and for Trinity River green sturgeon and Pacific Lamprey population studies.

5. Support the Native American Affairs proposed budget and request an increase of $1,000,000 for additional assistance to Indian tribes.

BACKGROUND

The Trinity River in northern California is the largest tributary to the Klamath River, the second largest river system in California. Since time immemorial, the Klamath Basin provided sustenance to Native Americans of the region. The Klamath River Basin is the aboriginal territory of Hoopa Valley, Karuk, Klamath, and Yurok Tribes. Moreover, utilization of fishery resources of the Klamath River has been fundamental to the economic health of northern California providing viable recreational and commercial salmon fisheries. In 1963, BOR completed construction of the Trinity River Division of the Central Valley Project (CVP). The Trinity River Division currently provides an estimated fourteen percent of the total water yielded by the CVP.

Shortly after completion of the Trinity Dam, and subsequent diversion of up to 90 percent of the stream flows at the diversion point (near Lewiston, California) from the Trinity River, the fishery began to decline. Through the 1980's, corresponding declines of up to 80 percent of the salmon and steelhead populations occurred. In response to declines in Trinity fish stocks, the Secretary of Interior approved development of a flow evaluation study in 1981 to determine stream flow needs for fish restoration. Further, Congress recognized the seriousness of the problem, and enacted the Trinity River Restoration Act (Public Law 98–541, 1984) which, with subsequent amendments, authorized approximately $70,000,000 in an attempt to reverse the decline of the fishery resources within the Trinity River Basin. However, the downward trend in Trinity fish populations has continued as reflected by listing of coho salmon under the Endangered Species Act (ESA) (6 May, 1997) and proposed listings of steelhead and chinook fish stocks of the Klamath/Trinity Rivers.

While much work has been accomplished to date, it is recognized that continued monitoring and research will be necessary to provide insight on status of resources, evaluation of restorative measures, and effective management recommendations for further restoration. Primary among the scientific achievements to date has been the development of in-stream flow criteria that quantify the benefits to salmonids of retained flows in the Trinity Basin. These criteria, developed over the entire course of the Restoration Program, provide a basis for the Secretary's flow decision, due in fiscal year 2000. The Secretary's Trinity River Flow Evaluation Study Report is now ready for printing, and the Environmental Impact Statement (EIS) is scheduled for completion by April, 2000.

In spite of many years of research into Trinity River ecosystem processes, considerable uncertainty persists in regard to downstream impacts of water releases from Lewiston Dam. These uncertainties are to be addressed via an Adaptive Management Plan (AMP) under the direction of the Interior Secretary. Long-term monitoring and research are essential to the AMP: hypotheses underlying the Trinity River Flow Evaluation Study recommendations will be tested through research; and monitoring data will be used to measure how well river ecosystem health objectives are met.

NARRATIVE JUSTIFICATION AND FUNDING REQUESTS

1. The Tribe is in agreement with the Administration's legal conclusions contained in the fiscal year 2000 Budget Justification and Annual Performance Plan—Trinity River Division—that existing authorities provide ample justification for expenditures on fish and wildlife restoration within the Trinity River. The 1955 Act creating the Trinity River Division, Trinity River Fish and Wildlife Restoration Act as amended, and the Central Valley Project Improvement Act (CVPIA) mandate that

the Department of the Interior restore and maintain fish and wildlife populations with CVP funds. Furthermore, Congress acknowledged the reserved fishing rights of the Hoopa Valley Tribe in the CVPIA.

2. Funding Request for Fish and Wildlife Management—In January 1998, agencies responsible for managing the Trinity River fishery resources determined that $13,000,000 was needed annually to fund comprehensive management within the Trinity River Basin in order to restore the fishery resources to pre-dam levels. The Hoopa Valley Tribe participated in the development of this management plan.

Therefore, the Tribe requests that the Committee provide $13,000,000 for Fish and Wildlife Management and Development within the Trinity River Division budget.

Further, the Tribe requests that the Committee continue support for the Co-Management Agreement between the Tribe and BOR at a level of $2,500,000 for implementation in fiscal year 2000. The requested funding would ensure the Tribe's involvement in water project operations planning, environmental impact analysis, hatchery investigations, fisheries management, and would accelerate resource restoration through unified, inter-governmental management actions.

In its seventh year, the Co-Management Agreement between Hoopa and BOR has contributed not only to the fulfillment of the Federal trust responsibilities to Native Americans, but has also served to bring Federal, State, Tribal and local management agencies together into a constructive and cooperative forum for managing fishery and water resources within the Trinity River Basin.

3. Support proposed funding increase for the Klamath Project and request an additional $750,000 for the Karuk and Klamath Tribes. Both Tribes are involved with the restoration and protection of Trust resources in the Klamath River including active technical and policy involvement in water quality and quantity studies designed to improve the health of the upper Klamath Basin ecosystem. Endemic suckers listed under the ESA in Upper Klamath Lake, as well as salmon and steelhead living in downstream areas would benefit from increased Tribal involvement.

4. Request $150,000 from the General Activities Planning budget for a feasibility study for upgrading the Lewiston Hydro-power generator, green sturgeon and Pacific Lamprey studies. It is expected that the Interior Secretary's Trinity River permanent fishery flow decision will result in reduced diversions of Trinity River flows into California's Central Valley. While being greatly beneficial to Trinity River fishery resources and upholding the federal trust obligations to Indian tribes, the decision will likely reduce the amount of electricity generated from diverted flows. To compensate for this situation, the Tribe requests that $100,000 be provided from Reclamation's General Activities Planning budget for determining the feasibility of increasing the capacity of the Lewiston Powerhouse generators in anticipation of the increased releases to the Trinity River. An expected benefit of increased generation of electricity from the Lewiston powerhouse is the possibility of using its revenues to pay for future fish and wildlife restoration activities within the Trinity River Basin, thereby reducing long-term costs to the Federal Government.

In addition, the Tribe requests that $50,000 be provided for conducting population and fish health studies for Trinity River green sturgeon and Pacific Lamprey, both of which are important species to the Klamath and Trinity River Indian tribes and have been negatively impacted by the construction and management of the Trinity River Division.

5. Support the Native American Affairs proposed budget request and an increase of $1,000,000 for additional assistance to Indian tribes. The Reclamation Native American Affairs program has proven to be very beneficial to both the Federal Government and Indian tribes while trying to resolve inter-governmental water and fishery management issues. Without a doubt, the Native American Affairs Program has been instrumental in reducing the possibility of costly litigation and disputes between Reclamation and Indian tribes.

RESULTS ANTICIPATED

Trinity Restoration Program: Effective restoration of fisheries, critical to the Hoopa Valley and Yurok tribes and the economic stability of the fishery dependent communities of northern California and southern Oregon, would be promoted through collective actions of the Trinity Restoration Program. Identification and implementation of specific remedies and monitoring of fishery trends are expected results of Restoration Program.

While many on-the-ground achievements have already been realized, many critical elements have yet to be completed. Among the expected outcomes of the Program for 1999 is the completion of the Environmental Impact Statement to assist the Secretary with implementation of in-river flows required for full restoration of

salmonid populations in the Trinity River as mandated under Public Law 102–575. The Secretary's fishery flow allocation decision, originally mandated for fiscal year 1997, was delayed due to incomplete environmental documentation. It is now anticipated that completed environmental documentation shall be available to support the Secretary's Decision expected in fiscal year 2000.

Tribal/Reclamation Co-Management Agreements and Native American Affairs Program: The Co-Management Agreements will continue to assist in the coordination of Federal, State, Tribal and local activities (management and research) impacting salmon fisheries and salmon habitats of the Klamath and Trinity rivers. Accomplishments under this agreement in fiscal year 1997 included maintenance of data collection and analysis programs critical to the integrated management of the Klamath and Trinity fishery resources. Both Reclamation and the Tribe agree that a wise investment has been made in developing a comprehensive foundation for fishery restoration. This foundation includes on-the-ground restoration work, assembly of scientific data on fisheries and habitat, and the coordination across multiple jurisdictions affecting salmon survival. It is now important to insure that this investment provides the desired results of a fully restored Trinity River Basin.

The General Activities Planning budget request will assist the Tribes, agencies and private interests to develop opportunities for compensating for the loss of electricity caused by increased Trinity River flows. The Green Sturgeon and Pacific Lamprey population and survival studies will provide basic information for development of long-term management programs for these species. While green sturgeon and Pacific Lamprey are important species to Indian tribes, and their maintenance is part of the Federal Government's trust obligations, lack of funding has prevented the development of management programs for these species.

CONCLUSION

The Hoopa Valley Tribe's relationship with BOR has improved significantly in recent years; however, it is clear that the fishery management problems associated with the Central Valley Project and Klamath Project operations still persist. Resolution of these issues may only be assured through the continued commitment by the Tribe and BOR to ongoing co-management of these important resources.

Again, I appreciate the opportunity to submit testimony regarding BOR's fiscal year 2000 budget. I am available to discuss these matters with you in more detail at your convenience. Thank you.

PREPARED STATEMENT OF WILLIAM A. BRAKKEN, COMMUNITY LIAISON/CENTRAL OREGON TEAM LEADER, NORTHWEST AREA FOUNDATION

DESCHUTES BASIN RESOURCES CONSERVANCY

I understand that the Senate Appropriations Subcommittee on Energy and Water Development has an upcoming hearing pertaining to the Deschutes Basin Resources Conservancy (DRC) in Central Oregon. This seemed an appropriate time to share some information with you regarding the Northwest Area Foundation's past experience with the DRC, as well as our potential future relationship.

As you may be aware, the DRC grew out of a collaborative planning effort initiated in 1992 by the Confederated Tribes of the Warm Springs Reservation and Environmental Defense Fund to improve instream flows and water quality in the Deschutes River. Ultimately, that initiative attracted the support of a large and diverse number of organizations and individuals throughout Central Oregon—many of whom are now represented on the DRC Board. The Northwest Area Foundation provided the bulk of financial support—$300,000 over three years—for this planning effort. We consider it to be among the most successful of our recent watershed planning and management grants.

Recently the Foundation shifted the focus of our mission from short-term grantmaking to individual nonprofit organizations to working with entire communities in long-term partnerships of approximately 10 years. We anticipate committing $150 million to only a dozen or so community partnerships in our eight-state region over the next decade. One of the first places we are exploring for a possible partnership is the regional community of Central Oregon. We were drawn to this region for a number of reasons. But one of the most significant was the promising model for regional collaboration that is currently being demonstrated by the DRC.

We are particularly impressed with the quality and diversity of individuals that DRC has attracted to serve on its board of directors. During the past six months members of the Foundation's Central Oregon Team have met individually with more than 150 citizens of the region—most all of them identified through personal refer-

rals. Judging from the number of referrals we received of people serving on the DRC board, and our meetings with many of those individuals, we can attest to the high caliber of the board, as well as its action-orientation. In fact, we are hopeful we can attract a similar caliber of individuals to a steering committee we will soon convene to help design our prospective partnership with the community.

The specific goal of our community partnerships is to reduce poverty by encouraging better integration of the social, economic, and environmental facets of a community's development. To effectively accomplish this goal, we will need to work closely with local organizations focused on similar objectives, such as the Deschutes Basin Resources Conservancy. We commend their efforts to you, and hope you will support them in whatever way possible. That, in turn, will help us better leverage our potential investment in Central Oregon.

Thank you for your consideration. Please feel free to contact me with any questions.

PREPARED STATEMENT OF RON NELSON, CHAIRMAN, DESCHUTES BASIN RESOURCES CONSERVANCY

SUMMARY

The Deschutes Basin Working Group, dba the Deschutes Basin Resources Conservancy (DRC), is a non-profit, private corporation established in Oregon in 1996. In September 1996, Congress enacted and the President signed Public Law 104–208, which included S.1662, the Oregon Resources Conservation Act. Section 301(h) (Division B, Title III) of Public Law 104–208 authorizes $1.0 million per year through 2001. The DRC is limited to spending 5 percent of any appropriation on administration.

In 1999, Congress appropriated $500,000 to the Bureau of Reclamation to support the DRC. The DRC is using these funds to implement projects to improve water quality and quantity in the Deschutes Basin. Water projects are crucial in the Deschutes Basin where steelhead and bull trout are listed as threatened and Fall Chinook are proposed for listing under the Federal Endangered Species Act.

The DRC has supported eight demonstration projects in the Basin. From October 1998 to March 1999 the DRC has leveraged $272,180 of its funds to complete $777,680 in on-the-ground restoration projects. These projects include: piping irrigation district delivery systems to prevent water losses; securing instream water rights to restore flows to Squaw Creek; providing riparian fences to protect riverbanks; working with private timberland owners to restore riparian and wetland areas; and seeking donated water rights to enhance instream flows in the Deschutes Basin.

The DRC is governed by a diverse group of directors from private and public interests from the region. It is a community-based, cooperative endeavor that believes economic progress and natural resource conservation need to work together to achieve success. The DRC seeks voluntary actions based upon contracts and compensation for property and services. The DRC does not seek, nor is it authorized, to impose regulatory mandates through legal or political action.

1999 DRC PROJECTS

Annual Water Leasing Program.—The DRC is working with water users in targeted areas for water rights donations or sales to improve instream flows. The program began November 1998 by meeting with each irrigation district manager to introduce the leasing program and the process for transfers. In early 1999 water rights holders were contacted requesting the user's water donation. This program enables water right holder to protect their water rights by leasing and improves Deschutes flows.

Central Oregon Irrigation District Piping.—For the most part the irrigation canals in the Upper Deschutes Basin are unlined and have been dug in porous, volcanic soils, so water losses through percolation can be quite high over the long distances that irrigation water must travel from the point of diversion to the farms. The DRC and Central Oregon Irrigation District propose to install roughly 3,960 feet of pipe, an inlet structure, an outlet structure, four clean-outs and four diversion structures. COID figures to conserve .29 cfs or .57 an ac/ft. Projected over a 180 day period, this calculates to 102.6 ac/ft water conserved. One half of the conserved water from this project will be returned to instream flows in the Deschutes River. This project is an important demonstration of how water can be conserved to benefit both the irrigation district and its water users and the Deschutes ecosystem.

Confederated Tribes of Warm Springs Riparian Fencing.—The DRC and the Confederated Tribes of the Warm Springs Indian Reservation of Oregon are partners on a project to protect riparian areas in the Deschutes Basin's Eagle Creek, Skookum Creek and the mainstem river. The project constructs fence for livestock exclosures, places cattle guards at road crossings and installs solar pumps to provide animals water away from the riverbank. One of the DRC's primary goals is to improve water quality. Healthy, functioning riparian areas are critical to improving water quality in the basin. Riparian vegetation provides fish and aquatic habitat, stream shading to reduce water temperatures, bank stability and a filter for nutrients and sediments entering the water. This project is especially important for the habitat of Bull Trout that are listed as threatened and Fall Chinook and steelhead that are pending listing under the Federal Endangered Species Act. This project involves voluntary cooperation by the tribal grazing group allottees. The Warm Springs Tribes are involved in various other projects to improve stream conditions both on and off the reservation. This project is a part of a larger effort to improve flows and water quality for fish and wildlife.

North Unit Irrigation District Piping.—The DRC, North Unit Irrigation District, Bureau of Reclamation and Natural Resource Conservation Service are partners in a Water Conservation Grant Program project for the Deschutes Basin. These groups are providing funds to replace an open irrigation lateral with buried pipe. The project consists of installing approximately 20,235 feet of plastic pipe, with 19 turnouts and related appurtenances. The delivered water will be pressurized due to the elevation difference between the inlet at the main canal and landowner outlets. This pipeline will provide irrigation for approximately 445 acres. This project will save water, improve energy efficiency and reduce operation and maintenance expenses. The project will annually save about 600 acre feet of water. The majority of the conserved water comes from eliminating seepage from the open lateral. Water will also be saved by reducing system management losses (carry water) and improving delivery to small land parcels. Standard measuring devices, flow meters or flow regulators will be utilized at all outlets. Use of flow meters on the larger outlets will improve on-farm irrigation water management because landowners can readily verify how much water they are currently using or have used to date. One half of the conserved water from the project will be returned to instream flows in the Deschutes River. This project is an important demonstration of how water can be conserved to benefit both the irrigation district and its water users and the Deschutes ecosystem. The pressurized system will reduce the pumping requirements for sprinkler irrigation systems to save energy. Most of the irrigated land served by this lateral is currently being sprinkler irrigated.

Foley Creek Riparian Areas, Wetlands and Forest.—Foley Creek is one of the most significant steelhead spawning and rearing areas in the Deschutes Basin. The DRC, EDF and landowners, Ochoco Lumber, are working together to develop a forest management plan to improve riparian areas and wetlands in Upper Foley Creek. The project also includes an intensive timber vegetation inventory. This inventory will provide the foundation to construct a carbon assessment that meets Environmental Protection Agency criteria. This may result in carbon contracts and other types of commodity contracts for the landowner to protect this habitat and benefit financially. This project is a demonstration of how private sector market solutions can improve the Deschutes ecosystem.

BACKGROUND

In 1989, the Environmental Defense Fund (EDF) and the Confederated Tribes of the Warm Springs Reservation began a cooperative project to reconcile on-reservation ecological and economic conflicts. In late 1992, the Tribes and EDF expanded the scope of the project to include the entire Deschutes Basin. It was agreed that the initial focus would be on river flows and water pollution. Flow-deficient stream reaches and excessive water pollutant loads could only be mitigated by identifying and reducing existing water diversions and pollution discharges. At the same time, a high value was placed on being "good neighbors" to other landowners and resources users within the Basin. Positive incentives for changes in resource uses were emphasized instead of costly and divisive political and legal conflicts. Solutions employing economic incentives, such as water rights and pollution allowance marketing, were introduced and experiences elsewhere in the West were reviewed.

A key forum for this community dialogue, the "Ad Hoc Deschutes Group", was formed. The 14 member Ad Hoc Group had representatives of all economic sectors in the Basin. The irrigation community holds the most water rights and reservoir storage and therefore has the greatest impact among resource users on the pattern and amount of river flows. At the same time, water quality degradation stems from

a diverse set of land uses driving non-point water pollution. An important part of the project was to assure that the federal interests in the Basin were addressed along with those of the tribes, resource users, and local and state governments.

The Ad Hoc Group recognized the need for a private organization with ecosystem-determined goals and methods based on positive incentives, consensus, and local governance. Since approximately half of the Basin's land area is managed by federal agencies it was clear that such a private organization would need the capacity to partner on projects with the federal agencies to be truly ecosystem and basinwide in scope. In March, 1996, Senator Hatfield introduced S. 1662 authorizing federal agencies to work with this private organization, known as the Deschutes Basin Working Group. Title III of the Oregon Resource Conservation Act of 1996, signed by the President in September, 1996, authorizes the following:

—Federal agencies to work with the private Deschutes Basin Working Group, dba Deschutes Basin Resources Conservancy (DRC)

—Secretaries of Interior & Agriculture to appoint DRC board members for 3 year terms

—Federal participation with DRC in ecological restoration projects on federal and non-federal land and water with 50–50 cost share

—Five year startup authorization of $1.0 Million a year federal fund; 50/50 cost share with DRC

—Emphasize voluntary market-based economic incentives

The Deschutes Basin Working Group, later to adopt an operating name of the Deschutes Basin Resources Conservancy (DRC), has the goal of implementing on-the-ground projects that enhance the quality of the region's natural resources and add value to its economy.

Its board consists of nine members from the Basin's private sector; hydropower, livestock grazing, recreation/tourism, timber, land development, irrigation (2), environmental (2), and two members from the Confederated Tribes of the Warm Springs Reservation. In addition to the private board members there are two board members appointed from the Departments of Interior and Agriculture, two board members representing the State of Oregon, and four members representing local governments within the Deschutes Basin.

The DRC will receive funds through tax exempt donations from individuals, businesses, and corporations, including philanthropic foundations, and from government agencies seeking project development assistance or collaboration. It will seek to develop income from direct sources such as fee-for-service.

FEDERAL APPROPRIATIONS IN FISCAL YEAR 2000 FOR THE DRC—AN INVESTMENT IN CENTRAL OREGON, IN FEDERAL AGENCIES' FUTURE ROLE AND IN RIVER BASIN MANAGEMENT

The DRC has a foundation enabling it to make a substantial contribution toward meeting the region's economic and ecological challenges. The potential for the DRC to marshal significant and ongoing resources and cooperation is great. The engagement of private sector interests in the design, funding, and implementation of ecological restoration efforts is an important precedent to help relieve federal budgetary requirements under a variety of programs and responsibilities. The DRC's combination of private and local interests with those of the federal agencies provides an opportunity to explore the cooperative sharing of authorities and responsibilities. The DRC represents a new institutional approach to river basin management that will be applicable to other river basins throughout the nation, particularly in the western regions.

PREPARED STATEMENT OF JAN LEE, EXECUTIVE DIRECTOR, OREGON WATER RESOURCES CONGRESS

Chairman Domenici and Members of the Subcommittee: Mr. Chairman, members of the subcommittee, I am Jan Lee, executive director of the Oregon Water Resources Congress (OWRC). The OWRC represents irrigation, water control, drainage and water improvement districts, private ditch and irrigation corporations, cities and counties, individual farmers and ranchers statewide as well as having agribusiness associates as members.

I am writing to urge your support for the $18,366,000 included in the President's fiscal year 2000 Budget for the Bureau of Reclamation projects in the State of Oregon. The funding for these projects represents a valuable commitment to meeting the needs of our member organizations at a time when many are confronted with the problem of how to meet water delivery needs for their district populations while at the same time addressing environmental and Native American requirements.

There are particular projects like the Deschutes Ecosystem Restoration program and the Klamath project in Southern Oregon that typify this balance.

OWRC has a larger concern that the overall funding for the Bureau of Reclamation the past several years has not been adequate to address the backlog of projects in their program. We were greatly surprised that Congress cut the Bureau's Budget by 11 percent for fiscal year 1999. The cuts in the Oregon Water management and Technical Assistance program, Efficiency Incentives program, Water Management Conservation Program and the Title XVI make it difficult for water users in the state to address the combination of water/environmental/Native American water resource issues.

In addition to the proposed funding for Oregon projects in the fiscal year 2000 Budget, we would ask the Subcommittee to consider funding to move forward the Willow Lake Natural Treatment System Title XVI project in Salem, Oregon, a project that we support because of the agricultural component associated with the proposal. We would also ask that additional funding be included in the Efficiency Incentives Program for the Bend Feeder Canal in Bend, Oregon.

I would also ask that the Subcommittee continue to look into the issues surrounding the report to the Subcommittee that the Bureau of Reclamation provided concerning annual costs associated with operation and maintenance for fiscal years 1993–1997. Our district's already have very tight budget constraints and are concerned with possibilities of having increased costs passed on that may have nothing to do with their projects.

Thank you for considering our requests and we look forward to favorable action by the subcommittee.

PREPARED STATEMENT OF THE MCKENZIE WATERSHED COUNCIL

The McKenzie Watershed Council is an advisory body established in 1993 with the purpose of helping to address management issues in Oregon's McKenzie River watershed and to provide a framework for coordination and cooperation among key interests. The mission of the 20-member council is to foster stewardship of McKenzie Watershed resources, deal with issues in advance of resource degradation, and ensure sustainable watershed health, function, and uses.

In March 1995, the Council, which includes a representative from the U.S. Army Corps of Engineers, agreed by consensus to support federal implementation of the Willamette River Temperature Control project. The U.S. Army Corps of Engineers has been authorized to evaluate and plan for the installation of temperature control structures in the McKenzie Watershed on the Cougar and Blue River projects. The recommended plan is to modify the projects by adding one multi-level, ported intake structure at each project. These structures will permit selective withdrawal of water from different elevations within the reservoirs to achieve preferred downstream water temperatures for anadromous and native fish species. The Cougar and Blue River projects are only a few miles above their respective river's confluence with the McKenzie River, so their influence on the McKenzie temperature regime is significant. The recommended plan is expected to produce an additional 16,700 spring chinook salmon annually in the McKenzie River watershed.

Implementation of the Willamette River Temperature Control project takes on extra significance with the expected federal threatened species listing of the Upper Willamette spring chinook salmon. The McKenzie Watershed contains the last self-sustaining population of native spring chinook salmon in the Willamette system. Historically the McKenzie Watershed was the destination for 40 percent of the native spring chinook salmon passing above Willamette Falls. Obviously, the McKenzie Watershed will play a major role in the restoration of Willamette spring chinook salmon.

Alterations to the water temperature regime of the McKenzie River have been cited by the Oregon Department of Fish and Wildlife as a key limiting factor for the production of spring chinook salmon. In addition to spring chinook, bull trout are listed as "threatened" under the federal Endangered Species Act, and their status would be improved with a modified temperature regime.

The McKenzie Watershed Council commends the Clinton Administration's funding request for construction of this critical temperature control device. However, this funding request does not do enough to protect the McKenzie River's spring chinook salmon. The Council supports increasing fiscal year 2000 construction funding to $5 million, which will accelerate completion of this critical project. In addition, this funding level will provide the scheduling flexibility necessary to accommodate spring chinook salmon migration and spawning cycles. It is essential that construction activities be managed in a manner that will minimize impacts on salmon.

Adequate funding for this project, which will assure timely initiation and proper management, will accelerate the recovery of the McKenzie spring chinook salmon population. In comparison to other recovery options such as aquatic habitat enhancement, temperature control is the most effective and least costly alternative for restoring fish populations. Implementation of temperature control structures on the Cougar and Blue River projects will complement other critical restoration efforts being completed by public and private stakeholders in the McKenzie Watershed and throughout the Willamette Basin.

PREPARED STATEMENT OF WILLIAM MARTIN, CHAIRMAN, TUMALO IRRIGATION DISTRICT

Chairman Domenici and Members of the Subcommittee: Tumalo Irrigation District (TID) is writing to urge your support for their request of $2,000,000 in the Bureau of Reclamation's fiscal year 2000 budget. This money would be used for the piping of the Bend Feed Canal. This work would be undertaken through the Bureau of Reclamation's Efficiency Incentives Program.

TID is located in Bend, Oregon and diverts its water from the Deschutes River and from Tumalo Creek. The water diverted from the Deschutes River is transported through a rapidly urbanizing area in an open canal which is made of porous volcanic materials. A portion of the canal is already piped and TID proposes using this funding for piping the balance of the canal including the flume over Tumalo Creek.

The piping of the Bend Feed Canal will cost approximately $4,000,000, half of which will be paid for by the Tumalo Irrigation District. This piping will save a minimum of 20 cubic feet per second (cfs). From this savings, TID proposes targeting a 5 cfs flow for the Tumalo Creek, which currently is dried up in low water years The remaining 15 cfs of old rights will be exchanged for TID's 1961 rights which will be put in stream. The piping project will not expand TID's irrigated acreage.

This project will help reestablish Tumalo Creek as a spawning area for fish and contribute flow to the Deschutes River. These flows will help in meeting the water needs of the northwest fish on the threatened or endangered species list.

Although TID is experiencing an abundant snow pack this year, district users remember the drought years. The water savings will help insure a more reliable delivery of water in years of short supply.

This project is a continuation of TID's conservation plan. Over the last four years TID has spent approximately $2,500,000 on piping its canals, laterals and ditches. In addition to the $2,000,000 that will be provided under the cost-sharing for this project, TID will spend approximately $800,000 to replace two flumes and approximately $250,000 to install a fish screen in the next year.

TID is a small irrigation district and needs federal assistance for the completion of the effort to pipe the Bend Feed Canal. As population in the Bend urban area is occurring at a rapid pace, enclosing the canal with pipe will reduce the drowning risk of children, pets and wildlife. TID believes the project is beneficial to the public with its water savings and safety features, and will provide increased reliability to its users.

The Tumalo Irrigation District appreciates the Subcommittee's consideration of this request for the Bureau of Reclamation's fiscal year 2000 budget.

PREPARED STATEMENT OF MAYOR DONNA EVANS, CITY OF WEST JORDAN, UTAH

Mr. Chairman, thank you for providing the opportunity to testify before your Committee. My name is Donna Evans, and I am the Mayor of West Jordan, Utah. The purpose of my testimony is to request $1.65 millionfor the federal share of the construction for the West Jordan, Utah Water Reuse Project and $700,000 to complete the feasibility study and the planning and design for the Jordan River Meander project to be constructed by the U.S. Army Corps of Engineers.

The Water Reuse project has been authorized as part of Public Law 104–266 amending the Reclamation Wastewater and Groundwater Facilities Act (Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992). The City has committed the 75 percent local share for the project and is prepared to proceed. The Corps of Engineers expects to finish the feasibility study in fiscal year 2000 and complete the plans and specifications for the project in the next fiscal year.

WEST JORDAN WATER REUSE PROJECT

This project is located in the City of West Jordan, Utah, with a current population of over 52,000 people. As a suburb of Salt Lake City, the City of West Jordan is experiencing rapid growth. Since 1986 the water use in the City has increased over 55 percent to over 13,000 acre feet per year. During the summer months, water use increases mostly as a result of lawn watering and other outdoor irrigation activities. Records indicate that the average daily flow may increase as much as 77 percent over average annual flow to a maximum daily water use rate of almost 20 million gallons a day.

This project would consist of the construction of the facilities to treat and distribute reclaimed water for the irrigation of public and, possible, private properties. The reclaimed water would be obtained from the effluent of South Valley water reclamation facility, located in the City of West Jordan. Up to 7000 acre feet per year of water would be available to reduce the peak loading of the culinary water delivery system and supplies. The water would receive tertiary treatment and disinfection prior to distribution.

Due to the rapid growth of not only the City of West Jordan, but also the entire Salt Lake Valley, water resources are now being taxed to their limits. Salt Lake County Water Conservancy District (SLCWCD), which wholesales water to over twenty different entities in the valley, is projecting reaching their current peak flow capacity in three years or less. West Jordan currently purchases forty to fifty percent of their water supplies from SLCWCD, most of which is during peak demand of summer. Reducing the peak loading of West Jordan would not only benefit the residents of the City, but also the rest of the customers of SLCWCD by delaying or reducing the costly upgrades to the wholesale delivery system of SLCWCD.

Although such water reuse is already being accomplished in other areas of the country, it is a relatively new approach to water conservation in Utah. The State of Utah has recently passed regulations on the use of effluent from treatment facilities. All current discharge parameters of South Valley Reclamation Facility meet the State regulations for Type I uses. Type I use is that which "where human exposure is likely." Additionally, the State Division of Water Rights has recently issued their opinion on how the rights to the effluent would be distributed. Although there is not yet an official ruling, the City has been assured by the State Engineer that whatever water the City contributes to the treatment plant and has the original water rights for, the City has a right to reuse that quantity of effluent.

Following the initial feasibility study, the City would proceed with detailed plans and specifications for the required facilities. These facilities would include, but not be limited to the following: Diversion structure with sand and/or activated carbon filter beds; lined holding pond or reservoir; pumping facility with chlorination or other disinfection capabilities; booster pump station(s); distribution system; and metering and billing capability.

For the most part, all facilities would be constructed on City property or right of ways. Some land may have to be shared with or purchased from South Valley Reclamation Facility. Disturbance of any of the properties would be minimal. The impact would be no greater than, and possibly less, than the installation of necessary utilities to serve the growing population.

Initially, it is projected that the project would be delivering up to 1000 acre feet of water to over 300 acres of City parks, cemeteries, and athletic complexes. As the system is expanded, it could serve a number of commercial landscapes and eventually private properties. As aforementioned, the City could divert up to 7000 acre feet of water, with current water rights.

With the continuing growth of the Salt Lake Valley and particularly that of the City of West Jordan, new water supply sources are being exhausted physically and financially. Over one third of all water consumed is for irrigation of developed landscapes. This project would put to beneficial use water which is now discharging directly into the Great Salt Lake. Additionally, the project would reduce the use of drinking quality water for irrigation purposes, making more available where potable water is more critical. The $1.65 million would be the full federal share for the entire project.

JORDAN RIVER MEANDER PROJECT

The Corps and the City of West Jordan are working on an environmental enhancement project to restore the River's meander through the City to reduce the River's current scouring impacts caused by man-made changes to the River's channel. The project will restore the River to its natural meandering path through a 1.7 mile corridor in the City and relocate 48" and 56" sewer lines to an alignment further west of the River.

The Salt Lake District Office of the Corps of Engineers reports that with the funding they hope to complete the feasibility study in early fiscal year 2000 and initiate the planning and design phases of the project next fiscal year. The Corps will need $700,000 in fiscal year 2000 ($130,000 to complete feasibility and $570,00 to begin planning and design). The total Jordan River Meander project, including construction, is $6.8 million.

Thank you very much for your kind consideration of our requests. Water supply is essential to the quality of life in West Jordan, Utah as it is in most western cities. The Reuse project redirects and strengthens the City's new strategy in water conservation and long term water supply. The Jordan River is the historic and ecological center of our city and having it restored to a more meandering course will enhance the quality of life for our citizens and improve the natural environment for our wildlife. In both cases the help from you and your committee will have a major positive impact on the quality of life in our city for our citizens. Thank you for your help.

PREPARED STATEMENT OF THE DRY PRAIRIE RURAL WATER

Dry Prairie Rural Water (DPRW) joins the Fort Peck Tribes in the request for funds to continue the planning of the Fort Peck Reservation Rural Water System in the amount of $447,000 from the Burec General Investigations Account. DPRW serves the off reservation portion of Roosevelt, Sheridan, Daniels and portions of Valley county. The funds requested to address pre-authorization planning of the DPRW system are $193,000.

With the funds from fiscal year 1999 appropriations, DPRW accomplished a tremendous amount towards the advancement of the project. The coordination and education of the public, Environmental analysis and pre-construction engineering are progressing very well. The state has also recognized the need for this system and have passed through committee an $82,000 Renewable Resource grant and a $100,000 appropriation through the Joint Committee on Resources. These funds will be for fiscal year 1999 and 2000.

With the funds from this request and the state and local funds, we hope to able to complete the environmental assessment and final engineering work. In the event the project is authorized this year, we will be ready to begin design level investigations.

With the help from the previously allocated funds, DPRW has been able to secure a strong public participation in this project. All or 100 percent of the cities have passed resolutions to participate in the system. They have paid or budgeted $5 per water service. The rural drive is going equally as well. From the rural sector we ask a $100 fee to be included in the planning of the system. Over 50 percent have sent in their fee with about 20 per week coming in at this time. The rural membership drive was started in December of 1998.

One of the benefits that has already been realized from this effort is the trust and friendship building between the on and off-Reservation people. The joint effort to solve this common problem has made us aware of the different problems each of us face on both sides of the reservation borders. The problems will be easier to solve together.

The water quality problems in the DPRW service area are similar to the problems on the Fort Peck Reservation. DPRW has one city with a condemned water system with two more operating at the edge of compliance. The quality of the ground water we are presently using has deteriorated quickly in recent years. Several cities have recently built treatment facilities only to find that they do not adequately purify the water. The excessive amounts of iron, sodium, nitrates, and sulfates are very expensive and difficult to filter out.

We strongly believe that the only permanent and most economically feasible solution to the water problems in North East Montana is a regional water system using Missouri River water. With out this type of system, we will be forever struggling to find ways to make useless water usable. The health and economical welfare of this area depends on the success of this project.

The Montana delegation introduced S 841 and H 2306 to the 105th Congress. These bills have been reintroduced this year. With strong state and local involvement we hope to be more successful in our bid for authorization.

PREPARED STATEMENT OF THE FORT PECK ASSINIBOINE AND SIOUX

The Fort Peck Assiniboine and Sioux Tribes respectfully request funds to continue planning of the Fort Peck Reservation RWS, Montana, in the amount of $447,000.

The Tribes are joined in fiscal year 2000 by the Dry Prairie Water System, a part of the Fort Peck Assiniboine and Sioux Rural Water System, that is planning water service to all or parts of Roosevelt, Sheridan, Daniels and Valley counties outside the Fort Peck Indian Reservation. The request for funds is for continued pre-authorization work on the Fort Peck Indian Reservation ($254,000) and within Dry Prairie Water System ($193,000).

The Tribes are highly appreciative of the work by this Subcommittee on the project previously. In fiscal year 1993 and fiscal year 1994, $350,000 were appropriated, and in fiscal year 1997 through fiscal year 1999, $810,000 were appropriated.

ACCOMPLISHMENTS WITH PRIOR APPROPRIATIONS AND PROPOSED ACTIVITIES

The work products completed to date by the Bureau of Reclamation include a *Needs Assessment and Feasibility Report* within the boundaries of the Fort Peck Indian Reservation. The Fort Peck Assiniboine and Sioux Tribes have continued to work with the Bureau of Reclamation and the Tribes' engineer to improve upon and update the cost estimates for a regional project. The *Final Engineering Report* is in progress and will be completed in fiscal year 1999, incorporating the cost of expanding facilities on the Fort Peck Indian Reservation to serve the Dry Prairie Water System outside the Fort Peck Indian Reservation. The State of Montana, by action of its legislature, appropriated $62,000 in fiscal year 1997 to provide for a Needs Assessment and cost estimate of facilities outside the Reservation. The 1999 Montana Legislature is currently considering $182,000 in planning funds. The needs and facility costs determined for the Dry Prairie Water System are being incorporated into the *Final Engineering Report.*

Based on the considerable pre-authorization work that has been completed fiscal year 2000 funding will provide for conclusion of the environmental assessment and value engineering concepts in the Final Engineering Report. In the event the project is authorized in fiscal year 1999, the fiscal year 2000 appropriations will be used to complete NEPA compliance requirements and to begin design level investigations.

PROGRESS OF THE FORT PECK ASSINIBOINE AND SIOUX TRIBES

Through the efforts of this Subcommittee, planning for the project has been adequately advanced and we are hopeful that the project will be authorized this year. Specific technical objectives with the fiscal year 2000 funds include continued public involvement and coordination with off-Reservation interests in the Dry Prairie Water System by the Fort Peck Assiniboine and Sioux Tribes, continued work with the Bureau of Reclamation on NEPA and ways of reducing project costs while delivering necessary water requirements.

The Tribes are extremely pleased with progress on the project to date. fiscal year 1997 through fiscal year 1999 focused on public involvement within the Fort Peck Indian Reservation and outside it. The Tribes held numerous public meetings to acquaint residents within the boundaries of this regional project with capital costs, operation and maintenance costs, planning for the establishment of an operation and maintenance entity and the potential impact on environmental resources. The Tribes have planned the use of water from the Missouri River on the basis of their Compact with the State of Montana which assures a dependable supply of project water without shortage. The efforts of the Tribes have involved members of the Tribal Council, Water Resources staff, the Tribes' Water Commission, members of the Fort Peck Assiniboine and Sioux Tribes and other residents of the Fort Peck Indian Reservation.

Detailed cost estimates have been refined and expanded off the Reservation by the Fort Peck Assiniboine and Sioux Tribes and Counties Water System to assist water users and communities in an evaluation of the costs of participating in the project and improving drinking quality.

The total project cost within the Reservation, sized to carry off-Reservation water demands, is $103 million. The cost of enlarging the facilities to carry water to meet off-Reservation municipal, rural and industrial demands is $26 million (included in the $103 million). The cost of facilities outside the reservation is $76 million. Therefore, total project costs are $179 million. Assuming a cost share of 76 percent federal and 24 percent local, consistent with the Safe Drinking Water Act, as amended, and comparable projects funded by the Subcommittee, the non-federal cost share would be $16.0 million. The Tribes recognize that the cost share details necessarily require Congressional concurrence and authorization.

The cost of annual operation and maintenance of Fort Peck and Dry Prairie facilities is estimated at $2.57 per thousand gallons. Off-Reservation users will have additional costs to operate and maintain off-Reservation transmission and distribution

facilities and to retire debt. The Dry Prairie monthly cost of water at $40.00 is near the edge of the ability to pay.

DRY PRAIRIE WATER SYSTEM ACTIVITIES

Part of the effort of the Fort Peck Assiniboine and Sioux Tribes during fiscal year 1997 and 1998 was to work with the off-Reservation, Dry Prairie, interests in the project to assist them with organization and an improved understanding of the project. This resulted in the formation of a Steering Committee for the Dry Prairie System, which then evolved to the formation of a conservation district under Montana law or a non-federal entity with a board of directors to plan and design the Dry Prairie system.

The board has undertaken a fund drive for both communities and rural residences. One hundred percent (100 percent) of the communities have indicated their support of the project by contributing $5.00 per service connection, and as much as 75 percent participation from rural farmers and ranchers is expected with a $100.00 sign up requirement to evidence the support of the individual to the project. The degree of support for the project exceeds most other rural water projects in the northern great plains and indicates the severity of the water problem in the region. Improvement in the source and quality of water are considered essential to stabilizing the population of the area and attracting new industry.

WATER QUALITY OF EXISTING DRINKING WATER SUPPLIES AND NEEDS

The geologic setting of the Fort Peck Indian Reservation and the counties outside the Reservation is comparable to the rest of eastern Montana, North Dakota and South Dakota. With the exception of the Missouri River, which is a high quality water source, the groundwater supplies of the region are of poor quality, derived from shales deposited in ancient seas. Some of the worst water on the North American Continent lies below the Fort Peck Indian Reservation in the Madison Formation. This water is not used for human or livestock consumption. It is a brine several times more concentrated than sea water. Above this unsuitable aquifer are lesser aquifers that have been subjected to oil and gas development and have been contaminated, in part, by those activities. Other near-surface aquifers are subject to growing nitrogen contamination from agricultural activities within the area.

The Poplar River, which flows through the central portions of the Fort Peck Indian Reservation and the region is the subject of an Apportionment Agreement between Canada and the United States. Half of the water supply is available for Canada as measured at the International Boundary, and the balance is available for use in the United States. Depletion of this resource by agricultural and coal-fired power generation on the Canadian side increases the concentrations of chemicals and contaminants in the supply for the United States. The Poplar River and its principle tributaries are neither dependable supplies of water nor are they of suitable quality for this project. Thus, the Fort Peck Tribes and the Counties Water System are seeking a regional water project, comparable to Garrison, WEB, Mni Wiconi and Mid-Dakota that rely on the high quality waters of the Mainstem Missouri River.

The feature of this project that makes it more cost effective than similar projects is its proximity to the Missouri River. The southern boundary of the Fort Peck Indian Reservation is formed by the Missouri River for a distance of more than 60 miles. Many of the towns in this regional project are located two to three miles from the river, including Nashua, Frazer, Oswego, Wolf Point, Poplar, Brockton, Culbertson, and Bainville. As shown on the enclosed project map, a looping transmission system outside the Fort Peck Indian Reservation will deliver water 30 to 40 miles north of the Missouri River. Therefore, the distances from the Missouri River to all points in the main transmission system are shorter than in other projects of this nature in the Northern Great Plains.

For comparison of water quality of this project with other regional projects, please refer to Tables 1 and 2.

PROJECT AUTHORIZATION SOUGHT IN FISCAL YEAR 1999

In the first session of the 105th Congress, the Montana delegation introduced S. 841 and H.R. 2306, comparable bills in both houses of Congress for authorization of the Fort Peck Assiniboine and Sioux Rural Water Project. A hearing was held on the proposed legislation by the Senate Water and Power Subcommittee in fall 1997. A hearing before the House Water and Power Subcommittee was held in summer 1998. Means of financing the project within the Reclamation budget were discussed in the context of the GAO Report on this project and Lewis and Clark.

The Montana delegation is working with the Tribes and the Dry Prairie Rural Water to re-introduce authorizing bills early in this session. The project is building

good relationships throughout the region as we determine the interests of those outside the Reservation in participating in this most important project. The community-building aspects of the project have been considerable over a short period of time.

We have worked with the Bureau of Reclamation to address its concerns related to federal and non-federal cost share, among other matters. Many of the initial issues have been clarified to the mutual satisfaction of the sponsors and Reclamation. There has also been good coordination with the Western Area Power Administration on the power provisions of the bills.@

TABLE 1.—*Comparison of Fort Peck Total Dissolved Solid Levels With Comparable Projects*

Project/community	*Total dissolved solids project community (mgl)*
Fort Peck—Fort Kipp	2,730
Lewis and Clark—Upper Limit	2,600
Mni Wiconi—Red Shirt	2,332
Mni Wiconi—Reliance	2,056
Mni Wiconi—Murdo	1,761
Mni Wiconi—Kennebec	1,740
Mni Wiconi—Presho	1,398
Fort Peck—Poplar	1,380
Fort Peck—Frazer	1,180
Lewis and Clark—Lower Limit	1,179
Mni Wiconi—Wakpamni Lake	1,125
Mni Wiconi—Horse Creek	869
Fort Peck—Brockton	748
Mni Wiconi—Pine Ridge Village	416

TABLE 2.—*Comparison of Fort Peck Sulfate Levels With Comparable Projects*

Project/Community	*Sulfate (mgl)*
Lewis and Clark—Upper Limit	1,500
Mni Wiconi—Reliance	1,139
Fort Peck—Fort Kipp	1,120
Mni Wiconi—Red Shirt	1,080
Mni Wiconi—Murdo	1,042
Mni Wiconi—Kennebec	984
Mni Wiconi—Presho	644
Lewis and Clark—Lower Limit	538
Fort Peck—Frazer	498
Mni Wiconi—Horse Creek	410
Mni Wiconi—Wakpamni Lake	398
Fort Peck—Brockton	212
Fort Peck—Poplar	103
Mni Wiconi—Pine Ridge Village	70

PREPARED STATEMENT OF HON. JIM GERINGER, GOVERNOR, STATE OF WYOMING

This testimony supports the appropriation in fiscal year 2000 of $17,500,000 for the Bureau of Reclamation's basin-wide Colorado River Basin Salinity Control Program. This testimony is submitted in support of a fiscal year 2000 appropriation of $17,500,000 for the Bureau of Reclamation's Colorado River Salinity Control Program. Testimony was recently submitted to this Subcommittee by the Colorado River Basin Salinity Control Forum (Forum), a seven-state organization created by the Governors of the Colorado River Basin States, by the Forum's Executive Director, Jack Barnett. The State of Wyoming, a member state of the Forum, concurs in the Forum's testimony. While the President's recommended budget line-item for the basin-wide Colorado River Basin Salinity Control Program is $12,300,000, the State of Wyoming and the Forum urge the Congress to increase the appropriation for this Program by $5,200,000. The implementation of the Program has fallen behind the needed pace to prevent salinity concentration levels from exceeding specified numeric criteria in the water quality standards for the Colorado River. In addition to considerations of complying with this basin-wide water quality standard, the United States has committed to the Republic of Mexico, pursuant to Minute 242 of the 1944 "Treaty Between the United States and Mexico, Relating to Waters of the Colorado

and Tijuana River and of the Rio Grande," to managing the salinity concentrations of water deliveries to Mexico.

The State of Wyoming is one of the seven member states represented on the Forum and the Colorado River Basin Salinity Control Advisory Council (Council). The Council was created by Section 204 of the 1974 Colorado River Basin Salinity Control Act (Public Law 93–320). Like the Forum, the Council is composed of gubernatorial representatives of the seven Colorado River Basin states. Both the Council and Forum serve important liaison roles among the seven states, the Secretaries of the Interior and Agriculture and the Administrator of the Environmental Protection Agency (EPA). The Council is directed by statute to advise these federal officials on the progress of the federal/state cost-shared, basin-wide salinity control programs, and annually recommends to the Federal agencies what level of funding it believes is required to meet the objective of assuring continuing compliance with the basin-wide water quality standards.

The Council last met in October 1998 and developed funding recommendations for fiscal years 2000 and 2001 based on the progress the Bureau of Reclamation, the U.S. Department of Agriculture, the Bureau of Land Management and the seven states are making in implementing their programs for managing and reducing the salt loading into the Colorado River System. The Council's funding recommendations further heeded analyzes made by the Bureau of Reclamation and the Forum. Every three years the Forum updates the plan of implementation for maintaining the Colorado River water quality standards for salinity in accordance with Section 303 of the Clean Water Act. The 1996 triennial review of the standards identified the need for the Bureau of Reclamation to expend $17,500,000 per year in order to carry out its portion of the plan of implementation. The plan is devised to assure that the salinity concentrations of Colorado River water do not exceed the numeric criteria set forth in the standards. Based on its own review of the facts, the Council recommended that a minimum of $17,500,000 needs to be expended by the Bureau of Reclamation during fiscal year 2000 to accomplish needed salinity control activities.

This funding level is appropriate if the salinity of Colorado River waters is to be controlled so as not to exceed the numeric salinity concentration criteria contained within the water quality standards for the Colorado River. Without the necessary levels of funding, there is an increased probability that the numeric criteria will be exceeded resulting in violations of the basin-wide water quality standards. Without the necessary levels of funding, there is an increased probability that the numeric criteria will be exceeded resulting in violations of the basin-wide water quality standards. Failure to maintain the standards' numeric criteria could result in the imposition of state-line water quality standards (as opposed to the successful basin-wide approach that has been in place since 1975) and impair Wyoming's ability to develop our Compact-apportioned water supplies. The present basin-wide salinity control program and its funding arrangements appropriately reflects that the primary beneficiaries of the basin-wide salinity control program are in the Lower Basin while the most cost-effective opportunities to reduce salt loading are upstream in the Upper Basin. Failure to maintain the standards' numeric criteria could result in the imposition of state-line water quality standards (as opposed to the successful basin-wide approach that has been in place since 1975) and impair the states' ability to develop its Compact-apportioned water supplies. Delaying or deferring adequate funding will create the need for a much more expensive salinity control effort in the future to assure that the Colorado River Basin states are able to comply with the water quality standards. "Catch-up" funding in the future will require the expenditure of greater sums of money, increase the likelihood that the numeric criteria for Colorado River water quality are exceeded, and create undue burdens and difficulties for one of the most successful Federal/State cooperative non-point source pollution control programs in the United States.

In July, 1995, Congress amended the Colorado River Basin Salinity Control Act. The amended Act provided Reclamation with additional authorities that have improved upon the cost-effectiveness of Reclamation's salinity control program, in large part because it provided for proposals and greater involvement from the private sector. Submitted proposals have far exceeded the available funding, while at the same time overall progress in accomplishing the rate of salinity control determined to be needed and as set forth in the Plan of Implementation continues to fall behind the scheduled rate.

We urge this Subcommittee to fund the level for the Colorado River Basin Salinity Control Program line-item in Reclamation's budget at $17,500,000. In addition to the funding needs identified for the basin-wide Colorado River Basin Salinity Control Program, the State of Wyoming supports the appropriation of Operation and Maintenance funds for completed Reclamation salinity control projects, including

the Paradox Valley Unit. The State of Wyoming understands that a portion of the General Investigation Funds included in the President's budget are intended for salinity control activities. Wyoming supports the appropriation of funds to accomplish these necessary planning and investigation activities.

Thank you for the opportunity to submit this testimony. I request, in addition to your consideration of its contents, that you make it a part of the formal hearing record concerning fiscal year 2000 appropriations for the Bureau of Reclamation.

DEPARTMENT OF ENERGY PROGRAMS AND ACTIVITIES

PREPARED STATEMENT OF THE AMERICAN SOCIETY FOR MICROBIOLOGY

The American Society for Microbiology (ASM), the largest single life science organization in the world, comprised of more than 43,000 members, appreciates the opportunity to provide written testimony on the fiscal year 2000 budget for the Department of Energy's (DOE) research programs.

The ASM represents scientists who work throughout academic, governmental and industrial institutions worldwide. Microbiologists are involved in research to improve human health and the environment. The ASM's mission is to enhance the science of microbiology, to gain a better understanding of basic life processes, and to promote the application of this knowledge for improved health, and for economic and environmental well being.

The ASM strongly supports the inclusion of basic science programs within the DOE. While relatively small in terms of the overall DOE appropriation, these programs provide important fundamental discoveries that establish the foundation for subsequent developments in biotechnology related to energy and the environment. It is imperative for the United States to maintain a strong science budget that supports basic research.

Along with enhanced appropriations to fund specific program areas, it is important that the DOE receive increases in administrative budgets to properly staff and manage fundamental science programs. Investments in well-managed basic and applied science programs can produce long term benefits. Over the past decade, scientific research has become more interdisciplinary. It is essential that DOE have the resources necessary to adapt to these changes in science and to hire the necessary experts to manage programs effectively. This will allow the Agency to make educated program and funding decisions based on cross-disciplinary scientific expertise.

Many DOE scientific research programs share the common goal of producing and conserving energy in environmentally responsible ways. Areas of research include basic research projects in microbiology, as well as, extensive development of biotechnological systems to produce alternative fuels and chemicals, to recover fossil fuels, to improve the refinement process of fossil fuels, to remediate environmental problems, and to reduce wastes and pollution.

In 1997, the United States signed the Kyoto Protocol and committed to reduce the nation's carbon dioxide emissions to eight percent below 1990 levels. The Administration proposed a government-wide Climate Change Technology Initiative (CCTI) to implement this commitment and to find solutions to problems associated with greenhouse gasses. The President's budget for DOE proposes $437 million for this initiative. These funds will be allocated throughout the Agency's programs including the Office of Science (SC). Biological research is slated to receive a significant boost from this initiative. As part of the CCTI, DOE will support microbiological research on carbon management science including basic studies on microorganisms that consume carbon, and on other microbes that assist in the development of carbon free energy sources. Combating global warming is critical and these programs will make significant contributions to the long-term battle to maintain the quality of our atmosphere.

The ASM is encouraged by the President's budget request for DOE's science programs. The Administration's proposed budget for fiscal year 2000 requests $17.8 billion for the DOE overall. Included in that request is $2.8 billion for programs supported by the Office of Science. The following comments focus on research supported by the Biological and Environmental Research (BER) and Basic Energy Sciences (BES) programs and make recommendations related to carbon management, genomics, bioremediation, ocean science, and basic energy science. Federal investment in these programs today will help to ensure fundamental research to find solutions to future environmental and energy problems while maintaining U.S. scientific leadership worldwide.

CARBON MANAGEMENT SCIENCE

An important component of the CCTI program in BER addresses the basic phenomena and strategies for managing the carbon budget of our terrestrial and ocean systems. Biological sequestration of carbon, both its capture and stability of the biologically produced carbon forms, has major effects on the global CO_2 and methane concentrations. Furthermore, stored carbon such as soil carbon, has beneficial effects on plant growth, water retention in soil, and soil structure.

The President's budget proposes an increase from $5.5 million in fiscal year 1999 to $13.0 million in fiscal year 2000 for the carbon management research program. Approximately $5.8 million of this budget would be devoted to genome sequencing of microorganisms important to carbon sequestion and hydrogen production. ASM strongly supports this enhanced effort and believes that new understanding will be derived that will aid decisions about management of the global carbon cycle, and new biotechnologies discovered that can reduce CO_2, convert carbon to useful products and stabilize fixed carbon.

GENOMICS

DOE supports the Microbial Genome Program (MGP) within the Office of Biological and Environmental Research . The program, developed in 1994 as a compliment to the Human Genome Program, already provides complete genome sequence information on important microorganisms. The Administration has proposed $10 million for fiscal year 2000, about $1 million more than last year.

Genome sequencing has revolutionized the scientific approach to understanding biology and is providing a depth of insight not previously possible. DOE's MGP has led the way in this new biological era, completing full genome sequences of several microorganisms important in energy and environmental processes. Now, however, other nations have seen the promise of this field of research and have mounted significant programs. Continued growth in the DOE MGP is critical to maintaining U.S. leadership in this important field. This research should include not only the genome sequencing but the functional analysis of those genomes, the associated software and databases to fully and efficiently analyze the information, and development of new technologies to help characterize the genes of unculturable microbes in nature.

In view of the tremendous potential to be derived form microbial genome sequencing, ASM recommends that Congress provide $15 million for the MGP. A base funding level of $10 million to sequence critical organisms within the scope of DOE's mission should be provided to the MGP. Funding from the CCTI should serve as an add-on to the program for specialized sequences of organisms related to the mission of the CCTI.

Researchers supported by the MGP have already sequenced several complete microbial genomes, including ones from methanogens living in deep-sea thermal vent regions, and a bacterium that is extremely resistant to radiation, Deinococcus radiodurans. This sequence information provides clues into how we can design biotechnological processes that will function in extreme conditions, including ones that will generate fuels and help clean up the environment. With each new genome that is sequenced we gain a greater understanding of microbial evolution and diversity. Also, each sequenced genome has revealed how much more science needs to learn. Thirty percent of each genome has no known function. This presents a great challenge for scientists to unravel the genomes' significance for understanding microbial evolution and the potential for biotechnological developments.

The DOE has established the necessary peer review and advisory program to the MGP to ensure that the microorganisms selected for sequencing will yield the greatest scientific informational benefits and that the research is of the highest quality. Important new knowledge has been gained from each and every genome sequenced. The ASM believes that even greater benefits would be achieved if the program were funded at the level of $15 million and strongly urges this Subcommittee to consider adding these funds to the Microbial Genome Program for support of competitive research.

The DOE has expanded its research into microbial diversity, and has begun sequencing the genomes of bioremediative microorganisms. Due to a scientific approach called sequence leveraging, a practice of using previously sequenced microbes to build the sequences of similar non-sequenced microbes in a more cost-effective manner. The results of these initiatives will be readily available to other scientists, through the use of on-line databases. All genome sequences supported by the MGP are available to the public and as such contribute to further scientific exploration. The public disclosure of genomic data will aid scientists in their research into new

biotechnologies such as bioremediation, a technology that is proving to be a practical and a cost-effective way of eliminating pollutants.

BIOREMEDIATION

The MGP's research into bioremediative microorganisms compliments the research supported by the DOE's Natural and Accelerated Bioremediation Program (NABIR) and other DOE bioremediation research initiatives. The NABIR program is level funded from fiscal year 1998 with a request for fiscal year 2000 of $19.1 million. The ASM supports the Administration's request for bioremediation research. However, the ASM believes that greater benefits will be achieved if the NABIR program is increased to $30 million, which is more consistent with the original $40 million plan for the program.

Bioremediation scientists are searching for cost-effective technologies to improve current remediation methods to clean up DOE's contaminated sites. This research will lead to new discoveries into reliable methods of bioremediation of metals and radionuclides as well as organic pollutants in soils and groundwater. The NABIR program supports the basic research that is needed to understand this technology to more reliably develop the practical applications for cost-effective cleanup of pollutants at DOE sites. The ASM strongly recommends that additional funding be allocated to balance the program elements and pollutants studied as originally envisioned when the NABIR Program was designed.

OCEAN SCIENCE

Other exciting new microbiological research supported by BER is in the Ocean Sciences Program. The Administration's budget request includes $6.9 million for this program in fiscal year 2000. Microbiological research supported by the Ocean Sciences Program investigates the effects global change has on marine microbes. The findings from this program will be crucial to understanding the responses of marine biological systems to changes in their environments. The ASM fully supports the Administration's request for this program.

BASIC ENERGY SCIENCES

The Administration's requested funding level for the Office of Basic Energy Sciences is $888.1 million for fiscal year 2000. This funding level is an $88.6 million increase over last year. BES funds important microbiological basic research programs through the Energy Biosciences Division. In fact, about one fifth of all BES funds go directly to support research at academic institutions across the nation.

This program focuses on research in both microbiological and plant sciences that will lead to new discoveries in producing energy without risk to the environment and finding effective methods of cleaning up existing contamination. The CCTI effort of BES is proposed to increase from $8.0 million to $20.0 million in fiscal year 2000. Research on the microbial role in the carbon cycle is an important part of this program.

Other microbiological research supported by this program includes biotechnology related to energy, biofuel production, and technologies to aid in the restoration of contaminated environmental sites. More basic research on hydrogen, methane, and ethanol production is needed if we are to meet future energy needs and to have fuels that will minimize environmental pollution. The ASM supports the proposed funding level for this program and urges Congress to allocate these funds for the Energy Biosciences.

CONCLUSION

DOE's research programs help to keep the United States at the forefront of scientific discovery and competitive in the world marketplace. The ASM encourages Congress to maintain its commitment to the Department of Energy research programs to maintain the United States' leadership in these vital industries and continue our commitment to a strong basic science program.

The debate over the effect of greenhouse gasses on the environment is complex. While some may disagree about the severity of the greenhouse problem, most will agree that the reduction of industrial gasses emitted into the atmosphere will provide more long term environmental benefits than continuing to increase the rate these gasses enter our atmosphere. In Kyoto, the United States committed to significantly reduce carbon dioxide emissions into the atmosphere. DOE's basic research programs support research that investigates solutions to existing and future environmental and energy problems. Through the leadership of DOE's basic research science in clean fuels, and environmental processes, new technologies will be devel-

oped to enable the U.S. to be better prepared to meet environmental problems and the economic challenges associated with them.

In summary, the ASM makes the following recommendations:

—The ASM believes that it is imperative for the United States to maintain a strong science budget that supports basic research.

—It is essential that the DOE receive sufficient increases in administrative budgets to properly staff and manage biological science programs.

—The ASM recommends that Congress provide $15 million, $6 million more than fiscal year 1999 funding, for the Microbial Genome Program. The MGP should have a base funding level of $10 million to sequence critical organisms within the scope of DOE's mission. Funding from the Climate Change Technology Initiative should serve as an add-on to the program for specialized sequences of organisms related to the mission of the CCTI.

—The ASM recommends that the CCTI programs in BER and BES receive the $33.0 million proposed for fiscal year 2000, and that $5.8 million of this be devoted to genome sequencing of microorganisms important to global carbon management.

—The ASM recommends $30 million be appropriated for the NABIR program to provide the funds necessary to sustain a balanced program of bioremediation research on chemicals important to DOE site cleanup.

—The ASM fully supports the Administration's request for $6.9 million for the Ocean Sciences Program.

Thank you for the opportunity to provide testimony in support of the DOE basic life sciences programs. The ASM hopes that its recommendations will be useful to the Subcommittee. We would be pleased to respond to any questions.

PREPARED STATEMENT OF DR. ELLEN FUTTER, PRESIDENT, AMERICAN MUSEUM OF NATURAL HISTORY

Founded in 1869, the American Museum of Natural History is one of the nation's pre-eminent scientific and educational institutions. For over 129 years, the Museum has pursued a mission of examining critical scientific issues and increasing public knowledge about them. Throughout the Museum's history, its explorers and scientists have pioneered discoveries that have offered us new ways of looking at nature and human civilization. The Museum has sponsored thousands of expeditions, sending scientists and explorers to every continent. This rich scientific legacy includes an irreplaceable record of life on earth in collections of some 32 million natural specimens and cultural artifacts that are an extraordinary research tool and represent the focus of science at the Museum. The Museum's power to interpret wide-ranging scientific discoveries and convey them imaginatively has inspired generations of visitors to its grand exhibition halls and educated millions about the marvels of the natural world and the vitality of human culture. With four million visitors annually (of whom half are schoolchildren), the largest unified natural history library in the Western Hemisphere, a staff of dedicated educators who seek to inspire curiosity and a desire to learn in both children and adults, the Museum is known as one of the nation's preeminent scientific and educational institutions.

More than 200 active research scientists with internationally recognized expertise conduct more than 150 field projects each year. Museum scientists in the ten scientific departments are retracing the evolutionary tree, documenting changes in the environment, and describing the achievements of human culture affecting the public's understanding of where we come from and where we may be headed.

The Museum's ongoing research provides the foundation for its educational mission. The goals of its educational programs include increasing scientific literacy among both adults and children nationwide addressing issues that affect our daily lives and the future of the planet and its inhabitants, and providing a forum for exploring world cultures. The recent Museum's launching of the National Center for Science Literacy, Education, and Technology in partnership with NASA helps to further these goals. In creating the National Center, AMNH and NASA recognized an opportunity to combine and leverage their incomparable resources. The National Center creates materials and programs that reach beyond our institutional walls into homes, schools, museums, and community organizations around the nation.

The Museum actively continues a tradition of creating some of the greatest scientific exhibitions in the world. Early in the year 2000, the Museum will open the new Rose Center for Earth and Space, in one of the most exciting chapters in the Museum's long and distinguished history of science and education. The Rose Center includes a newly rebuilt and updated Hayden Planetarium and will allow visitors to journey among the stars and planets in our own galaxy as well as those of other

galaxies; the Lewis B. and Dorothy Cullman Hall of the Universe, where interactive technology and participatory displays will elucidate important principles of astronomy and astrophysics; and the adjoining Gottesman Hall of Planet Earth (opening in 1999). The new Hall of Planet Earth will explore key questions such as: how has the Earth changed though time; why do ocean basins continents and mountains exist; what causes climate change; and why is the Earth habitable. As part of the exhibition the question of natural resources will be explored: what are they; what resources are necessary to generate energy (oil, coal, goethermal); where are they located; and how are they formed. The Rose Center for Earth and Space will enable the Museum to join science and education to provide a seamless educational journey taking visitors from the beginnings of the universe, to the formation and processes of Earth to the extraordinary and irreplaceable diversity of life and cultures on our planet.

One of the strategic goals of the Department of Energy is to utilize its assets to advance the nation's science literacy. In addition to our mutual commitment to science literacy, the American Museum and DOE share several other joint goals, including: making science/scientific enterprise more accessible to a large and diverse audience; harnessing the power of technology to support science, exhibition, and education; and enhancing the diversity of the science workforce working with schools, parents, and the community. The DOE has enormous resources that can support the activities of the American Museum's science, exhibition, and education programs. In partnership with DOE, the Museum would significantly advance the public's access to the expertise, data and technology that has been developed by DOE.

The Department of Energy has traditionally been one of the major sources of support for research and laboratory instrumentation equipment. The types of laboratories and instrumentation that the American Museum seeks are indeed consistent with the DOE's mission. The Molecular Systematics Lab is a critical tool to basic energy research, the human genome project, and the Department's biological and environmental research function (the BER account).

Technology is rapidly changing the way we perceive nature. With the advent of DNA sequencing, museum collections have become critical baseline resources for the assessment of the genetic diversity of natural populations. Genomes, especially those of the simplest organisms, provide a window onto the fundamental mechanics of life. One of the goals of the DOE sponsored Human Genome Program is to learn about the DNA of nonhuman organisms. This, the sponsors of the research say, can lead to an understanding of their natural capabilities that can be applied toward solving challenges in health care, energy sources, and environmental cleanup. We believe that the Museum's accomplishments in this area support and complement the Department of Energy's goals in this area.

The American Museum has a history of being at the forefront of conservation activities. In addition, the molecular systematics programs at the Museum are on the cutting edge in the use of DNA sequences in conservation and evolutionary research. The Museum houses two molecular laboratories that are directed by four curators from the Museum and one from The New York Botanical Garden. Current studies focus on a variety of endangered species representing diverse geographic and taxonomic scope, including: tiger beetles and moths of the Atlantic coast of North America, sturgeon of the Caspian Sea, muntjacs (small deer) recently discovered in Southeast Asia, lemurs and whales of Madagascar, spotted owls of the Pacific Northwest, tiger populations throughout Asia, and right whales around the world. Ancient DNA, essential for historical study of changes in genetic markers in endangered species, has been recovered from museum specimens of rare or extinct animals, as well as 25-million-year-old termites fossilized in amber.

As more species become threatened and extinct, it is more critical than ever to catalogue and store the variety of life's natural genetic diversity so that it will be available far into the future. For these reasons, the Museum has launched a new effort to create a super-cold storage facility. Located in a new, state-of-the-art collections and laboratory building, this new storage facility will enable Museum scientists and researchers from around the world to perform unique and vital DNA research. This new storage facility will multiply the possibilities for DNA research exponentially.

Molecular techniques have revolutionized the study of biology, including conservation, evolution, and medicine. As part of our ongoing mission in collections-based research we propose expanding activities in the preservation of biological tissues and molecular libraries in super-cold storage for current and future genetic research. This collection is unique and valuable for research in several fields, including:

—Conservation genetics.—The practice of systematics and the management of endangered species rely on collections to provide data on the natural distribution

of populations on the planet over time. Accurately identified specimens accompanied by data such as date and locality of their collection are essential for the design of field projects. With the advent of DNA sequencing, museum collections have become valuable resources for recognizing species and assessing changes in the genetic diversity of natural populations throughout periods of ecological change.

—Systematics.—Natural history collections are critical resources for the creation of phylogenetic trees (branching diagrams representing evolutionary relationships), as many species that are pivotal to the reconstruction of a full evolutionary history of a group are known only from museum material. The American Museum frozen-tissue program provides a means to appropriately store rare organisms for molecular work. This collection serves as a permanent library of the molecular structure of organisms and is an important source of loans to investigators from around the world.

—Medicine.—Better understanding of the natural arrangements of genomes and interactions among genes is driving, and will continue to drive, the development of novel therapies for disease. It is also clear that many genes of significant scientific and medical importance are found only in a few organisms. Such natural products are useful in ways we are only beginning to understand. Tissue collections such as the one we propose expanding at the Museum will preserve genetic material and gene products from rare and endangered organisms that may go extinct before science fully exploits their potential.

The super-cold natural history collection is a permanent world wide resource for storage, conservation of genetic resources, and loans to the scientific community. Most biological material in natural history collections is dried or formalin fixed. While these methods preserve anatomy, they do not preserve nucleic acids and proteins in workable quantities. A super-cold natural history collection of vast biological diversity is underway at the Museum.

Now in operation for eight years, the Musuem's molecular laboratories have accrued tens of thousands of specimens. We will create a database not only for record keeping, but also to make this collection easily searched via the Internet and accessible for loans by scientists outside the Museum. We foresee increased loan activity as the fields of molecular systematics and comparative genomics continue to grow. Because tissues could be easily depleted by several requests, molecular libraries (DNA in fragments multiplied and stored in easily workable vectors) are or will be constructed for many of these specimens. Many of the tissues and molecular libraries in the Museum=s frozen collection come from long-term field projects with extensively detailed data.

We also suggest establishing a geographically based, publicly accessible Web site that enables users anywhere to access the available information. Projects of this type are critical to fostering a public understanding of human genomics and the fundamental building blocks of life, and are in keeping with the DOE's own stated goals.

Molecular information is important for understanding the history of life. The phylogenetic trees constructed from DNA sequence data have changed how biologists think about ecology, evolution, conservation, development, and behavior. The phylogenetic approach relies heavily on primary DNA sequences. However, many lineages of organisms have only been sampled in a very cursory manner or not at all.

In the past, the time and expense of DNA sequencing forced systematists to collect sequences from only one gene per species. A single set of character information is inadequate to represent the complexity of the organisms and their history. Fortunately, with support of the Department of Energy's Human Genome Program, DNA sequencing technology has improved rapidly in the past five years (bases sequenced per unit time has increased at least tenfold). This improvement has allowed the Museum's molecular labs to address gaps in knowledge of biodiversity by sequencing DNA from rare, endangered, and understudied organisms. Concomitantly, Museum scientists are working to improve the theory and implementation of phylogenetic analysis of vast data sets of DNA sequences and other forms of biological information such as the anatomy of extant and extinct organisms.

Currently, the Museum has one old and one new sequencer, both of which are operated on a 24 hour/day, 7 day/week schedule. Museum researchers bring a great deal of knowledge of the natural world and a staggering diversity of organisms into the lab. Our students and scientists are not typically molecular biologists but rather zoologists, botanists, and resource managers who are trained at the Museum to collect raw sequence data from the organisms in which they specialize and analyze the data for evolutionary and conservation studies. Sequence data are shared worldwide on NIH's Genbank database and via original scientific research disseminated in theses and peer reviewed publications.

Given that DNA sequencing technology has improved vastly in rapidity and cost effectiveness in the past five years, and given the Department of Energy's increased pace for the Human Genome Program, we seek in FY00 the addition of upgrade sequencing and computational equipment to the Museum's molecular laboratories. These upgrades will allow us to fully benefit from the intellectual resources represented by our students and scientists and the physical resources contained in our new super-cold storage facility. In addition, the Hall of Human Biology and Evolution at the Museum is a major resource for the public and especially students. The Human Genome Program of the DOE is an important endeavor. We propose to assist the DOE to translate its findings to the public through a AGenetics Bulletin, a set of continually updated interactive media kiosks that display research findings in the exhibition hall and can be made available internationally via public web sites.

Despite empirical advances, no amount of sampling of DNA of extant animals will help researchers overcome the gaps in evolutionary history that are left by extinction events. As a result, analytical approaches that combine DNA sequence with other types of information such as the anatomy of living and fossil species are proving very informative. However, because of the mathematical difficulty inherent in calculating phylogenetic trees, our ability to understand data lags far behind our ability to produce raw data.

A common theoretical problem in biology is the accommodation of diverse kinds of information and their ability to jointly support notions of evolutionary relationships. For example, several studies focus on the integration of data from adult anatomy with molecular information. How are such diverse kinds of information combined? Furthermore, how can the information presented by the fossil record help distinguish among hypotheses derived from molecular evidence? We have addressed these issues through new ways of describing characters (DNA or any feature of an organism) mathematically and linking them through novel means of phylogenetic-tree reconstruction. These methods are general and useful, but require immense computational attention, necessitating the development of new parallel algorithms in order to examine these procedures and questions.

In addition to building biological expertise at the level of the molecule and organism, researchers at the Museum have been studying the mathematical and algorithmic complexities of phylogenetic analysis in great depth over the last 20 years. By expanding the parallel-processing cluster, we plan to develop and explore new approaches to making sense of the large and diverse datasets necessary to appreciate organismal diversity. The Museum has made software available to the research community free of charge and will continue to do so. Furthermore the Museum serves as a center for training and symposia on evolutionary theory.

We are seeking, therefore, a fiscal year 2000 DOE investment of $2 million to support genomic research and related facility and instrumentation needs including a super cold storage facility, DNA sequencing and computational equipment, and related educational materials.

PREPARED STATEMENT OF JOE L. MAUDERLY, SENIOR SCIENTIST AND DIRECTOR OF EXTERNAL AFFAIRS, THE LOVELACE RESPIRATORY RESEARCH INSTITUTE

It is proposed that the Department of Energy negotiate with the Lovelace Respiratory Research Institute to establish a long-term agreement for operation of the privatized, government-owned Inhalation Toxicology Research Institute facility on Kirtland AFB in Albuquerque, NM.

EXECUTIVE SUMMARY

Beginning in fiscal year 1997, the Lovelace Respiratory Research Institute joined DOE in a pioneering effort to privatize the operation of a small DOE research laboratory, the Inhalation Toxicology Research Institute in Albuquerque, NM. The facility was leased to Lovelace for a five-year period, allowing Lovelace to diversify and build federal and non-federal support for research in the facility, thereby preserving it as a national research resource, offsetting the economic impact of declining DOE funding and potential closure, and mitigating DOE's liability for decommissioning the facility. Lovelace continues DOE work under a cooperative agreement, and pays use fees for non-DOE work at the facility.

Lovelace committed its resources to the success of the venture. It focused its corporate mission, out-placed peripheral activities, reorganized and consolidated its administrative and scientific activities, renovated portions of the facility at its own expense, developed an aggressive marketing program, diversified its customer base, and spearheaded a community technology incubator program which uses a portion of the facility.

The privatization has been successful.—Research support for activities in the facility has increased. Research support has been diversified, and major new programs have been initiated for both federal and non-federal customers. To date, $359 thousand in use fees were collected. Many companies have been served by the incubator. Hundreds of direct jobs have been saved and many more indirect jobs are supported by the effort.

The privatization is at a critical point, and the future disposition of the facility must be resolved quickly or the effort will fail.—Now, in the third year of the initial five-year agreement and with no resolution of longer-term use, Lovelace is prevented from establishing long-term research agreements for either federal or non-federal clients. DOE's Albuquerque Operations Office recently provided Lovelace with a draft agreement which would extend the lease for a total of up to 10 years. Lovelace urgently seeks an arrangement that provides a longer-term operating horizon and allows use fees to be used for facility maintenance.

BACKGROUND OF THE PRIVATIZATION

The Lovelace Respiratory Research Institute (LRRI) is an independent, non-profit biomedical research organization located in Albuquerque, NM and dedicated to the prevention, treatment, and cure of respiratory disease. LRRI conducts basic and applied research for government, industry, health advocacy organizations, and the public. Beginning with a 1960 contract with the Atomic Energy Commission, Lovelace developed and managed the government-owned laboratory which became the DOE-owned Inhalation Toxicology Research Institute (ITRI), a one-of-a-kind international center of excellence for basic and applied research on respiratory disease, respiratory toxicology and environmental lung health risks. DOE work at ITRI was funded primarily by the Office of Energy Research (ER), with lesser levels of funding from the Offices of Defense Programs and Environment, Safety, and Health.

During the late 1980s and early 1990s, the decline in DOE/ER priorities for research on health outcomes resulted in the closure of many of the Agency's laboratory-based biology programs, with the exception of those closely related to the human genome and nuclear medicine. Declining funding threatened the continued existence of the ITRI facility, and its operation as a special purpose DOE laboratory prevented Lovelace from replacing declining DOE funds by responding to other federal and non-federal research customers in a competitive manner. Recognizing the value of ITRI as a national research resource, Lovelace negotiated an agreement with DOE to privatize the facility on a five-year trial basis.

LRRI leases the ITRI facility from the government through DOE as the landlord agency. The term of the present lease is five years, the first year being fiscal year 1997. The lease allows use and sublease of the facility for purposes generally consistent with past uses. Under the lease payment is made to the U.S. Treasury at the rate of 3.53 percent of gross revenues from non-DOE sources, excluding support from LRRI's own endowment. Under the cooperative agreement, a fee of 3.45 percent of the total value of grants and contracts is assessed for use of government-owned equipment in work for non-federal customers. Equipment fee revenues may be used at ITRI as DOE program funds as specified in 10 CFR 600. The lease clauses included DOE support for facility repair or replacement costs over $25,000. To terminate work under the previous Management and Operating contract, DOE agreed to pay costs incurred by reductions in workforce necessitated by the loss of DOE funding and not offset by new business.

Upon privatization, DOE work by Lovelace in the leased ITRI facility continued under a five-year cooperative agreement, with total funding projected to decline progressively from approximately $13 million in fiscal year 1997 to $4 million in fiscal year 2001. LRRI accepted the considerable challenge of developing new research and business activities that, at minimum, must offset the progressive loss of DOE support.

Lovelace committed its organization to the privatization effort

Enabled by the privatization of the ITRI facility, LRRI consolidated its multiple research and administrative operations into a single organization. The Institute then embarked on a rapid transformation that purposefully linked the future of the organization to its success in privatizing the ITRI facility. It recruited a new President/CEO oriented toward development of research business, narrowed its scientific focus to respiratory disease, out-placed research programs not aligned with this focus, combined and reduced the total size of administrative functions, shifted from a local to a national Board of Directors, implemented a multifaceted marketing program, consolidated its laboratory staff in the ITRI facility, undertook (at its own expense) several facility renovations, and subleased excess portions of both LRRI-owned and ITRI facilities.

THE PRIVATIZATION HAS CLEARLY BEEN SUCCESSFUL

The research conducted in the facility has grown and diversified

From fiscal year 1996 to fiscal year 1999 (to date), LRRI has increased its annual non-clinical research business from approximately $17 million to approximately $21 million. This increase has been attended by a considerable diversification of funding for work in the ITRI facility. In fiscal year 1996, before privatization, 71 percent of the work in the facility was supported by DOE, 12 percent by NIH, 9 percent by other federal agencies, and 8 percent by non-federal customers. In fiscal year 1999 (to date), only 31 percent of the work in the facility is funded by DOE, 16 percent by EPA, 10 percent by NIH, 10 percent by DOD, and 33 percent by non-federal sources. A total of $359 thousand in facility and equipment use fees has been collected from non-DOE clients to date.

LRRI's success has supported the local economy through the retention of approximately 200 jobs directly within the Institute, which translates into approximately 1000 total jobs, most of which are in the local community.

NEW FEDERAL RESEARCH INITIATIVES DEPEND ON CONTINUED USE OF THE FACILITY

DOE has a continuing need for the facility

It is clear that DOE itself has continuing need for the capabilities offered by LRRI and the ITRI facility. During fiscal year 1999, DOE is funding approximately $700 thousand in new work obtained through competitive grants programs from various offices, and this work is intended to continue in future years. The Office of Heavy Vehicle Technologies has established a growing environment, safety, and health program concerning engine emissions, and LRRI is a major participant in this program. Indeed, the funding for LRRI work on engine emissions, made possible by the unique ITRI facility, nearly tripled from fiscal year 1998 to fiscal year 1999, and is envisioned to continue for several years.

THE ENVIRONMENTAL PROTECTION AGENCY HAS A CONTINUING NEED FOR THE FACILITY

In fiscal year 1998, congress established the National Environmental Respiratory Center through the EPA appropriation as a multi-year research program to address the growing crisis of apportioning adverse health effects of environmental air pollution among the many constituents of air pollution mixtures. This program, developed by LRRI at the ITRI facility and unlike any other air pollution research effort in the nation, is essential to providing a foundation for the air pollution regulatory framework of the future. The work was made possible by the unique capabilities of the ITRI facility for creating in the laboratory complex mixtures of man-made and natural air contaminants, and conducting laboratory assays of the health effects of the mixtures. This body of research will be jointly funded by EPA, other federal agencies, states, and industry, and is intended to continue at a level of approximately $4 million/yr for at least six more years. In addition to the Center, EPA has funded several new projects at LRRI in response to competitive solicitations for work on airborne toxic materials and environmental lung disease.

The Department of Defense has a continuing need for the facility

As described above, research funding from DOD has grown, and the Agency clearly has a continuing need for the capabilities Lovelace offers at the ITRI facility. Recent examples are studies to resolve Gulf War Illness issues, the cancer hazards of depleted uranium fragments retained deep in tissue, and the detection of airborne biological agents.

The ITRI facility is slated to play an increasing role in the development of new technologies to detect and mitigate chemical, biological, and radiological threats of both military and domestic importance. Based in part on the unique capabilities of the ITRI facility for working safely with very hazardous agents and creating atmospheres of airborne agents, a new working alliance has formed among LRRI, Sandia National Laboratories, Los Alamos National Laboratories, and the University of New Mexico. This new Research Alliance for Health and National Security will pool intellectual and technical resources to develop new technologies to detect and reduce threats, protect personnel, and stage and treat victims. Although each member organization brings special capabilities to the Alliance, the continued existence of LRRI's capabilities at the ITRI facility are central to the work plan.

The National Institutes of Health has a continuing need for the facility

NIH (NHLBI, NIEHS, NCI) continues to fund research utilizing the ITRI facility. One example is the multi-year Special Center of Research Excellence (SCORE) grant awarded jointly to the University of New Mexico and LRRI to conduct re-

search on the causes of the continual increase in childhood asthma. Part of this work requires the specialized capabilities of ITRI to generate atmospheres of tobacco smoke and other air pollutant mixtures to determine their role in the development of asthma. NIEHS recently awarded a developmental center grant to the University of New Mexico, and a portion of the research requires the environmental research capabilities of the ITRI facility. There have been discussions with the Director of NIEHS regarding the potential use of the ITRI facility in a more direct manner to support the Agency's inhalation toxicology needs.

The facility is also being used to support a growing technology business incubator

LRRI is playing a key role in an effort involving other community groups to develop a technology business incubator program. The Business Technology Group (BTG) was formed in the fall of 1997 by LRRI, Sandia National Laboratories, the Albuquerque and Hispano Chambers of Commerce, the Albuquerque Department of Economic Development, Technology Ventures Corporation, the Center for Entrepreneurship, the University of New Mexico, and several private companies. Local incubator space was consolidated under the BTG, an Executive Committee was formed to direct operations, and an Evaluation Committee was formed to evaluate potential incubatees. LRRI provides a portion of the incubator space through subleases of the ITRI facility, and provides a wide range of administrative, scientific, and technical support services to the occupants.

After only one year of operation, 41 new companies have already been served by this incubator, providing numerous jobs in the community, and several additional companies are either in negotiations with BTG or have expressed interest.

There is an urgent need to resolve the long-term future of the facility

Both DOE and LRRI can take satisfaction in the clear success of the exploratory privatization effort to date. The success of this effort provides a unique demonstration that it is possible to privatize government-owned research facilities and at the same time enhance their value as a national resource.

It is now critical to build on this success by developing a long-term plan for the use and maintenance of the facility. LRRI and the DOE Albuquerque Operations Office are currently negotiating an extension of the lease, but this is not an adequate long-term solution. For example, even a revolving five-year lease would only permit LRRI to compete for multi-year projects during the first two of each five years, an arrangement which would ensure failure. It is important to note that this limitation is troublesome for both federal and non-federal customers, who have demonstrated their interest in maintaining programs in the facility, as well as for LRRI, which has structured its organization around the effort.

There are several alternative possibilities for resolving this issue. For example, a longer-term (eg, 10 year) agreement with negotiation on future use beginning at the mid-point (eg, at five years) would be a step in the right direction. On the other end of the spectrum, it may be possible to convey ownership of the facility to LRRI or a community group. LRRI is open to discussing any possibility, including those that might require a legislative mandate.

It is important to recognize that a long-term use arrangement can not succeed without provision for investment in the maintenance of the structures, heating and cooling equipment, etc. that are essential to the usefulness of the facility. The Agency would incur a considerable cost to decommission the facility if it were abandoned. It may be cost-effective for the Agency to mitigate or delay this cost may be offset by a modest investment in the facility. At a minimum, the use fees collected from non-DOE research sponsors should be used for this purpose.

PREPARED STATEMENT OF DR. DAVID E. BALDWIN, SENIOR VICE PRESIDENT, GENERAL ATOMICS, ET AL.

Chairman Domenici, Senator Reid and Members of the Subcommittee, we are very pleased to submit this statement on the status of the fusion energy sciences program. We each believe that the nation's fusion research program is experiencing the most exciting and important new developments in a long time. We want to tell you about some of those changes and our developing plan for the future of fusion energy research.

Fusion is a scientific and technological grand challenge. It has required the development of the entire field of high-temperature plasma physics, a field of science that contributes to the description of some 99 percent of the visible universe. Plasma physics also provides cross-cutting insights to related fields such as nonlinear mechanics, atomic physics, and fluid turbulence. Quality science has always been the key to optimizing fusion systems. Throughout the history of fusion energy research,

the combination of exciting, challenging science and the lofty energy goal has attracted gifted young people into fusion research, many of whom have gone on to make important contributions in related scientific fields and in the commercial technology arena.

The DOE Fusion Energy Sciences program is exploring multiple paths for optimizing the fusion systems, taking advantage of both the strong international program in magnetic fusion energy and the strong DOE Defense Programs effort in inertial confinement fusion. As in other fields, the advancement of plasma science and technology requires facilities in a range of sizes, from the largest devices that press the frontier of high-temperature plasmas to smaller experiments suitable to begin the exploration of innovative ideas for fusion optimization. The very largest facilities may require international collaboration while the smallest are natural for university-scale investigation. Specific questions of plasma science and fusion technology set both the required number and the required scale of the experimental facilities in the program.

FUSION APPROACHES AND ISSUES

There are two principal approaches to creating practical fusion energy: magnetic fusion energy (MFE) and inertial fusion energy (IFE). Scientific progress in both of areas has been profound over the past decade. For both MFE and IFE, there is little question that the generation of copious fusion energy in the laboratory is scientifically and technically achievable. Fusion energy production of over 20 MJ per pulse has already been achieved in MFE and is anticipated for IFE in NIF in 2008. The challenge to fusion researchers now is to make fusion power practical, affordable, and attractive. Each approach to fusion has a different mix of technical attributes. As it is presently unclear which approach will ultimately prove the most meritorious, a prudent fusion development strategy is one which retains breadth and well as depth in its scope and has a process for advancement of the most attractive concepts and elimination of noncompetitive approaches.

Issues unique to MFE include (1) maximizing the pressure of the plasma that can be held by the confining magnetic field; (2) minimizing the transport loss of heat from the plasma; (3) achieving stable, steady-state operation in self-heated, burning plasmas; and (4) controlling of the plasma edge including exhaust of the fusion ash, which is helium. Issues unique to IFE include (1) completing the target physics program as part of the DOE DP Stockpile Stewardship Program; (2) developing an efficient, rep-rated driver for target compression; (3) developing low-cost methods for target fabrication, injection and tracking; and (4) developing chamber concepts capable of containing repeated micro-explosions over long periods. Issues in common include production of the tritium fuel, reduction of activation of the confining structure, and efficient conversion of neutron energy produced to electricity.

RECENT CHANGES IN U.S. FUSION RESEARCH

As Members of this Subcommittee are well aware, the fusion energy sciences program has been through a number of very significant changes over the past few years. These changes have included substantial cuts to the program budget (nearly 40 percent between fiscal year 1996 and today) and the resulting termination of one major and several minor experiments, an increased emphasis on scientific understanding and innovative alternative approaches to fusion energy development, and the withdrawal of U.S. participation in the design of a major international fusion collaboration.

One of the more significant recent developments to occur in the fusion program has been the closer alliance between inertial confinement fusion scientists and magnetic fusion energy scientists. As you are aware, the development of inertial confinement fusion has been pursued primarily as a means of providing insight into the physics of nuclear weapons and for maintaining the reliability of our nuclear weapons stockpile. While some work on inertial fusion energy development is funded through the fusion energy sciences budget, most of that budget is focused on the development of magnetic fusion energy and science.

Recently however, scientific and technological progress in inertial fusion has led to increased confidence that inertial confinement may present another potentially attractive path to fusion energy. So, somewhat over a year ago, in response to this progress and to guidance from your Subcommittee, intensive discussions began between the leadership of the magnetic and inertial confinement fusion communities.

Those discussions and the strengthening bond between the magnetic and inertial fusion communities has resulted in a new proposal or roadmap for the management of our nation's fusion energy research.

A PORTFOLIO-BASED ROADMAP FOR FUSION ENERGY R&D

The ultimate goal of fusion research is the creation of a nearly ideal energy source for future generations: one that is safe, inexhaustible, without harmful atmospheric emissions, and that has a fuel source readily available to all nations. After decades of R&D and many advances, the promise of fusion energy remains bright. Significant challenges, however, remain to fulfill this promise. In the nearer term, fusion research yields rich benefits in fundamental science and practical technology.

Within the fusion community, we are in the process of developing a portfolio-based roadmap for the future of U.S. fusion research that we believe to be responsive to this subcommittee's directions.

The central element of the roadmap is the exploration of a portfolio of promising ideas for improved fusion concepts, including improvements to the leading tokamak concept. This effort builds on the major advances in the knowledge of fusion physics, gained particularly over the last decade, coupled with greatly improved methods for measurement of critically important local plasma parameters. Promising ideas can be more readily identified in both MFE and IFE based on new understanding in areas like plasma turbulence, nonlinear instabilities, particle and radiation transport, MHD stability, wave-particle interactions, and the plasma/material interface. This naturally leads to the use of a "portfolio" approach. In order to provide a framework to assess the relative level of development among the different fusion concepts being pursued within MFE and IFE and to permit the application of appropriate objectives and criteria for success within the fusion portfolio, concepts are expected to advance through a series of distinct stages of experimental development. The lowest stage is identified as "Concept Exploration", then "Proof of Principle", followed by "Performance Extension." Success in these stages then should lead to the technical and scientific basis for making a decision to advance the concept to a stage of "Fusion Energy Development," and ultimately to a fusion demonstration power plant.

This development roadmap is optimized to provide the most cost-effective route to the knowledge base for practical fusion power. At all times it balances the risk of innovative new ideas, pursued initially at low cost, with the scientific productivity of well established concepts, pursued in more powerful and expensive devices. An important aspect of this portfolio-management approach is that there is strong scientific synergy across the elements of the portfolio, and indeed scientific advances made in one concept are readily translated to others. The breadth of the portfolio assures that attractive opportunities are not missed, and roadblocks are not likely to span all approaches. It also broadens the arena of spin-offs from fusion research to other areas of U.S. science and technology.

FUSION FUNDING NEEDS

In developing this plan or roadmap for fusion research, we are trying to be responsive to both Congress's expressed concerns and to the long-term energy needs of the nation. The program seeks to broaden fusion research with a central theme of optimizing the fusion power source through application of the underlying science. However, this is necessarily a broader fusion program whose goals cannot be met at the current level of funding ($223 million in fiscal year 1999), and the fusion budget must be increased to $300 million per year in the near term. While still well below the funding of only a few years ago, this funding level will support a considerably broadened program in both MFE and IFE, enable initiatives like the new laser fusion initiative, allow for greater utilization of existing experimental facilities, ensure that potentially viable paths to fusion are not overlooked, and ensure continued measurable and substantial progress towards the ultimate goal of practical fusion energy.

—Within MFE, there are today compelling and peer-reviewed near-term opportunities for investment in innovative confinement experiments (at a range of scales), new tools for the U.S. tokamak facilities to address advanced-tokamak issues and collaboration on the most powerful experimental facilities overseas. These investments will enable a broad, coordinated attack on key scientific and technical issues associated with the optimization of magnetic confinement systems and the achievement of the most attractive power plant concept.

—Within IFE, exciting opportunities exist in parallel with the construction and operation of NIF, to demonstrate the principles for a range of potentially attractive drivers for repetitively imploding fusion targets (including both ion beams and lasers), to address associated fusion target chamber technologies, and to examine techniques for the mass manufacture of precision targets. New innovative driver and target concepts are also being developed, providing opportunities for new science and a potentially more attractive ultimate power plant.

—In support of both areas there are opportunities in technology development, advanced simulation, and basic plasma science and technology.

We recognize, however, that funding increases this year may be heavily constrained. In this event, to begin to broaden the fusion research agenda in fiscal year 2000, an appropriate level of support for the Fusion Energy Sciences program would be $260 million, including the $10 million needed to begin decommissioning of the DOE TFTR device at Princeton. This level would permit a start on the expanded IFE program and on important MFE opportunities which cannot be addressed at the current level.

Thank you for the opportunity to submit this statement.

PREPARED STATEMENT OF LYNNE P. BROWN, PH.D., ASSOCIATE VICE PRESIDENT FOR GOVERNMENT AND COMMUNITY RELATIONS, CENTER FOR COGNITION, LEARNING, EMOTION AND MEMORY, NEW YORK UNIVERSITY

Research into cognition, learning, emotion, and memory can help educators, physicians, and other health care givers, policymakers, and the general public by enhancing our understanding of normal brain development as well as the many disabilities, disorders, and diseases that erode our ability to learn and think, to remember, and to emote appropriately.

New York University is seeking $10.5 million over five years to establish at its Washington Square campus a Center for Cognition, Learning, Emotion and Memory. The program will draw on existing research strengths in the fields of neural science, biology and chemistry, psychology, computer science, and linguistics to push the frontiers of our understanding of how the brain functions, and how we learn.

Such exploration into the fundamental neurobiological mechanisms of the nervous system has broad implications for human behavior and decision making as well as direct applicability to early childhood development, language acquisition, teaching methods, computer science and technology development for education, the diagnosis and treatment of mental and memory disorders, and specialized training for stressful occupation.

COGNITION, LEARNING, EMOTION AND MEMORY STUDIES AT NYU (CLEM)

New York University is poised to become a premier center for biological studies of the acquisition, storage, processing and retrieval of information in the nervous system.

To be housed at NYU's Washington Square Campus within the Center for Neural Science, the new Center will capitalize on the university's expertise in a wide range of related fields that encompass our computer scientists who use MRI imaging for research into normal and pathological mental processes in humans, our vision scientists who are exploring the input of vision to learning and memory, our physical scientists producing magnetic measurements of brain function with a focus on the decay of memories, our linguists studying the relation of language and the mind, and our psychiatrists conducting clinical studies of patients with nervous system disorders.

The New York University Program in Cognition, Learning, Emotion and Memory (CLEM) focuses on research and training in the fundamental neurobiological mechanisms that underlie learning and memory—the acquisition and storage of information in the nervous system. Current studies by the faculty at NYU are determining why fear can facilitate memory; how memory can be enhanced; what conditions facilitate long-term and short-term memory; and where in the brain all these memories are processed and stored. The research capacity of this Center capitalizes on our expertise in physiology, neuroanatomy, and behavioral studies, and builds on active studies that range from the mental coding and representation of memory to the molecular foundations of the neural processes underlying emotional memories. Our faculty use electrophysiological and neuroanatomical techniques to study the organization of memory in the medial temporal lobe. Together these researchers bring substantial strength in psychological testing, computational sophistication, advanced tissues staining and electrical probes, and humane animal conditioning.

These core faculty are well recognized by their peers and have a solid track record of sustained research funding from federal agencies and private foundations: total costs awarded and committed for their research for full project periods from all sources presently total $7 million. Additional faculty are being recruited in areas of specialization that include: the cellular and molecular mechanisms operative in neural systems that make emotional memory possible, neurophysiological studies of memory in non-human primates, computational modeling of memory, and neuropsychological and imaging research on normal and pathological human memory.

Colleagues in the Biology Department are doing related work in the molecular basis of development and learning. Given the important input of vision to learning and memory, the Center has strong links with the many vision scientists based in the Psychology Department who work on directly related topics that include form, color, and depth perception, memory and psycholinguistics. Colleagues in behavioral science study learning and motivation, memory and aging. Physical scientists explore the magnetic measurement of brain function, with a focus on the decay of memories. CLEM also shares research interests with colleagues in the Linguistics Department, who study the relation of language and the mind.

Research linkages extend to computational vision studies, now centered in NYU's Sloan Program in Theoretical Neurobiology. The Sloan Program works closely with computer scientists at our Courant Institute on Mathematical Science, with colleagues at the Medical Center in Psychiatry, who use MRI imaging for research into normal and pathological mental processes in humans, and in Neurobiology, who are conducting clinical studies of patients with nervous disorders, especially memory disorders.

What is unique and exciting about the establishment of such a comprehensive center at NYU is the opportunity to tap into and coordinate this rich multidisciplinary array of talent to conduct pioneering research into how the brain works. In this, the "Decade of the Brain," NYU is strategically positioned to be a leader.

EARLY CHILDHOOD AND EDUCATION

Research into the learning process as it relates to attention and retention clearly holds important implications for early childhood development. Although most of a person's brain development is completed by birth, the first few years of life are critically important in spurring intellectual development. For example, research has already shown that in their early years, children need human stimulation, such as playing and talking, to develop the ability to learn.

With more immigrant children in schools, language development is another crucial area of study. If a child's brain were more receptive to acquiring sounds during the first few months of life, and language in the first few years of life, then students may learn a second language more quickly if taught in the lower grades instead of waiting for high school.

In the midst of a national debate on education reform, thousands of education innovations are being considered without the advantage of a fundamental understanding of the learning process. CLEM researchers, coupled with educational psychologists, can contribute to a better understanding of how parents can stimulate their children's cognitive growth, how children learn at different stages and use different styles, how educators can accommodate those styles, and how educational technology can be harnessed to increase retention and memory.

At NYU, these efforts will be enhanced by our scholars and research conducted in our School of Education and our New York State-supported Center for Advanced Technology.

COMPUTER SCIENCE AND TECHNOLOGY DEVELOPMENT

As we refine our knowledge of how the brain acquires, processes, retains and retrieves information and images, we will also be able to improve the design, development and utilization of computer science and technology. As we reach a better understanding of how children learn, we can more effectively harness computer technology in the service of education.

At NYU, this effort is enhanced by the presence of our New York State-supported Center for Digital Multimedia, Publishing and Education, which brings together educators, laboratory scientists and software designers who explore how interactive multimedia technologies enhance learning and develop prototype teaching models.

SPECIALIZED TRAINING

Research into how cognition and emotion interact can have applicability to other diverse areas of interest including retraining of adult workers, job performance and specialized training for high risk or stressful jobs such as military service and emergency rescue work.

Accordingly, we believe that the work of this Center is an appropriate focus for the Department of Energy, given the Department's long-term involvement and investment in computer science technology through its Basic Energy Sciences program. The focus of the NYU Center for Cognition, Learning, Emotion and Memory is entirely consistent with the Department's commitment both to the Basic Energy Sciences, including computer science, and to its commitment to Biological and Environmental Research. We have demonstrated how scientists from a broad range of

biological sciences are working together with leading mathematics and computer science researchers to achieve a better understanding of how the brain functions and how we learn. The Department's commitment to education and to science will be well served through this partnership.

PREPARED STATEMENT OF KERRY L. SUBLETTE, SARKEYS PROFESSOR OF ENVIRONMENTAL ENGINEERING, UNIVERSITY OF TULSA

It is proposed that the U.S. Department of Energy support a focused, university-based program, the Integrated Public/Private Energy & Environmental Consortium (IPEC), with the goal of increasing the competitiveness of the domestic energy industry through a reduction in the cost of compliance with U.S. environmental regulations. Federal support is specifically requested as part of the fiscal year 2000 appropriation for the Department of Energy through the Biological and Environmental Research account or other source the Subcommittee may determine to be appropriate.

Last year the Congress provided $1.5 million in funding for the Integrated Public/Private Energy & Environmental Consortium (IPEC) (formerly the Integrated Petroleum Environmental Consortium) in the fiscal year 1999 appropriations bill for the Environmental Protection Agency (EPA). Specially this funding was provided for the development of cost-effective environmental technology, improved business practices, and technology transfer for the domestic energy industry. With initial funding under the Science and Technology account of EPA, IPEC will implement a comprehensive mechanism (Center) to advance the consortium's research expertise in environmental technology. The consortium includes the University of Tulsa, the University of Oklahoma, Oklahoma State University, and the University of Arkansas.

IPEC's operating practices and linkages to the independent sector will ensure that real problems in the domestic energy industry are addressed with real, workable solutions. Indeed this Subcommittee highlighted and supported these efforts by including strong support language in the committee report. We thank you for your support and would also like to express our appreciation to those members and their staff who provided valuable advice and guidance during the last session of Congress. As envisioned and proposed by the consortium, State-level matching funds have been pledged to support IPEC, creating a true Federal-State partnership in this critical area.

IPEC officers have met with the Director of the Environmental Engineering Research Division of the EPA National Center for Environmental Research and Quality Assurance. The Consortium is working with EPA to ensure that we meet the agency's requirements for funding as a research center and the successful funding of IPEC.

IPEC is proceeding in its solicitation and review process so that we will be in a position to fund projects as soon as possible. The IPEC Industrial Advisory Board (IAB) has been formed and met for the first time on January 20, 1998. This twenty-member Board is composed of environmental professionals from the domestic energy industry and is dominated by representatives of independent producers. We are pleased to report that IPEC's Industrial Advisory Board has approved five programs for funding and more are expected in the coming months. These five projects include the following:

(1) Intrinsic bioremediation of whole gasoline.—This project seeks to develop a scientific basis for a risked-based approach to management of sites contaminated with gasoline. The project will investigate the mechanism and rate of the natural attenuation of gasoline via biodegradation by microorganisms which occur naturally in soil (termed intrinsic bioremediation). If all of the regulated components of gasoline can be naturally biodegraded, then contaminated sites which pose no immediate threat to human health or environmental receptors can be given a low priority for active intervention freeing precious resources to be allocated to sites where the threat is more acute.

(2) Microflora involved in phytoremediation of polyaromatic hydrocarbons.—Phytoremediation is the term applied to the use of plants and microorganisms that thrive in the plant's root zone to biodegrade soil pollutants such as polyaromatic hydrocarbons (PAHs). PAHs are a major class of recalcitrant pollutants and are a significant byproduct of petroleum processing and refining. PAHs are concentrated in food chains, are toxic, and some are recognized mutagens and carcinogens. This project will determine the feasibility of using plants to degrade these PAHs in contaminated soil by creating a "living cap" of plants and associated microorganisms over contaminated sites. The costs of such waste treatment are far below those re-

quired for conventional treatment such as excavation and incineration of contaminated soil.

(3) Passive sampling devices (PSDs) for bioavailability screening of soils containing petrochemicals.—The concept of a risk-based corrective action applied to the management of contaminated soil or groundwater requires that a regulator assess human risk. Soil contaminants can be detected by chemical analysis, but this provides little information on the actual hazard presented to ecological and human receptors. In some cases, contaminant levels above current soil quality guideline levels exists, but not toxicity. In other cases, chemical levels are below soil quality guidelines, yet toxicity persists. This project seeks to develop a rapid, cost effective screening tool or passive sampling device (PSD) to determine the actual toxicity of contaminants in soil and their bioremediation potential. Use of such a device to determine the actual risks to human health presented by a site and its amenability to bioremediation would allow regulators to better prioritize contaminated sites needing immediate remedial action.

(4) Using plants to remediate petroleum-contaminated soil.—This project also proposes to use plants and associated microorganisms in the plants root zone to effect the remediation of soil contaminants. This project specifically seeks to conduct field studies to develop protocols suitable for phytoremediation of petroleum-contaminated secondary containment berms. These earthen berms are designed to contain fluids in the event of a major spill or leak in a tank. Many of these berms become contaminated with oil through leaks, spills, and normal transfer operations. This project envisions the continuous cultivation of suitable plants on these berms to keep oil contamination under control.

(5) Probabilistic risk assessment of petroleum contamination using detailed physical models.—Like all human endeavors the exploration and production (E&P) of oil and gas has associated with it some risk of damage to human or environmental health. Response to this risk can be reactive or proactive. The latter is of course preferred since proactive management prevents environmental damage and injury and is less costly. This project will develop a proactive risk management program for E&P operations to minimize the potential for environmental damage. This risk-based approach makes resource allocation more effective based on the probability that a scenario will occur and the potential severity of the associated damage. Proactive risk management in the domestic petroleum industry has the potential for both significant cost savings and enhanced environmental protection.

The use of the Industrial Advisory Board to measure the relevancy of research within the Consortium is truly unique and ensures that the Consortium is meeting the needs of the domestic energy industry. IPEC has secured significant matching funds from industry for these first five programs. The combined funding request for these five projects is $492,000; however, the investigators have secured another $502,000 in matching funds from industry for these projects from individual companies and industry organizations such as the Gas Research Institute, the American Petroleum Institute and the Petroleum Environmental Research Forum. IPEC is well on its way to becoming a true public/private partnership.

As we have previously testified, the ability of small and medium sized producers to compete in a global market is complicated by two factors: the cost of regulatory compliance and the declining cost of crude oil. With your help IPEC is developing cost-effective solutions for the environmental problems that represent the greatest challenge to the competitiveness of the domestic energy industry. However, the fiscal year 1999 appropriation is only a beginning. For example, the IPEC Industrial Advisory Board has identified 26 critical research needs. With the current funding we can begin to address only a fraction of these needs. There is much work to be done and we respectfully request that the Subcommittee provide $4 million in funding for IPEC in fiscal year 2000.

THE CONTINUING CRISES IN THE DOMESTIC ENERGY INDUSTRY

The crisis in the domestic energy industry that we described in testimony in the last session of Congress has only gotten worse as the price of crude oil continues to fall to below $13 per barrel. The independent producers are producing from mature fields left behind by the majors. Although there is a significant resource base in the fields this is the most difficult and the most costly oil to produce. The independent producer has only one source of revenue—the sale of oil and gas. There is no vertical depth to his business. With the price of oil this low the independent producer is extremely vulnerable to the costs of environmental compliance. This latest drop in oil prices will no doubt result in another wave of business closures, plugged and abandoned wells, and reduced new well completions. The problem is so acute that the Governor of Oklahoma has recently formed an emergency task force to de-

termine what the state can do to help Oklahoma producers survive the current plunge in prices. A similar price crash in the 1980s triggered a prolonged statewide recession. Clearly this trend is not in the best interest of the U.S. in terms of energy self-sufficiency or national security. We are turning over control of our cost of production in terms of energy costs to foreign interests. If domestic exploration and production and refining are to continue to play a strategic role in meeting U.S. energy needs, the domestic petroleum producer will continue to require access to cost-effective technology for pollution prevention, waste treatment and remediation in exploration and production (E&P) and refining.

IPEC'S RESPONSE TO CRITICAL RESEARCH NEEDS

IPEC will continue to work with the domestic energy industry to provide solutions to those environmental problems that represent the greatest challenge to the competitiveness of the industry. Specifically in fiscal year 2000 IPEC will continue to work with our Industrial Advisory Board to address the remaining critical research needs they have identified as well as address new needs that develop. These research needs include the following:

(1) *Bioremediation and other remediation technologies*.—Reducing toxicity of hydrocarbon-contaminated soils; development of rapid, on-site remediation technologies; control of salt migration in the subsurface; developing methodologies for phytoremediation.

(2) *Risk Assessment*.—Development of cost-effective ecological risk assessment methods for petroleum impacted sites; development of cost-effective and relevant terrestrial (animal/plant) bioassays for use in ecological risk/impact assessment; development of field methods for ecological risk assessment; development of methods to evaluate actual and future environmental risk of petroleum impacted soils; determining the correlation between ecological risk assessment and human health risk assessment; determining the impact of intrinsic bioremediation on risk-based closures; development of risk-based guidelines for handling, disposal and storage of NORM-contaminated solids, pipe, and equipment.

(3) *Measurement Technology*.—Development of cost-effective methods (direct and indirect) for measuring the amount and extent of petroleum hydrocarbon sources in unsaturated and saturated soils; development of useful and easy to implement field and analytical methods and protocols for demonstrating intrinsic bioremediation; validating current models for predicting flash emissions of hydrocarbons in E&P operations.

(4) *Process Technologies*.—Control or treatment of flash gas emissions from stock tanks; use, treatment or disposal of oil tank bottoms; development of cost-effective methods for capture, recycling/destruction of volatile organic compound emissions from hydrocarbon processing and storage tanks; development of improved water treatment methods—particularly those methods; development of methods to for treatment of hydrogen sulfide in the reservoir.

(5) *Management and Decision Tools*.—Development of methods to predict plume migration of salt water from pits; development of methods to calculate the full life cycle cost of material and waste handling in the petroleum industry; development of proper pit closure methods using a clay or compacted soil cap; development of improved methods for disposal of drilling wastes; development of methods to distinguish between historical oil field pollution and recent, current and/or ongoing pollution.

In addition to working with our Industrial Advisory Board, IPEC will continue in fiscal year 2000 to build linkages with organizations which provide services to the domestic energy industry. As IPEC begins to fund technology development projects the Directors will work with the leadership of these organizations to develop a synergy between their efforts and those of IPEC. These organizations form the IPEC Affiliates Group and include the National Petroleum Technology Office (NPTO) of the U.S. Department of Energy, the Interstate Oil and Gas Compact Commission (IOGCC), the Petroleum Environmental Research Forum (PERF) the Oklahoma Energy Resources Board (OERB), the Oklahoma Independent Petroleum Association (OIPA), the Gas Research Institute (GRI), the Office of the Oklahoma Secretary of Energy, the Osage Agency of the Bureau of Indian Affairs and the Oil Producers of Arkansas (OPA). Recently, Governor Frank Keating of Oklahoma named the IPEC Director to the Environmental and Safety Committee of the IOGCC.

HOW IPEC'S OBJECTIVES ARE CONSISTENT WITH THE MISSION OF THE BIOLOGICAL AND ENVIRONMENTAL RESEARCH PROGRAM

Although IPEC's close ties to the independent sector of the domestic energy industry have resulted in a strong working relationship with the National Petroleum

Technology Office in the Office of Fossil Energy, IPEC continues to have broad applicability across the Department of Energy. Biological treatment of waste materials and bioremediation of contaminated media such as water, air and soil are widely recognized as potentially the most cost effective treatment methodologies available for many types of wastes. Petroleum hydrocarbons are both the most widely distributed class of environmental pollutants and the most amenable to biological treatment. These facts have certainly been recognized by the IPEC Industrial Advisory Board in that of the five research projects approved thus far by the IAB as relevant to IPEC's mission, four concern the use of plants and microbes to treat contaminated soils. Further, of the critical research needs identified by IPEC's Industrial Advisory Board fully half concern bioremediation, phytoremediation, ecological risk assessment, and toxicity issues. These topics are clearly within the mission of the DOE BER Program.

The mission of the Biological and Environmental Research (BER) Program under Environment, Safety and Health is to "develop the knowledge needed to mitigate or correct the consequences of energy use while contributing to the education and training of the scientific work force". This is identically the mission of IPEC when applied to the domestic energy industry. IPEC will use academic scientists and engineers in partnership with industry to develop new, cost-effective technology to solve environmental problems which are having a major economic impact on the domestic energy industry. These academic investigators will utilize undergraduate and graduate students in the sciences and engineering in these projects resulting in the training of new environmental professionals.

An example of an innovative petroleum environmental technology which fulfills the mission of the BER Program is intrinsic bioremediation of petroleum hydrocarbons. Intrinsic bioremediation is the application of indigenous microorganism to the attenuation of hydrocarbons which contaminate soil and groundwater. It has recently been shown that many petroleum hydrocarbons will be biologically degraded in soil and groundwater even in the absence of oxygen and without active intervention. These observations suggest that if no environmental receptor (drinking water aquifer, stream or lake) is immediately threatened, no intervention may be necessary to remediate certain spills. This conserves financial resources for application to other problems where the actual risks to public health are significant. However, intrinsic bioremediation is not sufficiently well understood at present to safely make these types of judgments. A better understanding of the rate and extent of natural attenuation of petroleum hydrocarbons in the subsurface will require a multi-disciplinary approach analogous to the BER subsurface science program. The response of "biological systems to local disturbances resulting from energy-related activities" is a key element of both the BER Program and IPEC's investigations of intrinsic bioremediation.

IPEC is in the second year of a major three-year effort to address an important problem in the exploration and production of petroleum and natural gas: the remediation of hydrocarbon-impacted soil and groundwater. The project is funded by the Biological and Environmental Research (BER) Program of DOE ($973,000) with cost share from Amoco Production Co. Specifically this research is investigating the mechanisms of the natural biodegradation or intrinsic bioremediation of hydrocarbons in the subsurface with the goal of providing a sound scientific basis to support risk-based regulatory decisions at hydrocarbon-contaminated sites.

FUNDING OF IPEC

IPEC is seeking appropriations of $4 million for fiscal year 2000 and the succeeding fiscal years 2001, 2002, and 2003 through the Department of Energy. The consortium will be responsible for at least a 50 percent match of federal appropriations with private sector and state support over a four year period. The Consortium will be subject to annual review to ensure the effective production of data, regulatory assessments, and technology development meeting the stated goals of the Consortium.

PREPARED STATEMENT OF ROBERT L. MCCRORY, PROFESSOR AND DIRECTOR, LABORATORY FOR LASER ENERGETICS, UNIVERSITY OF ROCHESTER

SUMMARY AND REQUESTED ACTION

The inertial confinement fusion (ICF) program is a key element in the Department of Energy's (DOE) Stockpile Stewardship Program (SSP) to ensure the reliability and credibility of the U. S. nuclear weapons stockpile. The ICF program provides access to high-energy-density physics data important in nuclear weapon de-

sign and understanding. In fiscal year 2000 the program will be focused on the use of available unique laboratory facilities: OMEGA at the University of Rochester's Laboratory for Laser Energetics (LLE), Z at Sandia National Laboratories (SNL), and the Nike laser at the Naval Research Laboratory (NRL). Significantly, the discontinuation of a major, older facility, the Nova laser at Lawrence Livermore National Laboratory (LLNL) in fiscal year 1999, requires the shift of many experiments conducted by the weapons laboratories to the OMEGA facility at LLE. Experiments on ICF facilities support the demonstration of thermonuclear ignition and gain on the National Ignition Facility (NIF) now under construction at LLNL. The facilities also provide data in support of the nuclear weapons science-based stewardship activities of the Nation.

LLE, a major participant in ICF research since the 1970s, is the only ICF program that has been jointly supported by the Federal government, State government, industry, utilities, and a university. At relatively small comparative cost, LLE makes fundamental scientific contributions to the National program and the Laboratory makes available technology to the public and private sectors through interactions with industry and other Federal laboratories. In addition, the Laboratory trains graduate students with the unique facility. Finally, the Laboratory serves as a National laser users' facility benefiting scientists throughout the country. The OMEGA laser, the highest power ultraviolet fusion laser in the world, will be the principal laser facility for SSP activities for DOE in fiscal year 2000.

The Laboratory's primary ICF mission is to validate the direct-drive option for ICF. OMEGA is also required to meet mission-critical requirements for the indirect-drive ignition plan developed by DOE for the NIF. Without LLE, the DOE schedule to demonstrate ignition and gain in the laboratory, the objective of the NIF program, cannot be realized. OMEGA with its 60 beams is also used for indirect-drive experiments in collaboration with the National laboratories for SSP experiments, including classified experiments.

OMEGA is the only facility that can demonstrate the scientific potential of direct drive to provide a modest-to high-gain energy option for the Nation. ICFAC1 emphasized the priority of conducting cryogenic experiments on OMEGA beginning in fiscal year 1999. OMEGA is, and will continue to be, the principal facility in the National program for ICF-based stockpile stewardship experiments until the NIF is completed in fiscal year 2004. Beyond 2004, OMEGA will continue to be used when full NIF energy or capability is not required, particularly since the cost per shot on OMEGA is considerably less costly than a NIF shot. Additionally, the repetition rate of OMEGA (one shot per hour) is substantially higher than that planned for NIF (several shots per day).

To provide the operations support for program deliverables and operation of OMEGA (for both cryogenic and SSP experiments), and maintain the training programs at Rochester, a total authorization and appropriation of $30,500,000 is requested for the University of Rochester for fiscal year 2000, as contained in the Administration's budget request for DOE.

BACKGROUND

Thermonuclear fusion is the process by which nuclei of low atomic weights, such as hydrogen, combine to form higher atomic weight nuclei such as helium. In this process some of the mass of the original nuclei is lost and transformed to energy in the form of high-energy particles. Energy from fusion reactions is the most basic form of energy in the universe; our sun and other stars produce energy by thermonuclear fusion reactions occurring in their interior. Fusion is also the process that provides the vast destructive power of thermonuclear weapons.

To initiate fusion reactions, the fuel must be heated to tens of millions of degrees. In ICF the heating and compression of fusion fuel occurs by the action of intense laser or particle beam drivers. There are two approaches to ICF, direct and indirect drive: indirect drive involves the conversion of beam energy to x rays to compress a fuel capsule in an enclosure called a hohlraum; direct drive involves the direct irradiation of a spherical fuel capsule by energy from a laser and may be more efficient energetically than indirect drive. In either approach, if very extreme density and temperature conditions are produced, it is possible to produce many times more energy in these fusion reactions than the energy provided by the drivers.

INERTIAL CONFINEMENT FUSION PROGRAM FOCUS

DOE has accepted the recommendations of independent reviews,[1 2] and construction of the NIF is in progress. The purpose of the NIF, in its SSP mission, includes the demonstration of ignition, propagating burn, and modest gain in the laboratory. The NIF project completion is projected to be 2004. Beginning in fiscal year 2000,

while NIF is under construction, OMEGA will be the principal ICF facility used for nuclear weapons stewardship experiments by LLNL and LANL, and for direct-and indirect-drive ICF experiments.

LLE is the primary focus in the U. S. for the direct-drive approach to ICF. Direct drive may ultimately prove to be the best approach to ICF and provide the most efficient path to a laboratory-scale thermonuclear capability for both energy research and defense technology needs. OMEGA is the only facility that can demonstrate the scientific potential of direct drive to provide modest to high gain on the NIF.

In addition to the ICF experimental program, LLE is a major participant in NIF design and construction. At present, LLE is fabricating the large polarizers and transport mirrors for the NIF, and LLNL has also recently decided to have LLE coat, assemble, and test the NIF deformable mirrors. LLE is the lead laboratory working with DOE and the other participants to formulate the plan for the direct-drive ignition campaign on the NIF. In collaboration with the other ICF laboratories, LLE is also developing several advanced diagnostics required for NIF experiments (see below).

An extensive collaborative program between LLNL, LANL, and LLE has provided data on basic physics, beam smoothing, and unstable hydrodynamics using available lasers. This collaboration on OMEGA includes both nuclear weapons physics experiments and ICF experiments. Physics issues for both ICF and weapons issues for the SSP fall into five broad categories: irradiation uniformity, laser energy coupling and transport, laser-plasma interaction physics, hydrodynamic stability, and hot-spot and main-fuel-layer physics. The OMEGA and NIF programs are complementary. Figure 1 illustrates the schedule for the glass laser facilities to be used in the National program plan for inertial fusion and shows the phased availability plan for the NIF.

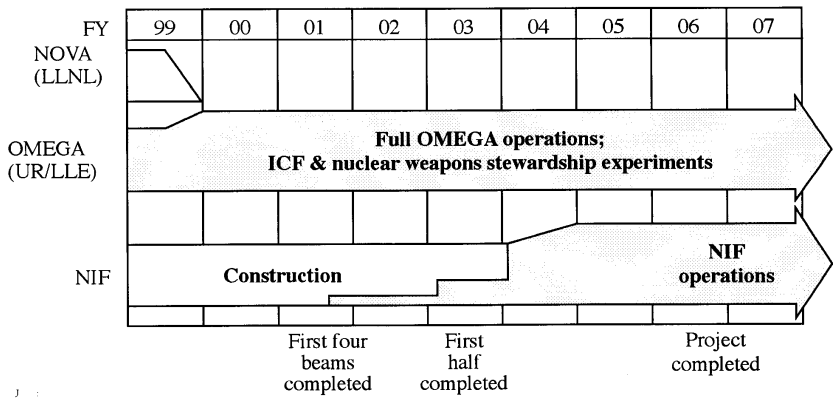


Fig. 1 Schedule for the operation of NOVA, OMEGA, and the NIF.

The figure illustrates how the National program has been structured to provide a full complement of mature experimental facilities from the present to the future. With the termination of Nova laser operations in fiscal year 1999, OMEGA becomes the Nation's principal facility to continue experimental work during NIF construction. Both LANL and LLNL will continue to use OMEGA for indirect-drive experiments for ICF and SSP experiments for the foreseeable future. Because of the high interest and utility of the OMEGA facility to the weapons laboratories, DOE's budget request includes funds for extended operations on OMEGA for SSP experiments. With its lower per-shot cost compared to NIF, as well as the higher shot-repetition rate, OMEGA will be a very important supporting facility for experiments and diagnostic development for the NIF after it's completion in 2004 (see Fig. 1).

THE LLE DIRECT-DRIVE PROGRAM FOR FISCAL YEAR 2000

The goal of the glass-laser direct-drive target physics program is to evaluate the performance of fuel capsules near ignition conditions. OMEGA is also the first facility to attempt the fielding of high-fill-pressure cryogenic DT capsules, the basis for the principal capsule design to be used in the NIF indirect-drive ignition demonstration. In addition to providing data for the NIF, these experiments are required to validate the direct-drive configuration on the NIF that could result in two to three

times higher fusion gains (gain > 50) than those available with the baseline (indirect-drive) NIF design.

An important element of the direct-drive program on OMEGA is to demonstrate on-target irradiation uniformity of 98 percent to 99 percent. The realization of this goal is a principal objective for fiscal year 2000. OMEGA is also being used to develop and test diagnostics for NIF. Cryogenic fueling and target experiments on OMEGA are necessary to demonstrate the likelihood of success of the direct-drive option of NIF. Additionally, the OMEGA cryogenic system serves as an engineering test-bed to support NIF cryogenic development. In collaboration with LANL and General Atomics, the cryogenic capability will be completed in fiscal year 1999 with the first fully cryogenic capsule experiments planned for OMEGA in fiscal year 2000. The ICFAC[1] recommended in their final report: "The committee believes that experiments are essential to assessing real target performance and benchmarking code calculations. The first opportunity to do such experiments on cryogenic targets approaching NIF size will be on OMEGA . . . It is very important that this effort be kept on track with proper priority and not delayed further."[1] A cryogenic capability, advanced diagnostics development (including fusion-product charged-particle diagnostics, γ-ray detection, and high-dynamic-range optical and x-ray streak cameras), and beam smoothing are all required for the NIF. LLE is the principal National facility to develop these technologies for the program. LLE's design and testing of two-dimensional smoothing by spectral dispersion and fabrication capabilities for the large polarizers, transport optics, and deformable mirrors for the NIF are essential to its completion and success.

LLE provides education and training in the field of ICF and related areas for personnel with expertise in areas of critical National needs. These include theoretical and experimental plasma physics, laser-matter interaction physics, high-energy-density physics, x-ray and atomic physics, ultrafast optoelectronics, high-power laser development and applications, nonlinear optics, optical materials, and optical fabrication technology. One hundred eighteen University of Rochester students have earned Ph.D. degrees at LLE since its founding. Forty-eight graduate students from other universities were funded by NLUF grants. A total of 34 graduate students and 14 faculty members of the University of Rochester are currently involved in the unique research environment provided at LLE and represent many departments within the University, including Mechanical Engineering, The Institute of Optics, Physics and Astronomy, Electrical Engineering, and Chemical Engineering. Beyond this, more than 50 undergraduate students receive research experience annually at LLE. Additionally, a high-school summer science program exposes ten talented students each year to the research environment and encourages them to consider careers in science and engineering. Many LLE graduates have made important scientific contributions in National laboratories, universities, and industrial research centers.

REFERENCES

[1] Inertial Confinement Fusion Advisory Committee Report to Assistant Secretary Reis (February 21, 1996).

[2] "Science Based Stockpile Stewardship," JASON Report JSR–94–345 (The MITRE Corporation, McLean, VA, November 1994).

PREPARED STATEMENT OF THE UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY

The following is the testimony of the University of Medicine and Dentistry of New Jersey (UMDNJ), the largest public health sciences university in the nation. The UMDNJ statewide system is located on five academic campuses and consists of 3 medical schools, and schools of dentistry, nursing, health related professions, public health and graduate biomedical sciences. UMDNJ also comprises a University-owned acute care hospital, three core teaching hospitals, an integrated behavioral health care delivery system, a statewide system for managed care and affiliations with more than 100 health care and educational institutions statewide. No other institution in the nation possesses the resources which match our scope in higher education, health care delivery, research and community service initiatives with state, federal and local entities.

We appreciate this opportunity to bring to your attention the priority projects of UMDNJ that are consistent with the biomedical research mission of the Department of Energy and Water. These include the Child Health Institute of New Jersey, the Neurological Institute of New Jersey, efforts to combat infectious disease and chem-

ical and biological terrorism, and our collaboration with the Department of Energy on its environmental clean-up efforts.

Our first priority is the Child Health Institute of New Jersey at the UMDNJ-Robert Wood Johnson Medical School (RWJMS) in New Brunswick, New Jersey. As part of the state's public higher education system, the medical school's 2,500 full-time and volunteer faculty train about 1,500 students in medicine, public health and graduate programs and ranks in the top one-third of the country with regard to the percentage of its students who practice in primary care specialties after completing their residency training. The School ranks in the top one-third in the nation in terms of grant support per faculty member. RWJMS is also home to The Cancer Institute of New Jersey, the only NCI-designated clinical cancer center in New Jersey; The Center for Advanced Biotechnology and Medicine; the Environmental and Occupational Health Sciences Institute, the largest environmental institute in the world; and the Child Health Institute of New Jersey.

The Child Health Institute is a comprehensive biomedical research center focused on the health and wellness of children. In this program, medical researchers direct efforts toward the prevention and cure of environmental, genetic and cellular diseases of infants and children. The Institute is integral to the long-term plan for the enhancement of research at the medical school in developmental genetics, particularly as it relates to disorders that affect a child's development and growth, both physically and cognetively.

The program will enable the medical school to expand and strengthen basic research efforts with clinical departments at the Robert Wood Johnson University Hospital and with the new Children's Hospital in the areas of Obstetrics, Pediatrics, Neurology, Surgery and Psychiatry. The Child Health Institute will fill a critical gap in services through the recruitment of an intellectual base upon which basic molecular programs in child development will build.

The Child Health Institute will focus research on the molecular and genetic mechanisms which direct the development of human form, subsequent growth, and acquisition of function. Broadly, faculty and students will investigate disorders that occur during the process of development to discover and study the genes contributing to developmental disabilities and childhood diseases; to determine how genes and the environment interact to cause childhood diseases; and to identify the causes and possible avenues of treatment of cognitive disorders broadly found among conditions such as mental retardation, autism and related neurological disorders.

Normal child development is a water dependent process, reflecting water quality, quantity and its 19management' by cells and tissues. Access to uncontaminated water is at the base of the tree of life. Pollution of aquatic ecosystems poses a serious threat to the entire ecosystem and studying how a toxin affects embryonic development is central to understanding the risks pollutants represent, whether derived from pesticides, industrial run-off, acid rain or landfills. In multiple ways, the embryo is a sentinel for environmental toxins. Research at the Child Health Institute will focus on molecular mechanisms of early embryonic development, a natural, but vulnerable water-based environment. Sixty percent of the weight of the average human is contributed by water. The average 150 lb man contains about 40 to 45 quarts of waters, approximately 6 quarts of which is circulating in the blood, and 39 quarts are within and between the cells of each and every organ. The embryo is even more highly hydrated than the adult. During development the embryo undergoes rapid changes in size and shape requiring rapid changes in the structures and cells present in any one tissue. In order to accommodate these rapid and essential changes, the embryo is rich in molecules which have a very high water binding capacity. After birth, the water in tissues allows cells to continue to move about within the embryo with ease and also promote fluid movement in blood vessels, the gastrointestinal tract and the airways. For example, cystic fibrosis (CF) is an inherited disorder which afflicts millions of children world-wide. The genetic defect in CF has been identified and involves a pump which, in effect, moves salt and water into and out of cells. Children with CF insufficiently pump water into the secretions of their pancreas and lungs and the dryness of these secretions leads to obstruction of those organs and subsequent infection and/or obstruction.

The CHI will address genetic disorders that lead to a much broader array of disorders such as heart defects, autism, diabetes, muscular dystrophy to name a few. The Institute will grow on a current funding base at RWJMS of approximately $50 million, $17 million of which has development as a theme. The CHI builds on existing significant strengths within RWJMS and our associated joint research institutes with Rutgers University.

The CHI will act as a magnet for additional growth in research and health care program development in New Jersey. The Institute will encompass 83,000 gross square feet and will house more than 40 research laboratories and associated sup-

port facilities. Fourteen senior faculty will direct teams of M.D. and Ph.D. researchers, visiting scientists, postdoctoral fellows, graduate students and technicians for a full complement of some 130 employees. At maturity, the Institute is expected to attract $7 to $9 million dollars of new research funding annually. The Institute's total annual operating budget is projected to be $10 to $12 million: applying a standard economic multiplier of 5, the total impact on the New Brunswick area is estimated to be $50 to $60 million per year. Construction costs for the Institute are estimated at $27 million, with approximately half of that figure associated with local employment.

We respectfully seek $10 million from the Department of Energy and Water to further advance the construction and development of the Child Health Institute of New Jersey.

Our second priority is the Neurological Institute of New Jersey at UMDNJ-New Jersey Medical School (NJMS) and UMDNJ-University Hospital (UH) in Newark, New Jersey. The Institute was created as a center of excellence in the neurosciences in recognition of the fact that neurological diseases are a leading cause of death and disability and, of the widespread expertise that exists in this discipline on our Newark campus.

University Hospital is the major provider of tertiary neurological and neurosurgical services to the State of New Jersey, including patient care, education and research. The NJMS-Department of Neurosciences is ranked sixth nationally in research funding, with $4.1 million annually. NJMS offers the only fully accredited neurosurgical residency program in the state. The Neurological Institute will serve as an umbrella under which clinical, research and educational efforts in the neurosciences would be focused to support a higher level of achievement and expertise than currently exists in New Jersey.

The Neurological Institute will enable UMDNJ to further advance its cutting-edge work in neurological disorders including stroke, multiple sclerosis and Alzheimer's disease. About 50 million Americans are affected by these diseases annually. Neurological diseases account for some $400 billion annually in health care costs and lost productivity. While neurological diseases and injuries are devastating, there are breakthroughs in treatment with new drugs and/or surgical techniques, which require research and testing, significant financial support and a concentration of clinical expertise and potential research subjects in a controlled environment. The Neurological Institute will provide such a setting and will place New Jersey in the forefront of research and treatment of neurological diseases.

The employment of new MRI-technology can aid in the diagnosis and treatment of neurological diseases. We are working on the newest treatments available, and an investment in the work of the Neurological Institute is critical to advance our work in these diseases.

UMDNJ seeks a major step forward in the research arena with the acquisition and placement of a state-of-the-art Magnetic Resonance Imaging (MRI) instrument for the Neurological Institute. This MRI, with a rated field strength of 3–4 Tesla, is expected to provide spatial resolution in the millimeter range and temporal resolution of less than one second—both carrying great significance at physiological levels. Areas of research will include language, learning, memory, visual processing and spatial representation. Clinical applications will include Alzheimer's disease, multiple sclerosis, tumor characterization and epilepsy where brain dysfunction is clearly established. UMDNJ would collaborate with its research partners, the Veterans Administration Medical Center, Rutgers University and the New Jersey Institute of Technology in the development of a neuroimaging laboratory.

We respectfully seek $1.5 million from the Department of Energy and Water toward the capital and instrumentation costs of a neuroimaging laboratory for the Neurological Institute of New Jersey.

Our next priority project is our initiatives aimed at responding to threats of emerging infectious diseases, and chemical and biological terrorism.

UMDNJ is home to the International Center for Public Health, a strategic initiative that will create a world-class infectious disease research and treatment complex at University Heights Science Park in Newark, New Jersey. We are also home to the New Jersey Medical School National Tuberculosis Center, one of only three model Tuberculosis Prevention and Control Centers in the United States funded by the Centers of Disease Control (CDC).

In our complex world of instant communication and ease of global transportation, disaffected individuals or political groups have access to highly destructive weapons of terror. With our open society the United States is particularly at risk to individuals, ideologically motivated fanatics, or to nations seeking revenge. The possibility of the employment of weapons of mass destruction on an innocent population has already become a reality with the Sarin nerve gas attack in the subways of Tokyo.

State and local governments and health organizations need reliable information upon which to develop and coordinate response plans for contingencies due to weapons of mass destruction. They need programs to educate planners and response teams on the public health aspects of these threats and how to recognize and respond to them. In addition, they need to understand both the short and long term implications for human and ecologic health. Such a plan requires a broad base of scientific and educational expertise which has an international scope in order to devise approaches for the early detection and treatment of biological and chemical weapons of terror. As citizens of the nation's most densely populated state, we in New Jersey have a particular concern about being targets of biological and chemical terrorist activities. Our communities abut each other and our traffic patterns are statewide making us especially vulnerable to infectious disease. There are no obvious geographical boundaries to readily institute a quarantine. Our central location as a transportation hub for the populous Northeast also makes us a prime target.

Terrorists have three types of weapons available to them. For the first, explosive devices, although increasingly deadly, we have developed responses and have become all too familiar with this form of terror and chaos. The other two types of terrorist weapons are relatively new and present particular challenges to our normal response processes. These are chemical weapons of terror, such as nerve gas, and biological weapons of terror, such as anthrax. Chemical and biological weapons differ dramatically from explosions in that for these newer threats early recognition and diagnosis is crucial for both those initially affected and for others who might yet be affected through spread of infection or contact with the chemical. Education of emergency responders to correctly identify these threats, whether they occur here or abroad, is crucial to minimize the impact of biological and chemical weapons, as well as to protecting the emergency responders themselves. Compounding our problems is the need for a better understanding of the effects of likely chemical and biological agents of terrorism, development of the means to prevent their spread, and to rapidly treat their victims.

The nation's foremost program in education and training concerning chemical and physical threats is headed by a UMDNJ faculty member who is currently President of the American Public Health Association. Among her programs is the Center for Education and Training which provides training concerning chemical and physical agents to more than 160,000 police, firefighters, municipal and state employees, as well as to physicians, nurses and industrial hygienists. Because of its scientific expertise, UMDNJ is uniquely qualified to develop a program to educate state and municipal governments, emergency responders and health and hospital professionals on planning for the response to terrorism and training personnel to deal with threats of terrorism and how they affect public health.

We respectfully seek $1.5 million through the Department of Energy and Water to expand our research, education and training programs in response to threats of chemical and biological terrorism.

Our final priority is to seek continued funding for the Consortium for Risk Evaluation with Stakeholder Participation (CRESP), which is in its fourth year of funding from the DOE's Office of Environmental Management (EM). CRESP has become an integral part of the technical dialogue between DOE EM sites and their regulators on major issues. At both the Savannah River and Hanford, regulators are taking our results and using them to facilitate better remedial options to expedite or validate decisions that bring cleanup to closure.

By focusing its scientific efforts on issues which are arising at various points of regulatory interface, and providing data accepted by all parties as sound and credible, CRESP believes its work is not only proving valuable on specific issues, but is providing a basis for more extensive, complex wide replication and application. The pace of requests that CRESP scientists are involved in has expanded dramatically. We believe that we are more than a source of new information and methods. A mechanism such as CRESP is fundamental to bringing resolution to the regulatory process that would otherwise not be resolved.

The Administration's budget calls for CRESP to receive $3 million for fiscal year 2000. However, to maintain our current level of activity, we respectfully request an investment of $4 million. If CRESP is going to expand to respond to new requests, it will require at least that amount.

Thank you for the opportunity to submit testimony on behalf of the University of Medicine and Dentistry of New Jersey (UMDNJ). We are grateful to this committee for its past support of our initiatives and for your leadership in advancing biomedical and environmental research.

PREPARED STATEMENT OF JOE F. COLVIN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NUCLEAR ENERGY INSTITUTE

On behalf of the Nuclear Energy Institute, I would like to commend you, Chairman Domenici, Ranking Member Reid and the members of this subcommittee for focusing your attention on the value of nuclear-related programs contained in the Energy Department and Nuclear Regulatory Commission budget proposals for fiscal year 2000.

Before I proceed, let me say a word about the Nuclear Energy Institute. NEI sets policy for the U.S. nuclear energy industry and represents over 275 members with a broad spectrum of interests, including every U.S. utility that operates a nuclear power plant. NEI's members also include nuclear fuel cycle companies, suppliers, engineering firms, research laboratories, radiopharmaceutical companies, universities, labor unions and law firms.

In large measure, your continued support of nuclear-related programs will ensure a strong legacy of nuclear energy, science and security for our children and for generations to come. The programs outlined in my testimony will further U.S. advances in nuclear medicine and technology; help guard against international threats to our energy security and nuclear safety; and encourage growth of the nation's largest source of emission-free electricity.

Today, nuclear energy generates 20 percent of the nation's electricity—enough for 65 million homes. More than 100 nuclear units contribute to the stability of the nation's power grid and are the greatest source of emission-free energy in the country. Policymakers who recognize the nexus between energy and environmental policy cannot ignore nuclear energy's unique value in mitigating emissions to meet U.S. clear air regulations and international carbon abatement goals. To capitalize on these benefits, comprehensive reform of the nuclear regulatory process must be a priority in fiscal year 2000 appropriations legislation.

NUCLEAR REGULATORY COMMISSION

Safety is the nuclear energy industry's top priority, and we recognize the unique responsibility that the Nuclear Regulatory Commission has to assure adequate protection of public health and safety. The NRC's $465.4 million funding request should be devoted to implementing regulations that have a direct bearing on safety. One of the single most important challenges facing the nuclear energy industry is a regulatory process that consumes licensee and NRC resources on issues that have little or no safety significance, and that produce inconsistency in assessment and enforcement.

Mr. Chairman, I cannot overstate the importance of this subcommittee's role, which has been instrumental in encouraging the NRC commissioners and staff to complete work on many long-standing reform issues. The NRC has a number of promising regulatory reform initiatives underway. However, Congress should continue to guide regulatory reform.

The Omnibus Budget and Reconciliation Act of 1990, as amended, requires that the agency recover approximately 100 percent of its budget authority by assessing licensees annual fees consistent with the regulatory benefits derived. Most of those fees are collected as a generic assessment levied on NRC licensees, creating, in effect, a "miscellaneous" category to encompass nearly 80 percent of its budget. This practice is contrary to sound and accountable budgeting. The industry supports legislation to modify the fee structure so that licensees are assessed only for NRC programs necessary to regulate them. Unrelated agency expenditures, such as international activities and regulatory support to agreement states or other federal agencies, should not be included in nuclear plant licensee user fees, but should be included in a specific line item on the NRC's budget, subject to the authorization and appropriations process. Additionally, the agency's ability to collect user fees should be authorized annually by Congress until the commission completes its regulatory reform initiatives.

We strongly urge the subcommittee to reaffirm its recommendation last year to eliminate agency expenditures in fiscal year 2000 that do not benefit licensees so that user fees are fairly and equitably assessed.

In the area of reform, the subcommittee should encourage the NRC to develop and implement a long-term strategic plan as well as to focus on activities that can be completed in the near term. The NRC's long-range strategy should include these principles: A safety-focused regulatory framework that incorporates risk insights; a more efficient and accountable regulator; an integrated NRC strategy for achieving the objectives of regulatory reform; and a specific timetable and milestones to ensure the NRC's long-range plan is implemented on schedule; and staff resources and a fully accountable budget that supports fundamental NRC reform.

The nuclear energy industry believes that rather than increase the NRC budget—and user fees—the commission can better focus its programs and regulations on safety-based performance standards. Such an emphasis on performance standards would free NRC resources for license renewal of nuclear power plants and other discrete licensing actions without increasing the agency's overall budget.

The nuclear energy industry fully supports approval of the funding requested by NRC from the Nuclear Waste Fund. These funds will allow the NRC to continue its oversight of the Yucca Mountain project as the Department of Energy prepares its license application for the repository. The NRC's oversight activities are a crucial step toward timely implementation of the integrated used fuel management program.

On another front, this subcommittee can help resolve the long-standing impasse regarding overlapping regulatory authority between the NRC and the Environmental Protection Agency. This overlap authority exists in many areas, but is most immediately apparent in establishing radiation standards for a national repository for used nuclear fuel. As the subcommittee with jurisdiction over the Energy Department, the industry respectfully urges you to clarify the matter of setting radiation standards for Yucca Mountain. The NRC's regulations have proven effective in protecting public health and safety as well as worker safety at nuclear facilities. Conversely, EPA has little direct experience in regulating the use of radioactive materials and relies on a regulatory philosophy that lacks a scientific underpinning. The industry encourages this subcommittee to take actions necessary to eliminate dual regulation of nuclear facilities. For the reasons stated, EPA's standard setting authority should be ceded to the NRC, an independent agency with scientific and technical expertise.

NUCLEAR ENERGY RESEARCH AND DEVELOPMENT

Mr. Chairman, continued investment in nuclear energy research and development will ensure the U.S. position as a world leader in nuclear safety and technology. Through its fiscal year 2000 recommendations, this subcommittee also can continue to capitalize on nuclear energy's ability to avoid atmospheric emissions amid stronger Clean Air Act controls and international air quality goals. In fact, DOE states that without nuclear generation, the resulting increase in carbon emissions would be five times greater than utility reduction goals for 2000 under the agency's Climate Challenge Program.

A comparison of electricity generating sources reveals that nuclear energy is the most economical federal research and development investment. For example, in 1997, the federal government spent 5 cents for every kilowatt hour generated at nuclear power plants. The cost per kilowatt-hour of research and development in wind energy for that period was $4,769; for photovoltaics, $17,006; for natural gas, 41 cents and for coal, 5 cents.

The nuclear energy industry encourages the subcommittee to support a $40 million appropriation for the Nuclear Energy Research Initiative, which funds research and development at universities, national laboratories and industry to advance nuclear power technology, pave the way for the expanded use of emission-free nuclear energy and maintain U.S. leadership in nuclear technology and safety abroad. During its first year, NERI's review board received an impressive 300 grant applications. In light of this enthusiastic commitment, the proposed $40 million would permit NERI to grow yet remain manageable. The Energy Department's $25 million request would support continuation of first-year projects, but permit little, if any, expansion.

In addition to NERI, DOE's request for the Nuclear Energy Plant Optimization program would allocate $5 million to research and development projects that enhance the efficiency and reliability of our 103 nuclear power plants. The industry strongly supports a $10 million program in keeping with recommendations of the President's Committee of Advisors on Science and Technology. This initiative is particularly important as utilities deal with uncertainties associated with electric industry restructuring. NEPO seeks to work with industry to improve plant economics, reliability, availability and plant aging while maintaining a high level of safety.

Finally, the industry recommends $17 million for University Supportprograms at universities and colleges to enhance research and education in nuclear sciences by helping to sustain university reactor and engineering programs. While DOE requested $11.3 million, the nuclear energy industry believes additional funds are needed to expand the Nuclear Energy Education Research initiative and recruitment of future nuclear engineers and scientists.

In addition to these efforts, the industry strongly encourages the subcommittee to restore $20 million for electrometallurgical research at Argonne National Labora-

tories. This research would focus on devising technology to treat used fuel that powered the Argonne reactor, EBR-II. Research on the treatment of this metal fuel's unique composition could be applied to the treatment and disposal of other reactor fuels with unique characteristics.

FEDERAL STORAGE AND DISPOSAL OF USED NUCLEAR FUEL

A key component that ensures the continued benefits of nuclear energy is the federal acceptance and disposal of used nuclear fuel. Since 1982, the Energy Department has been siting and developing a deep geologic repository for the disposal of used nuclear fuel. In recent years, however, the agency has failed to advance an important aspect of the program—the acceptance and removal of used fuel. A little more than a year ago, the Energy Department was scheduled to start accepting used fuel from national laboratories, nuclear power plants and defense facilities at more than 100 locations in 40 states. The agency missed its deadline in violation of its clear statutory duty under the Nuclear Waste Policy Act of 1982. The law requires disposal at a single, federally monitored location.

The Energy Department in December 1998 released a report ordered by Congress supporting the continued scientific study of Yucca Mountain, Nevada, as the site for a permanent repository for used nuclear fuel.

The report concluded that "DOE believes that Yucca Mountain remains a promising site for a geologic repository." Despite the sound scientific basis for the viability assessment, the Administration still refuses to move used nuclear fuel. A recent plan from Energy Secretary Bill Richardson to take title of used nuclear fuel would leave used fuel where it is today and would pay for the program through the Nuclear Waste Fund. Although this proposal does not work as a stand-alone concept, the industry recognizes the valuable opportunity that Secretary Richardson has posed to industry stakeholders through the promise of continued dialogue focused on immediate receipt of used nuclear fuel. The industry welcomes that opportunity.

However, this country needs an immediate solution to central storage and disposal of its used nuclear fuel. The industry urges the subcommittee to support the Nuclear Waste Policy Act of 1999, S. 608, which would ensure funding for central storage and a geologic repository by altering the funding mechanism of the program. Without the budget modification in S. 608, DOE would fall short of funding needs now that it appears that a more realistic date for the agency to open a repository may be 2020, not 2010.

Despite the Energy Department's default, scientific and technical activities must continue if the agency is to able to determine if the permanent repository site is suitable. The agency's $409 million fiscal year 2000 request for the Office of Civilian Radioactive Waste Management is necessary to ensure the office continues to meet deadlines for data collection and study at the proposed Yucca Mountain, Nev., repository. All of these projects further DOE's effort to prepare a draft environmental impact statement and license application for the repository. From the industry's perspective, the fiscal year 2000 request assures timely scientific study and analysis at Yucca Mountain.

The administration's budget for Yucca Mountain activities includes $39 million from funds previously appropriated in 1996 for interim storage. Congress set those funds aside for an interim storage facility and an associated transportation framework pending passage of an authorization bill. This subcommittee should prevent the diversion of previously appropriated funds so that the money can be held for its intended purpose. However, as stated above, the agency's $409 million request is necessary to ensure the agency continues to meet its deadlines.

The nuclear energy industry believes that Nevada's use of federal grants by the state university system and counties has been wise and has resulted in useful contributions to the repository project. These efforts should continue to be funded. However, the nuclear energy industry continues to support strong oversight of all expenditure for the federal used nuclear fuel management program. Through this subcommittee's vigilance, recent appropriations acts have precluded Nevada from using grant funds for lobbying, litigation and certain multistate activities . Until the subcommittee is satisfied that DOE-administered funds provided to the state are properly spent, any further funds should be withheld from grant recipients shown to have misspent past federal grant money.

Several other programs warrant industry support at the recommended funding:

Low-Dose Radiation Research.—The nuclear energy industry supports the Energy Department's request of $10 million to study how cells react to low radiation doses and to better understand biological responses to radiation that would further enhance occupational radiation protection. This research has garnered the support of

the Health Physics Society, as the attached Health Physics Society policy statement notes.

Uranium Decontamination and Decommissioning.—The industry believes the federal government has a responsibility for site cleanup and decommissioning. DOE's fiscal year 2000 request for appropriations from the fund includes $242 million for activities at the government-owned gaseous diffusion plants and $35 million for uranium/thorium tailings cleanup.

Surplus Weapons Material Disposition.—The nuclear energy industry supports the Energy Department's $200 million request for the disposal of surplus weapons fissile materials so that the United States and Russia can continue a parallel path to dispose of excess weapons-grade material. The nuclear energy industry and federal agencies also must continue efforts to use mixed oxide fuel at U.S. reactors.

International Nuclear Safety Program and Nuclear Energy Agency.—DOE's International Nuclear Safety Program is essential to improving operational safety at Soviet-designed nuclear power plants. Potential weaknesses in reactor safety abroad may pose threats to public health and the environment and erode public confidence in the entire industry. The Institute also supports continued funding for U.S. membership in OECD's Nuclear Energy Agency. The industry also supports expansion of DOE's nuclear nonproliferation program, including the nuclear cities initiative with Russia.

Medical Isotopes.—The industry supports DOE' radioisotope program and encourages the enhanced and continued supply of isotopes for the purpose of medical research. Such isotopes are not readily available in the commercial sector and the Energy Department has a historical mandate from the Atomic Energy Act of 1954 to provide medical isotopes.

DOE Radiation Standards.—An area of major concern to the industry is overlapping authority on development of radiation standards for safe cleanup and restoration of DOE's decommissioned facilities. We urge the subcommittee to support the Energy Department in finalizing standards in order to enhance a safe, economic and timely conclusion to the agency's extensive environmental restoration program. Close involvement between DOE and the NRC ensures early identification of potential concerns that otherwise would require more costly long-term review.

CONCLUSION

By funding the Energy Department's nuclear energy research and development initiatives, the subcommittee would reaffirm nuclear energy's valuable contribution toward achieving clean air compliance and continue research to further enhance productivity of U.S. nuclear power plants. As the nation's second largest electricity source, nuclear energy is well-positioned to meet future energy demand in a manner that preserves and improves our air quality.

The nuclear energy industry urges the subcommittee to consider the equity of the Nuclear Regulatory Commission's user fee. Licensees should not be assessed 100 percent user fees for commission activities that do not affect the regulation of licensees, but that have broader, national or international application.

Finally, although the Department of Energy has failed to meet statutory and court-affirmed deadlines for disposal of used nuclear fuel, Congress should support the agency's continued scientific and technical work at the proposed Yucca Mountain repository to avoid further delays. Even as Congress considers separate legislation to reform the federal nuclear waste management program, the subcommittee must ensure that activities progress to support the repository project. I would like to thank the subcommittee for the opportunity to share the industry's perspective on issues vital to the nuclear energy industry.

PREPARED STATEMENT OF THE BUSINESS COUNCIL FOR SUSTAINABLE ENERGY

INTRODUCTION

The Council is pleased to offer testimony to the Energy and Water Subcommittee of the Senate Appropriations Committee on the proper role for government in promoting energy research and development, as it relates to renewable energy programs at the Department of Energy (DOE).

The Council was formed in 1992 and is comprised of businesses and industry trade associations which share a commitment to realize our nation's economic, environmental and national security goals through the rapid deployment of clean and efficient natural gas, energy efficiency, and renewable energy technologies. Our members range in size from Fortune 500 enterprises to small entrepreneurial companies, to national trade associations.

Few activities have a greater impact on our nation's economy, environment, and national security than the production and use of energy. Our economic well-being depends on energy expenditures, which account for approximately 7 to 8 percent of the nation's gross domestic product and a similar fraction of U.S. and world trade. Energy production and use also account for a large share of environmental problems, such as regional smog, acid rain, and the accumulation of greenhouse gases in the atmosphere. Our national security is increasingly linked to energy production and use, given our nation's increasing dependence on foreign oil sources, including those from the politically unstable Middle East. Expanded reliance on natural gas, energy efficiency, and renewable energy are the three pillars of a more secure and sustainable energy strategy that will help strengthen the U.S. economy and clean up the environment.

FEDERAL PROGRAMS TO PROMOTE RENEWABLE ENERGY RESOURCES

The Council recognizes that it is the suppliers and users of energy—not the federal government—that ultimately will decide which energy sources will meet our future energy needs. However, the federal government does play an important role in helping the private sector share the risk of investing in deployment of clean technologies that, while at or near economical viability, face financial, informational, or institutional obstacles to their wide market availability. The Council would like to describe the following programs, which can strengthen the nation's portfolio of energy generation technologies.

WIND

World markets for utility-scale wind energy are growing at an unprecedented rate. Figures for 1998 indicate that total worldwide installed wind capacity stands at 9,600 megawatts (MW), up 19 percent from a year earlier. This figure includes approximately 2,000 MW installed in 1998. The Council supports DOE's total request of $45.6 million for wind energy research and development in fiscal year 2000 to fund projects in turbine research ($20.2 million), cooperative research ($11.9 million) and applied research ($13.5 million). This level of funding is particularly important to continue developing next generation wind turbine technologies needed to keep the U.S. industry competitive in restructured domestic markets and in the fast growing, highly competitive international markets.

Total U.S. wind capacity grew by 235 MW in 1998, a significant change from the previous three years when U.S. markets for wind energy had slowed to 11 MW in 1997, 10 MW in 1996, and 41 MW in 1995. Preliminary projections indicate that 600 MW of new wind generating capacity will be developed in 1999 and that 120 to 250 MW of wind capacity will be added through "repowering" development at several older wind farms in California. Repowering involves the replacement of older wind turbines with newer, more efficient models. While the long-term future of wind technologies is uncertain in an increasingly deregulated electricity market, cost-shared DOE/wind industry efforts have the potential to develop the next generation of wind technologies to deliver electricity in the range of 2.5 cents/kilowatt-hour.

The Council supports DOE's programs focusing on small wind turbines which generate up to 50 kilowatts, including the cost-shared Advanced Small Wind turbine project. Small wind turbines are used for smaller on-and off-grid applications where the value of the energy is high. Presently, U.S. small wind turbine manufacturers are the world's leading suppliers but they must rely on exports for approximately three-quarters of their business. The small size of the domestic market makes this industry vulnerable to foreign competition, particularly from countries with more developed markets. For this reason, the Council is encouraging DOE to expand its small wind turbine market development programs by creating initiatives similar to PV-COMPACT, PV-BONUS, and the Million Solar Roofs program. Such initiatives would lower the costs of small wind turbines, create many new jobs, and give more opportunities for the marketplace to choose the most competitive small-scale renewable energy technologies.

DOE has also been effective in helping U.S. small wind turbine companies overcome barriers to important international markets. While DOE expenditures in this area have been very modest, support by the National Renewable Energy Laboratory in the areas of wind resource studies, economic analyses, and pilot projects has created substantial new markets in South America, Asia, and Russia. Throughout the world, rural villages are being electrified or provided with clean water by small wind turbines exported from the U.S., at costs that are lower than the conventional alternatives of extending the grid or running diesel generators.

Funding for Cooperative Research and Testing will provide support for industry testing at the National Wind Technology Center (NWTC) in Rocky Flats, Colorado.

This will allow for continued development of a U.S.-based certification capability for wind energy technologies. Ultimately, streamlined certification criteria will make it easier for U.S. businesses to market and sell American-made wind turbine technologies in international markets.

The main focus of the applied research program is development of models to better understand aerodynamics (through wind tunnel tests), fatigue damage prediction and structural reliability capabilities. Modeling and code design work is underway at both the National Renewable Energy Laboratory (located in Golden, Colorado) and the Sandia National Laboratory (New Mexico).

More and more electric utilities are becoming interested in generating power from large-scale wind power plants. The global market for wind power is expected to further grow over the next few years. New wind power markets are driven in part by the fact that at least one-third of the world's population—over 2 billion people—do not have access to reliable energy. Maintaining an U.S. presence in this growing industry is a valuable investment of federal resources—one that will pay off many times in the next several decades.

The global wind energy market has been growing at a remarkable rate over the last several years and is the world's fastest growing energy technology. The growth of the market offers significant export opportunities for U.S. wind turbine and component manufacturers. The World Energy Council has estimated that new wind capacity worldwide will amount to $150 billion to $400 billion worth of new business over the next twenty years. Experts estimate that U.S. companies can sell over $1 billion of wind energy each year if U.S. industry can capture 25 percent of the worldwide wind energy market over the next five years.

SOLAR ENERGY

The United States currently leads the world in the diverse portfolio of solar technologies: photovoltaics (PV) for manufacturing; thin films and energy services; solar thermal power in advanced concentrations (solar power towers, parabolic troughs, and dish-engines); and solar buildings in integrated systems and energy services delivery. However, our international competitors are positioning themselves to take market share from the United States in vast, multibillion dollar world markets, as a result of strong support provided by their respective governments—especially in Japan and Germany—through a variety of aggressive development and deployment programs. Maintaining our lead will require strong and focused U.S. government action, not only to support international activities but also to secure a position in growing domestic markets.

Solar technologies available today include PV, solar water and pool heating, solar process heating, and solar thermal power technologies. Faster integration of solar energy systems in both supply-and demand-side applications in our domestic economy, combined with support for increased exports of U.S. solar technologies, will have the parallel benefits of creating thousands of new high-technology manufacturing jobs while improving our environment. The Council supports the trend toward market-driven, industry cost-shared programs designed to leverage federal dollars with private sector participation to enhance private sector understanding and use of these technologies.

Improving conversion efficiency of solar panels and reducing manufacturing costs will play a key role in sustaining U.S. dominance in the area of PV. The Council supports DOE's photovoltaic system program. PV programs are among the best leveraged (the PV COMPACT program, for example, leverages $4 and $5 for every federal dollar expended) in DOE. Our two most formidable competitors, Japan and Germany, are outspending DOE's investment in PV research and development and PV commercialization programs. While U.S. industry is exporting a significant amount of its products to these countries, most expect this surge in demand to rapidly diminish as in-country manufacturing capabilities are increased. As an example, the Japanese Ministry of International Trade and Industry has set a domestic deployment goal of 400 megawatts of PV by next year and its manufacturers have responded to the challenge.

Japanese manufacturers are expected to expand their annual production capacity four-fold to 80 megawatts over the next three years. Not only will this expansion allow the Japanese industry to meet much of its domestic demand for PV; it will enable Japan to overtake the U.S. in terms of global market share. The Council also supports the Administration's Million Solar Roofs (MSR) Initiative.

The Council supports DOE cost-shared initiatives in R&D (thin-films and other advanced materials, manufacturing and other solar initiatives which address these issues). Equally important is the concept of building integrated PV programs where PV manufacturers, systems integrators and utilities are working together to reduce

the cost of PV generated electricity. The Council also supports the Department's PV COMPACT program. PV COMPACT is a collaborative effort involving more than 80 electric utilities (representing over half the electricity produced in the U.S.) and other interested organizations to garner the economic, commercial, and environmental benefits of PV technologies.

PV and other solar technologies offer the U.S. environmentally benign and cost-effective energy supply options in a variety of market applications. The market viability of these technologies is demonstrated in growing private sector interest in developing new manufacturing facilities related to solar industries. In the area of PV production alone, the last four years have witnessed six U.S. companies announce plans to construct new photovoltaic plants. This activity is a unique example of DOE funding encouraging significant private-sector investment that creates new jobs. The Council strongly urges Congress to continue its support of public/private partnerships that help ensure that U.S. companies can compete effectively in rapidly emerging world renewable energy markets.

BCSE is highly supportive of non-conventional PV programs within DOE's Office of Power Technologies. The Council specifically supports the non-conventional PV request of $4.3 million and specifically requests the Committee to instruct DOE to dedicate $2 million for Thermo Photovoltaic (TPV) research.

The Council also supports PV programs within DOE's Office of Energy Efficiency and Renewable Energy, specifically DOE's Solar Thermal Buildings program, a research and development program focusing on materials and components for solar water and space heating technologies for building applications. Based at the National Renewable Energy Laboratory and the Florida Solar Energy Center, the program also has a strong technology standard and certification component. Activities in fiscal year 2000 should include the completion of collaborative projects with utilities and builders to assess their impact on improving solar water heating technology and the completion of a cooperative research and development agreement with the Salt River Agricultural Improvement and Power District to develop a solar water heater that could provide hot water at a cost of 6 to 7 cents per kilowatt-hour.

The Council supports the Solar Thermal Electric and Process Heat programs, an R&D program on materials and components with a heavily cost-shared technology validation component. Over the past six years, the primary program focus has been in collaboration with industry to develop advanced solar thermal electric technologies to the point of commercial readiness.

DISTRIBUTED GENERATION

Utilities throughout the nation are reorganizing to meet the many challenges associated with electric utility restructuring. Accordingly, power providers are developing state of the art technologies aimed at providing customers with the cleanest, most reliable, and cheapest power possible. Combined heat and power (CHP) and distributed generation technologies provide reliable on-site power generation with dramatically improved efficiencies and cleaner fuels such as natural gas and biomass gas. BCSE strongly supports $8 million for development and deployment of CHP and related distributed generation systems, managed by the Office of Industrial Technologies, which showcase novel integrated schemes or hybrid system demonstrations.

RENEWABLE ENERGY PRODUCTION INCENTIVE

As part of the Energy Policy Act of 1992 (Sec. 1212), Congress passed the Renewable Energy Production Incentive (REPI) to encourage the development of renewable energy projects in tax-exempt municipal utilities. This program has been succcessful in helping municipal utilities such as the Sacramento Municipal Utility District develops wind and solar generating facilities. We believe the Administration's request is insufficient to meet the requirements of this program, and request the Committee increase to $20 million the funding for the REPI.

INTERNATIONAL ACTIVITIES

Finally, the Council would like to offer its support of federal programs designed to help open important international markets for renewable energy technologies. The Council is extremely supportive of the fiscal year 2000 increases in funding for international energy programs such as the International Solar Energy Program.

The developing world—Eastern and Central Europe, the former Soviet Union, Asia, Africa, and Latin America—presents tremendous opportunities for the deployment of renewable energy technologies. Renewables offer great flexibility to developing countries looking for economically viable, reliable, and clean energy supply options that can be used to serve growing metropolitan areas and remote rural regions

where power is otherwise unavailable. Renewables can also help support the development of commercial activities such as agriculture and telecommunications through remote power source applications. Competition in rapidly growing developing country markets is intense; U.S. renewables manufacturers face the dual obstacles of competition from conventional energy sources and foreign renewables manufacturers buoyed by government assistance.

In this regard, it is important to note that major U.S. competitors are now making aggressive moves into the renewables market. When measured against the relative size of their economies, Japan, Germany, and Sweden are each now making larger government R&D investments in renewables than is the U.S. In fact, the U.S. taxpayer spends a lower portion of his R&D budget on energy than any other taxpayer in an industrialized, market-based economy.

U.S. government assistance in identifying market opportunities, providing education and training for energy decision-makers in the developing world, and supporting demonstrations of renewable technologies in overseas applications promises to help ensure that U.S. renewables manufacturers will be successful in capturing market share throughout the expanding global market for clean energy technologies and services.

CONCLUSION

Some have suggested that a technology should have a minimum market share before federal support is provided for R&D. We believe that the role of the federal government should in fact decrease as new technologies successfully penetrate the market and increase their ability to support robust R&D programs on their own. Promoting research, development and validation of emerging renewable energy technologies will result in the near-term creation of thousands of new jobs, a stronger economy, enhanced export opportunities for domestic manufacturers, and a cleaner environment. DOE's budget request continues federal emphasis on developing low- and non-polluting energy technologies and services as a means of achieving these goals. It utilizes cost-shared collaboratives with industry to leverage limited federal funds in recognition that cooperation with industry is vital for addressing market imperfections impeding the widespread use of renewables. The Council strongly supports this approach, and urges Congress to continue its support of federal research, development and validation programs for renewable energy technologies.

PREPARED STATEMENT OF THE AMERICAN CHEMICAL SOCIETY

The American Chemical Society (ACS) strongly supports increasing the federal investment in research conducted by the Department of Energy's Office of Science (SC).

As part of our commitment to sustained research funding, ACS supports doubling total federal spending on research within a decade, fiscal year 1999–fiscal year 2009. This requires an average increase of 7 percent per year for each of the federal government's basic research programs. For that reason, ACS applauds Congress' recognition of the importance of energy-related research and for providing SC with an increase of greater than 9 percent in fiscal year 1999. This is an important first step.

ACS urges Congress to further strengthen the national investment in research supported by the Department of Energy's Office of Science by providing it with at least a 7 percent increase in fiscal year 2000. The nearly 5 percent increase proposed in the fiscal year 2000 Administration budget request for SC is insufficient to meet the energy-related research needs of our nation. Moreover, while the Society is pleased with the strong funding levels for proposed research initiatives such as the Scientific Simulation Initiative and the Climate Change Technology Initiative, ACS is concerned about the decrease in funding for ongoing basic research programs. For example, the Society is distressed with the proposed 2.3 percent decrease in funding for Chemical Science within the Basic Energy Sciences program.

The ACS supports programs within SC for the following reasons:

—The United States has a dynamic, comprehensive, interconnected research system that has enabled us to assume global leadership, enjoy a high standard of living, and ensure our nation's security. Maintaining those benefits requires continual renewal of investment in R&D, including research sponsored by SC, which is an integral part of the federal research enterprise.

—SC-supported research is advancing our national goals of reducing energy consumption, harnessing new energy sources, and reducing our dependence on imported oil and improving the quality of the environment. Better understanding of combustion at a fundamental level, improved hazardous waste storage, and

the development of new superconducting materials are some of the areas of discovery SC supports. SC research also plays a key role in efforts to understand global climate change.

—SC programs include a broad array of research activities that advance the fundamental scientific knowledge base and train future scientists in areas of great importance to our nation. They are also the principal source of support for the non-defense R&D carried out at DOE's nine multipurpose national laboratories.

The American Chemical Society appreciates Congress' continued focus on the nation's energy research needs, but also recognizes the difficulty in achieving the goal of doubling research support within a ten-year period. A national commitment to double federal support for research will require additional resources. ACS encourages Congress to work in a bipartisan manner with the Administration to identify and employ the necessary resources. The Society looks forward to working with Congress this year to strengthen the national investment in DOE basic research.

CHEMISTRY: FUNDAMENTAL TO MEETING ENERGY AND ENVIRONMENTAL CHALLENGES

Most chemistry research at DOE is supported through two programs within the Office of Science: Basic Energy Sciences (BES) and Biological and Environmental Research (BER). These two programs support the fundamental research that provides the discoveries, knowledge base, and the experienced scientists and engineers needed to address the environmental impacts of energy production and use. This research is also essential for control and clean-up of radioactive and hazardous wastes at DOE sites, particularly those sites involved in past nuclear weapons production.

—Basic Energy Sciences is the most diverse research program within DOE. This program supports scientific research related to energy technology development, which consists of a wide range of basic research activities in chemistry, as well as materials, engineering, earth sciences, and energy biosciences. Basic Energy Sciences is also the program through which major research facilities are developed and maintained. The major user facilities operated by BES at the DOE laboratories are used extensively by industry, universities, and government on a cost-shared basis.

—Biological and Environmental Research is focused on basic research in the biomedical and environmental sciences to further understanding of potential long-term health and environmental effects of energy productions and use that includes research on global climate change and the human genome project. The program also supports the Environmental Molecular Sciences Laboratory for bioremediation research.

Investments in fundamental research have already paid off, as documented in past DOE reports. Examples of promising work include the following:

—BES-supported researchers have synthesized and tested an ion exchange resin that removes a variety of metal contaminants from groundwater and mixed wastes.

—Radioactive sludge intake wastes present clogging problems. Surface chemistry information being produced through SC-supported research is helping to control this situation.

—In other SC-funded work, scientists have decomposed dioxins in soil using methods that are technically and economically feasible.

—BES-supported research is combining models of turbulent combustion with realistic chemical kinetics to reduce the emission of pollutants from internal combustion engines.

As the world's population grows, the energy and environmental challenges confronting us will become more complex and difficult for us to solve. The fundamental chemistry-related research supported by the Office of Science will be essential to our efforts to meet these challenges.

PREPARED STATEMENT OF JAIME STEVE, LEGISLATIVE DIRECTOR, AMERICAN WIND ENERGY ASSOCIATION

WIND POWER IS WORKING

Cost-Shared R&D + Existing Tax Credit = New Jobs & Competitively Priced, Pollution-Free Power

Over 230 Megawatts of New Domestic Wind Power Came On-Line in 1998.

Utility-Scale Wind Power Expands Throughout the U.S.

The American Wind Energy Association[1] appreciates this opportunity to provide testimony for the record on the Department of Energy's Fiscal 2000 wind energy program budget before the Senate Appropriations Subcommittee on Energy and Water Development.

Our testimony addresses the following issues:

(1) The need for increased appropriations for cost-shared DOE/industry R&D partnerships aimed at further driving down the cost of wind power to a level approaching 2.5 cents per kilowatt-hour.

(2) Wind power is working throughout much of the U.S.—Alaska, California, Colorado, Hawaii, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Nebraska, New Mexico, New York, Oregon, Texas, Washington, Wisconsin, Vermont, and Wyoming. Cost-shared R&D—which has already slashed the cost of wind power by more than 80 percent since the early 1980's—coupled with the existing wind energy production tax credit is currently producing competitively-priced, pollution-free electricity.

(3) Renewable Energy Production Incentive (REPI). This program would be significantly underfunded by the Clinton Administration budget proposal. But even more importantly, AWEA suggests that Congress work with the Department of Energy (DOE) to develop long-range alternatives to unpredictable annual funding of this program. For this appropriations cycle, AWEA recommends funding of $8 million—$12 million below the $20 million need identified by DOE in its fiscal year 1999 appropriations testimony.

A GROWING DOMESTIC WIND INDUSTRY

Utility-Scale Wind Development.—Total U.S. wind capacity grew by 235 megawatts (MW) in 1998, with major new wind plants being built in states outside California, traditionally the nation's leading wind energy producer. The states of Minnesota, Oregon, Wyoming, and Iowa account for most of the new development.

This impressive growth exhibits a significant change from the previous three years when U.S. markets for wind energy had slowed to only 11 MW of new capacity installed in 1997, 10 MW installed in 1996, and 41 MW installed in 1995.

This surge in U.S. wind energy capacity is due to two main factors:

(1) Cost-shared DOE/industry R&D partnerships which have reduced the cost of wind energy by more than 80 percent since the early 1980's.

(2) The impending expiration (on June 30, 1999) of the Wind Energy Production Tax Credit (PTC)which provides an incentive to produce electricity with non-polluting wind resources. While developers are moving quickly to erect new wind farms before the credit expires, AWEA remains hopeful that the incentive will be extended and continue to encourage additional projects in the future.

For 1999, AWEA is preliminarily projecting 600 MW of new wind energy capacity, and between 120 and 250 MW of "repowering" development at several older wind farms in California. The term repowering means removing older wind turbines and replacing them with new, more efficient turbines. At some sites in California one new wind machine can replace up to twelve turbines in operation since the early 1980's while generating more electricity at a significantly lower cost.

On the international front, wind power has been the fastest growing energy source in the world in the 1990's—with global installed generating capacity estimated to have grown by 25.7 percent annually since 1990. Worldwide, the wind industry doubled the amount of capacity in place three years ago, adding 2,100 megawatts (MW) to reach a total of 9,600 MW at the end of 1998. That amount of capacity is sufficient to generate approximately 21 billion kilowatt-hours of electricity, or enough power for 3.5 million suburban homes. Through this type of growth, wind power has become one of the most rapidly expanding industries, with worldwide equipment sales reaching roughly $2 billion in 1998.

Small Wind Systems (i.e., 50 kW or less).—Although the worldwide market for small wind turbines (with a capacity of less than 50 kilowatts per turbine) has not received as much attention, there is a growing recognition that the market for small wind turbines is becoming increasingly attractive. Small wind turbine markets are diverse, and include many applications both on-grid and off-grid. One market projection anticipates a five-fold increase in the small turbine market by 2005.

Small turbines can provide electricity where none is available from conventional sources or where fuel costs are prohibitively high, such as diesel generators in Alaska. Currently, more than 2 billion people around the globe are not connected to an electric power grid and that number is growing. Small wind turbine manufacturers

[1] The American Wind Energy Association, or AWEA, was formed in 1974. The organization represents virtually every facet of the wind industry, including turbine and component manufacturers, project developers, utilities, academicians, and interested individuals.

from Flagstaff, Arizona to Norman, Oklahoma, to Norwich, Vermont are working to capture this emerging market for U.S.-made goods and services.

One or more small turbines can power a cabin, telecommunications relay, business, school, community center, clinic, or an entire village. Farmers can use small turbines to power their homes and other buildings or pump water for livestock or irrigation. In some cases, utilities may erect a cluster of turbines at the end of a distribution line instead of building a more expensive power plant or transmission line.

WIND PROGRAM FISCAL YEAR 2000 REQUEST

AWEA supports DOE's fiscal 2000 wind program request of $45.6 million. A strong Department of Energy research and development effort, aimed at achieving even further cost reductions, is a crucial component in continuing to grow the U.S. wind industry and build on the successes of 1998 outlined below.

Applied Research.—About $13.5 million of the overall Wind program request would fund Applied Research containing core research efforts involving universities and private entities. Work focuses on advancing the U.S. wind energy technology base through research, testing, and analysis of complex interactions between wind turbine structures and materials. Efforts also examine how all parts of wind energy systems—blades, drivetrains, generators, power converters, control systems, and towers—can be optimized to increase reliability and further reduce costs.

AWEA's member companies rely on these cost-shared efforts with DOE and its laboratories for this type of research because most individual companies are undercapitalized. Even larger corporations have limited capability to carry out basic research efforts without specialized assistance.

Activities under the core research component of Applied Research are consistent with the recommendations of the President's Committee of Advisors on Science and Technology (PCAST) report on energy research and development to support research on computational fluid dynamics, light weight adaptive structures, advanced control systems, and variable speed and direct drive generators.

The additional $2.8 million requested above fiscal year 1999 funding would be applied to a new program—Wind Partnerships for Advanced Component Technologies (Wind PACT)—to establish industry-government teams to test promising new component parts. Under this effort, two to three R&D subcontracts would be competitively selected to explore potential concepts such as light-weight and direct-drive generators, flexible and articulated rotors, feedback controls for load alleviation, and high efficiency power converters.

Applied Research also includes R&D for technologies that enable wind to be used in stand-alone, remote, or hybrid power systems. The combined use of wind turbines with diesel generators and other renewables and storage systems is a potentially large market for U.S.-made technologies. The key research issue in this area is designing a control system that allows diesel generators to be turned off, when intermittent wind power is being produced, thus reducing overall consumption of high-cost diesel fuel. In addition to laboratory R&D on control systems, this program supports "real world" control system field verification projects in Alaska. Approximately 60 percent of field verification costs are met by private industry.

Ultimately, WindPACT and other Applied Research efforts are aimed at moving new technologies from the laboratories to the marketplace where they will directly benefit American consumers and taxpayers by spurring new job growth, cutting electricity generation costs, and reducing overall emissions of harmful air pollutants.

Turbine Research.—About $20.2 million of the overall Wind program request would be invested in DOE's cost-shared Turbine Research program aimed at further reducing the cost of utility-scale wind power to a price approaching 2.5 cents per kilowatt-hour at 15 mph wind sites. The bulk of this effort is focused on completing research and development with two industry partners leading to state-of-the-art utility scale (500 kW—2 MW) wind turbines. These projects currently call for a 20—75 percent industry cost-share.

The requested funding would support design review, analysis, and testing services needed for several new and on-going Turbine Research subcontracts with AWEA member companies. In addition, field verification projects would be initiated that would be tailored to satisfy specific regional needs. In addition, technical and data analyses support would be continued for ongoing utility-scale Turbine Verification Program projects.

Another important component of this program would direct $1.3 million in cost-shared R&D efforts to research, testing, and field verification of smaller wind turbines. This effort is aimed at assisting U.S. manufacturers capture a significant portion of the growing international market for small, distributed electricity generation

throughout the developing world. Another component of the $20.4 million Turbine Research effort would provide $1.8 million for projects aimed at developing distributed (or, off-grid) wind resources on Native American Lands. The additional $4.8 million requested above fiscal year 1999 funding would be used for several field verification efforts aimed at moving new turbine designs from the laboratory to the marketplace.

Cooperative Research & Testing Program.—About $11.9 million of the overall Wind program request would fund Cooperative Research and Testing efforts conducted at the National Wind Technology Center (NWTC), located new Rocky Flats, Colorado. The goal of this work is to resolve near-term technical questions and provide technical support thus allowing U.S. companies to better compete in world markets.

The additional $3.2 million requested above fiscal year 1999 funding would be used exclusively for field verification projects under the Hybrid Systems for Village Power program and wind monitoring/performance measurement at existing wind farms. This key efforts would build off of hybrid field verification work in Alaska and provide additional opportunities for field verification of new hybrid power systems developed in the area of Applied Research. In essence, this project would verify—through "real world testing"—smaller wind systems at existing stand-alone diesel power sites in Alaska and other states, U.S. territories, Native American communities, and other remote, off-grid locations.

A separate, but related, effort funded under Cooperative Research and Testing would support continued development of international consensus standards for wind turbine design, and establishment of wind turbine certification capability in the U.S. Both of these activities are essential to maximizing industry prospects for international sales of U.S. wind energy products and services.

WIND POWER IS WORKING IN THESE STATES

Once based almost solely in California, the domestic wind energy industry now features utility-scale projects in 18 states. This economic expansion into the nation's heartland is directly tied to dramatic cost reductions and reliability improvements stemming from industry cost-shared partnerships with the Department of Energy laboratories. Below are some of the state success stories of the last year.

Colorado.—New Belgium Brewing Company, of Fort Collins, CO,—makers of "Fat Tire Amber Ale" and other microbrews—said February 25 that it will soon become the largest private consumer of wind power in the U.S. The decision has been put to a vote of the company's 70 employees, who unanimously OK'd the switch to wind power even though the slightly increased cost cut into their bonuses, which are paid on a cost-per-barrel basis.

By substituting 100 percent wind power for more conventional sources of electricity, the brewery will reduce the amount of coal burned by 980 tons per year and eliminate more than 4 million pounds of carbon dioxide emissions annually. The power will be supplied by Fort Collins Utilities (FCU), the city's municipal utility. A 660-kW wind turbine will be built next fall at the Platte River Power Authority's wind site near Medicine Bow, Wyoming, to support New Belgium's subscription to FCU's wind power program. The new turbine will produce about 1.8 million kilowatt-hours of electricity per year, which is about the amount of electricity that New Belgium will consume over 12 months.

Two 600-kW turbines have operated at the Medicine Bow site since April, 1998, producing power for 12 other Fort Collins businesses and approximately 520 residents who have subscribed to the utility's wind program.

Iowa.—Enron Corp. is erecting 250 high-tech wind turbines near Alta and Storm Lake and will sell power to MidAmerican Energy. FPL Energy, Inc. (a subsidiary of Florida Power & Light) is building 56 turbines at Clear Lake and selling power to Alliant Energy. When these new wind turbines go on line, Iowa will be the third-largest wind energy producing state in the nation, behind California and Minnesota.

Illinois.—The initial startup of a new 60,000-square-foot wind turbine assembly plant in Champaign, IL has created 60 new jobs building 22 story-tall wind machines each weighing 23 tons. Workers have already built and shipped 56 turbines to a wind farm in Iowa and recently finished the first of four of 47 turbines headed for Texas. Owners, NEG Micon USA, Inc. (based in Rolling Meadows, IL) expect to assemble and deliver 250 wind turbines across the U.S. in 1999. When operating at full speed, the facility is capable of assembling more than 400 wind turbines per year.

Minnesota.—Northern States Power Co. is building 425 MW of wind capacity by 2002. When complete, these wind farms will be producing enough energy to power the equivalent of 200,000 Minnesota households.

New Mexico.—In April, Southwest Public Service Co. starts purchasing wind power from the brand new .7 MW Llano Estacado Wind Ranch located halfway between Clovis, NM and Farwell, TX. The one test-turbine is owned and maintained by Cielo Wind Power of Austin, TX. The Llano Estacado generator will be mounted on a 230-foot tubular steel tower and will be turned by three 80-foot long blades. Power is produced when wind velocity reaches eight to 60 miles-per-hour, although 25 MPH wind would be the most efficient. The generator will turn off when the wind velocity is more than 60 MPH.

New Mexico is ranked #12 on a DOE list of the top 20 states for wind energy development potential—even higher than California which is ranked #17. With more turbines, New Mexico winds could produce 435 billion kilowatt-hours annually, the wind energy could create 130,000 jobs, and it has an economic potential of $10.9 billion.

North Dakota.—Grand Forks, ND gained 130 new high-tech jobs earlier this year when LM Glasfiber, Inc., a wind turbine blade manufacturer based in Denmark, opened a new $5.8 million production facility in the town's new industrial park. More jobs will be added when the company soon adds a sales and service department.

Oregon.—FPL Energy's new Vansycle wind farm, near the town of Pendleton, went on line in December of 1998. The project's 38 high-tech turbines are now producing about 25 MW of power—enough electricity to meet the needs of about 60,000 people—for customers of Portland General Electric.

Texas.—(A) The largest wind turbines ever erected in North America were dedicated December 2, 1998 in Big Spring, Texas. Upon completion, the project's 46 wind turbines will produce about 117 million kilowatt-hours per year—enough electricity to serve the needs of 7,300 homes.

(B) Reliant Energy HL&P, a major utility based in Houston, TX., plans to offer its customers non-polluting electricity from the wind this summer. HL&P will be buying the power generated by 22.5 MW of wind capacity to be installed in the Delaware Mountain Wind Farm, which is now under construction in rural Culberson County in west Texas. The amount of electricity from the wind farm will be equivalent to the power needs of more than 4,000 homes. American National Wind Power (ANWP), a Houston-based wind farm developer, is scheduled to complete the wind plant's first phase, which will total 30 MW in capacity, before the end of June. ANWP hopes to ultimately expand the Delaware Mountain Wind Farm to 250 MW, which would make it the largest U.S. wind plant.

Wyoming.—The Foote Creek wind farm will soon have the capacity to produce over 40 MW of power. Electricity generated at the site will be purchased by Pacificorp, the Bonneville Power Administration, and the Eugene (Oregon) Water & Electric Board.

RENEWABLE ENERGY PRODUCTION INCENTIVE (REPI)

Year-to-year uncertainty regarding funding levels for the Renewable Energy Production Incentive (REPI) play havoc with the long-term planning needs of running a municipally-owned utility. For this reason, AWEA suggests the Congress work with the Department of Energy (DOE) to develop long-range alternatives to annual funding of this program.

Assuming that significant changes in program funding and distribution are unlikely to occur this year, AWEA recommends fiscal year 2000 REPI funding of $8 million—$12 million below the $20 million need identified by DOE (in its fiscal year 1999 appropriations testimony) and by the American Public Power Association.

AWEA's recommendation differs markedly from the Administration's proposed reduction to $1.5 million from current spending of $4 million (fiscal year 1999 level). AWEA's $8 million recommendation is the same funding level suggested in our fiscal year 1999 testimony.

The REPI program, authorized by the Energy Policy Act of 1992, encourages municipally-owned utilities to invest in renewable energy technologies including wind energy systems. REPI permits DOE to make direct payments to publicly and cooperatively owned utilities at the rate of 1.5 cent per kilowatt-hour for electricity generated from wind, solar, geothermal, and biomass projects. Because wind energy projects require a two to three year lead time for permitting and construction, it is very important that stable and predictable funding be provided.

REPI was established to ensure equity between investor-owned utilities—that utilize production tax credits—and publicly and cooperatively owned electric utilities that are unable to do so. REPI is particularly important in helping the following publicly owned utilities develop wind energy projects: Bonneville Power Administration (Washington, Oregon, Idaho, Montana); Cedar Falls Utilities (Iowa); City of

Brownfield (Texas); Eugene Water & Electric Board (Oregon); Fort Collins Light & Power (Colorado); Lincoln Electric (Nebraska); Lower Colorado River Authority (Texas); Marshall Utilities (Minnesota); Moorhead Public Service (Minnesota); Nebraska Public Power District (Nebraska); Platte River Power Authority (Colorado); Princeton Municipal Light Dept. (Massachusetts); Sacramento Municipal Utility District (California); Traverse City Light & Power (Michigan); and Waverly Light & Power (Iowa).

CONCLUSION

Smart investments in wind energy R&D have delivered—and are delivering—value for taxpayers by developing a clean domestic energy source providing significant economic, public health, and environmental benefits. Working with DOE, the wind industry has cut the per kilowatt-hour cost of wind power by more than 80 percent since the early 1980's thus allowing utility-scale wind development in 18 states and generating electricity equivalent to the residential electric needs of over one million Americans.

As the cost of conventional electricity sources also continues to decline, a strong DOE wind energy research and development effort funded at $45.6 million is one crucial component of growing this industry.

On behalf of the members and board of the American Wind Energy Association, I thank you for the chance to share our views on these important programs.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Mr. Chairman and Members of the Subcommittee: The Energy Committee of the Council on Engineering of the American Society of Mechanical Engineers (ASME) is pleased to provide testimony on the fiscal year 2000 budget request for the Department of Energy (DOE). Our testimony is directed to DOE's research and development (R&D) programs related to the use of renewable and nuclear energy and fundamental energy research.

INTRODUCTION TO THE ENERGY COMMITTEE OF ASME

The 125,000-member ASME is a worldwide engineering society focused on technical, educational, and research issues. It conducts one of the world's largest technical publishing operations, holds some 30 technical conferences and 200 professional development courses each year, and sets many industrial and manufacturing standards. This testimony represents the considered judgment of the Energy Committee and is not necessarily a position of ASME as a whole. The Energy Committee consists primarily of members representing the eight technical divisions that address energy technologies and resources.

Energy R&D was identified in a recent survey of ASME members as one of the most important public policy issues. Energy Committee members recommend that an energy policy:

—maintain U.S. competitiveness in the international marketplace;
—protect our national energy security;
—seek technological solutions to concerns about global climate change and emissions of associated pollutants; and,
—protect the environment in all phases of the energy cycle, from the extraction of fuels to the ultimate disposal of the byproducts.

ROLE OF TECHNOLOGY

Increased national and international concerns about the environment are placing higher demands on the performance of our energy systems. As engineers, we cannot emphasize strongly enough that investments in science, engineering, and technology are essential for enabling our nation to meet its needs for inexpensive energy that is produced and consumed in an environmentally friendly manner.

Meeting our future energy needs in a manner consistent with national and global environmental well-being will require development of a broad suite of technologies ranging from renewables to nuclear energy. Fossil fuels, which are presently the worldwide predominant energy source, will remain the primary fuel for provision of energy for a number of years to come, both here and abroad. Therefore, efforts to improve the efficiency and environmental friendliness of their use will have a larger impact than might be true of other sources, particularly in the next 20 years. Those efforts must be complemented by R&D investments in a broad range of energy production technologies.

The Energy Committee believes that immediate priority for increased funding for research programs should be given to:

—programs that maintain or even increase the use of nuclear energy,

—programs that develop renewable sources as viable energy options for both domestic and foreign implementation, and

—programs that provide for basic research, which stimulates the development of innovative technologies, addresses major science and technology challenges, and maintains our educational pipeline to ensure the supply of human capital.

PROGRAMS IN THE OFFICE OF NUCLEAR ENERGY

The Energy Committee supports the responsible use of all energy resources for generating electricity, transportation fuels, and use in the industrial, commercial, and residential sectors. Our assessment of energy use projections, such as presented in the EIA Annual Energy Outlook for 1998, lead to the conclusion that the United States must continue to maintain a diverse mix of energy supplies. The U.S. pioneered the safe utilization of atomic energy for commercial power production. Technology developed in the U.S. is now employed world-wide for nuclear power generation. For over two decades, no new nuclear power plants have been approved for construction in the U.S. Abroad, many countries are taking advantage of this clean, safe, and relatively inexpensive power source. The U.S. has the opportunity to renew its option on the effective use of nuclear power, which many believe will be a vital part of a future where carbon emissions may be severely curtailed. However, this will not be possible without significant, sustained, national investment, coupled with the re-licensing of existing U.S. nuclear plants.

Nuclear energy plant optimization

The Energy Committee is particularly supportive of efforts to address extending the life and improve the effectiveness of conventional nuclear power plants. The Nuclear Energy Plant Optimization (NEPO) program marks the beginning of efforts to enable maximum use of our existing nuclear generation capacity. Major advances in science and technology offer the potential to substantially increase the productive life of nuclear plants with improved safety and economic performance. Given the potential benefits offered by the NEPO program, the Energy Committee encourages consideration of additional funding, above the $5 million proposed by the Administration for fiscal year 2000 to $10 million, with appropriate and justified increases in future years.

Nuclear energy research initiative (NERI)

Renewal of efforts to develop fundamental new technology for future nuclear power generation was supported by the Energy Committee last year, and we continue to endorse investment in this young program. Increased understanding of nuclear power technology, advances in materials science, and improvements in many related sciences and technology offer the potential to reduce plant construction and operation costs and waste management requirements, and improve plant operability, reliability, lifespan, and safety. A substantial fraction of this initiative will go toward nurturing university research and education in nuclear science and engineering, through direct funding and reinforcing linkages between the nuclear technical community in industry and our national laboratories. It will help ensure the availability of an improved nuclear power option for the future, which will benefit the U.S. by enhancing power production in this country and enabling U.S. industry to compete effectively in the global energy markets. The Energy Committee supports the increase in funding proposed for this program.

Other nuclear programs

Consistent with support of the NERI program, the Energy Committee supports continued investment in the University Reactor Fuel Assistance and Support (URFAS) efforts. It is reasonable to believe that increased investment in NERI and NEPO will require greater utilization of our university reactors, therefore, the Energy Committee recommends a modest increase to $13 million for fiscal year 2000.

The Energy Committee supports continuation of the Advanced Radioisotope Program at the level proposed by the Administration (no change from fiscal year 1999). The Energy Committee also supports continued efforts to support establishment of a commercial application for the Fast Flux Test Facility (FFTF) at the level ($30 million) proposed by the Administration. This effort is particularly prudent considering the Administration-proposed establishment of an Advanced Nuclear Medicine Initiative that would augment the commercial mission envisioned for FFTF of medical isotope production.

PROGRAMS IN SOLAR AND RENEWABLE RESOURCES TECHNOLOGIES

The development of technologies that enable use of solar and renewable resources are of significant strategic importance to the U.S. Development of competitive renewable options provides insurance for potential energy security and global climate change impacts on our energy future. They will enable the U.S. to achieve a more sustainable energy economy.

The development of solar and renewable resource technologies provides one of the greatest challenges to modern science and engineering. Consistent with the magnitude of the challenge, it will be necessary to sustain investment over long periods of time to enable substantial progress in this arena. The Administration has proposed substantial increases in funding for solar and renewable programs, largely because of their potential to contribute to reduction of global climate change emissions. It is likely, however, that efforts to improve efficiency and reduce carbon emissions of fossil energy technologies could have a larger near-term impact on global climate change emissions than comparable investments in solar and renewable technology.

Solar/renewable energy programs

The Energy Committee strongly encourages continued support of fundamental science and engineering to facilitate discovery and development of breakthrough technologies in all solar and renewable resource applications. A key aspect of R&D should focus on the development of innovative concepts at universities to complement the work being pursued by the national laboratories. Demonstration programs are an essential element to both evaluate technologies and to address the many challenging operations and integration issues, and should be focused on resolving performance uncertainties, examining systemic and integration issues, and reducing cost and risk for commercial development and deployment. Such programs should not attempt to create a market for these technologies, which properly remains the responsibility of industry.

The Solar Buildings and Hydropower programs are very small, with small dollar increases. Both of these programs favorably impact the use of renewable energy, at good cost/benefit ratios. The larger programs, Concentrating Solar and Geothermal Energy, are slated for modest increases (11 percent and 4 percent, respectively), which appear appropriate considering their contributions.

The substantial increase (over 25 percent) in the hydrogen program does not seem justified. Careful consideration of the rationale for aggressive development of "pure" hydrogen technology systems should be undertaken in light of the potential for on-board and on-site conversion of hydrocarbon fuels to hydrogen offered by several developing technologies. Furthermore, the time scale for implementation of the "hydrogen economy," should it become necessary and economically feasible, is sufficiently long that urgent development is not now required. The $7.5 million (24 percent) increase in the Biomass program also does not seem to be merited in terms of its near-term contribution to the nation's energy needs, unless the "co-firing with coal" project can be shown to significantly reduce greenhouse gas emissions.

The major program dollar and percentage increases (about 30 percent each) are in the two biggest programs: Wind and Photovoltaics (PV). Both of these technologies have viable industries and are in a "globally competitive" mode, with research and development investments driving down the delivered energy price of each. It is to the advantage of the United States to be pre-eminent in both of these technologies because of the value of their export markets and also because of the energy security and emission-reduction objectives offered by both technologies. The PV program represents the renewable technology with the greatest overall energy/power potential, and also has been a program with steadily increasing efficiency and reduced energy/power costs. Both programs should continue to be examined for benefits versus costs, especially with large program funding increases.

PROGRAMS IN THE OFFICE OF SCIENCE

The bulk of funding allocated for programs in the Office of Science support efforts along four themes, (1) the physics of matter, (2) global climate change research, (3) fundamental transport and conversion processes, and (4) advanced computation and information technologies. The scientific merits of the majority of these programs have been well documented and have earned the support of the Energy Committee. The most substantial changes proposed for fiscal year 2000 relate to (1) the continued construction of the Spallation Neutron Source ($84 million), which the Energy Committee generally supports, and (2) initiation of the DOE elements of the Administration's Information Technology for the Twenty-First Century initiative (IT^2) ($68.5 million).

The Energy Committee strongly endorses the DOE efforts under the IT^2 with certain reservations. We applaud the inclusion of combustion processes as a major computation challenge of which the Scientific Simulation Initiative is a small portion ($7 million) of the proposed funding. However, there are a great many additional challenges that defy present engineering simulation (such as on-line simulation of power grid dynamics, or composite material behavior) that would be worthy research areas for advanced simulation. The development of engineering simulation approaches has been less well represented in DOE efforts than scientific computing, yet investments in engineering simulation can often result in rapid translation into domestic economic growth. We therefore support increased funding for the Simulation Initiative to enable establishment of a more substantial programmatic effort in engineering simulation as part of this new initiative.

Lastly, the Energy Committee is concerned that the Science Education budget remains under funded, at $4.5 million. ASME has long championed increased attention to science, mathematics and technical education at all levels, but particularly in grades K–12. Considering that almost $3 billion is budgeted for the DOE Office of Science, it seems only reasonable that efforts to translate the scientific and engineering experience of the present generation to those who will be responsible for our future should be of paramount importance. We therefore recommend a budget of $6 million for Science Education as the first step toward increasing the interest and enthusiasm of our youth for science and engineering.

Thank you for the opportunity to offer testimony regarding the renewable, nuclear, and science budgets proposed for the Department of Energy. ASME's Energy Committee will be pleased to respond to requests for additional information or perspectives on other aspects of our nation's energy program.

PREPARED STATEMENT OF CHESTER A. FARRIS, III, CHAIRMAN, PHOTOVOLTAICS DIVISION, SOLAR ENERGY INDUSTRIES ASSOCIATION (SEIA)

The Solar Energy Industries Association (SEIA) is the national industry association of the solar electric and solar thermal companies in the United States. The Photovoltaics Division represents those industry members who manufacture, distribute, and install solar electric technologies known as photovoltaics (PV).

The Division strongly supports the Administration's fiscal year 2000 recommendation for $93 million in research and development funding for photovoltaic technology. Over the last several years, federally-supported photovoltaic research at the National Renewable Energy Laboratory, Sandia National Laboratories, universities, and the private sector has yielded stunning results, enabling the U.S. to retain its worldwide technological leadership position.

The industry respectfully solicits the Subcommittee to fund critical cost-shared programs at the level of the Administration's request. In order of priority, these programs are:

1. Thin Film Partnership
2. PV Manufacturing Technology R&D (PV MaT)
3. Million Solar Roofs and Building-integrated PV R&D
4. System Engineering and Reliability
5. High Performance R&D

THE INDUSTRY REQUEST

The Photovoltaics RD&D Program administered by the U.S. Department of Energy has consistently achieved its long-and short-term goals and objectives.

The primary goal of the Program is to conduct pure and applied research on new materials and processes to lower the cost of photovoltaics and boost user confidence in the application of this innovative technology. The governments of Germany and Japan have initiatives far more ambitious than those outlined by the fiscal year 2000 recommendation.

The US photovoltaics industry is comprised of over 20 US-based manufacturers, 100 distribution and system integration firms, and over 100 solar electric installation companies. The US industry leads the world technologically and has a dominant market share of over 40 percent. The ability to maintain America's leadership position can only be sustained by leveling the playing field by fully funding the programs proposed in the Administration's budget. Funding in Japan's photovoltaics program now exceeds US $250 million per year. Germany has launched a program to install 100,000 rooftop systems that would increase the country's PV market requirement by an order of magnitude.

To date, the DOE Photovoltaics Program has been very effective in directing the resources of the National Renewable Energy Laboratory (NREL) and Sandia Na-

tional Laboratories, which are jointly known as the National Center for Photovoltaics (NCPV). The Labs' technical competency and analytical capabilities have resulted in significant improvements in the cost, reliability, and performance of photovoltaic cells, modules, and systems. Research areas of particular note include new substrate materials (high-strength glass and plastics), process technology, building-integrated photovoltaics, and system measurement and performance.

At the Subcommittee's request, the DOE Photovoltaics Program has dramatically reduced "uncosted" balances, becoming the leading renewable energy program to do so. The DOE Photovoltaics Program awards funding almost entirely on a competitive bid basis and is well managed and directed.

The Thin Film R&D and PV Manufacturing Technology programs have resulted in a reduction in photovoltaic cell and panel manufacturing costs from $50 per watt in 1976 to below $5 per watt today, a ten-fold decrease. To reach parity with conventional power generation technologies, our industry must continue to drive this cost down further. This goal can only be achieved through aggressive R&D and manufacturing technology programs such as the Thin Film Partnership and the PV MaT Program. The current cost-sharing methodology used by the Department ensures that participating companies must fully commit their own dollars towards this goal, as well.

The Million Solar Roofs Initiative, announced by the Administration in 1997, has encouraged several state agencies, local governments, and electric utilities to establish promotion and technical assistance programs for photovoltaics. However, the Million Solar Roofs Program requires additional funding in order to ensure the long-term viability of the US industry which is continually threatened by foreign government subsidy programs.

Historically, it has taken considerable courage and foresight from our elected officials to put in place infrastructure programs that have long-term benefits to this country. America's highways, electricity generation and distribution systems, aviation management systems, and state and national parks were championed at times when such spending was criticized.

The future economic strength of any nation is highly dependent on readily available, reliable, affordable, and clean energy. To ensure our nation's long-term energy security, independence, and sustainability, the government's support is absolutely crucial. Without question, this will be a daunting task. Photovoltaics have been and will continue to be a pivotal technology to achieve these goals in the new millenium.

The US photovoltaics industry urges you to support the Administration's fiscal year 2000 recommendation of $93 million, which includes explicit specific language supporting pure and applied research, technology improvement and validation, and commercialization technical assistance. Thank you.

PREPARED STATEMENT OF LES NELSON, CHAIRMAN, SOLAR THERMAL & BUILDING PRODUCTS DIVISION, SOLAR ENERGY INDUSTRIES ASSOCIATION (SEIA)

EXECUTIVE SUMMARY

The Solar Energy Industries Association (SEIA) is the national industry association of the photovoltaics and solar thermal equipment manufacturers, component suppliers, distributors, and installers (via our affiliated state and regional chapters). The Solar Thermal and Building Products Division represents the section of SEIA's members who are involved in solar water heating and solar space heating technologies primarily for buildings, but also for commercial and industrial processes and facilities.

The Division strongly supports the Administration's fiscal year 2000 recommendation for $5.5 million in funding a focused set of research activities primarily at the National Renewable Energy Laboratory and Sandia National Labs and select Universities. However, to insure that the funding in research has a pathway towards the private sector, the industry respectfully requests the Subcommittee to endorse a limited set of technology validation activities to promote new efficiencies in technology, greater utility of use by emerging markets, and analysis for barrier reduction in regard to pollution prevention, electricity displacement and load shifting, and building integration.

THE INDUSTRY REQUEST

The Solar Buildings RD&D program administered by the U.S. Department of Energy has been one of the under-appreciated RD&D programs.

The goal of the program is to significantly reduce solar system installed costs and operation and maintenance costs, largely through research on technical innovations

and lower cost materials, while providing technical assistance to energy service companies, solar companies and utilities on effective utilization of solar for load shifting, demand management, pollution prevention, and emerging energy service businesses.

The solar thermal industry is comprised entirely of small businesses with nearly 400 US-based companies involved in the manufacturing, distribution and installation of solar thermal systems.

The program has been extremely effective in directing the resources of the National Renewable Energy Laboratory, Sandia National Laboratory, the Florida Solar Energy Center and others in developing their technical competency to drive whole new areas of RD&D that can be transferred to the U.S. industry. Computer modeling of system performance, evolution of new concepts, and provision of technical assistance to emerging endusers are all quantifiable results of this program.

The Subcommittee has explicitly endorsed RD&D and commercialization efforts for other building-based technologies such as geothermal heat pumps. The solar thermal technologies are as deserving, not only because solar is a viable, clean, cost-effective option, but because the U.S. solar industry has a clear record of cost-shared RD&D tied to a willing utility and consumer base.

The Million Solar Roofs initiative, announced by The Administration in 1997, has leveraged several local governments, utilities and states to establish an aggressive promotion and technical assistance efforts for solar thermal. The emerging technologies that DOE has worked so ardently with industry to develop, should be allowed to penetrate this evolving market.

The U.S. Department of Energy along with its national laboratories and university partners are essential for the growth of this industry. There is an established need by state air quality offices to be provided analytical tools to quantify solar water heating pollution prevention benefits. Similarly, the utility industry wants quantifiable analysis on the demand reduction profiles of solar, while the new home construction market demands products which can be integrated with existing construction practices and products.

The research base is in place, the U.S. solar industry has shown to be a reliable and willing partner, and the market is on the cusp of growing with the appropriate and focused technical assistance.

The solar building industries urge you to support the fiscal year 2000 level of $5.5 million which includes specific language supporting pure and applied research, technology validation, and commercialization technical assistance. Thank you.

PREPARED STATEMENT OF LENNART JOHANSSON, CHAIRMAN, SOLAR THERMALPOWER DIVISION, SOLAR ENERGY INDUSTRIES ASSOCIATION (SEIA)

EXECUTIVE SUMMARY

The Solar Energy Industries Association (SEIA) is the national industry association of the photovoltaics and solar thermal equipment manufacturers, component suppliers, distributors, and installers (via our affiliated state and regional chapters). The Solar Thermal Power Division represents the section of SEIA's members who are involved in concentrating solar energy technologies primarily for electricity generation, but also for thermal energy commercial and industrial processes and facilities.

The Division strongly supports the Administration's fiscal year 2000 recommendation for $18.7 million in funding a focused set of research activities primarily at the National Renewable Energy Laboratory and Sandia National Laboratories. However, to insure that the funding in research has a pathway towards the private sector, the industry respectfully requests the Subcommittee to endorse a limited set of technology validation activities to validate system performance from the combined set of components created through joint collaboration of US industry and the national laboratories via DOE.

THE INDUSTRY REQUEST

The Concentrating Solar Power RD&D program administered by the U.S. Department of Energy has been one of the DOE programs that have been on time, on budget, and shown proven merits.

The goal of the program is to increase the efficiency of a variety of promising solar thermal technologies; to perform research on optimizing solar thermal operations for solar troughs; to undertake systems validations and lend competent technical assistance for solar driven engine systems, to hone performance tools and to provide technical assistance to energy service providers, solar-energy-related companies and util-

ities on the effective utilization of solar for load shifting, demand management, pollution prevention and the development of emerging energy service businesses.

The concentrating solar thermal industry currently holds global technical leadership with nearly 40 US-based companies involved in the manufacturing, distribution and installation of concentrating solar thermal systems.

To date, the DOE RD&D program for Concentrating Solar Power has been extremely effective. Solar Dish engines systems were installed at The Pentagon, at the National Renewable Energy Laboratory in Colorado and in Arizona in 1998. These systems needs continued validation and expansion to other sites.

The solar trough systems are going through another year of new technical O&M approaches in California where over 350 megawatts of power are being produced. Over the last decade, the cost per kWh has dropped from approximately 25 cents down to the 8- to 9-cent range with further improvements expected for new projects with the assistance of a continued and well-focussed RD&D program.

Largely due to the success of the program, international interest has increased with potential trough projects under discussion in Australia, Brazil, China, Egypt, Greece, Mexico, Morocco and Spain. With the increasing international interest, U.S. industries could be poised on the cusp of a potential new wave of technology export opportunities. Without a continued strong commitment by the USDOE to support the solar thermal RD&D program, US industry alone may not be able to maintain it's position of leadership in the face of the high level of support being lent similar programs by the European Union and other countries.

The Department of Energy has not been clear, however, on the direction of this emerging technology program even though the costs of the technology and the actual performance of solar concentrating technologies have far exceeded several other major programs in their energy R&D portfolio. This RD&D program typifies the need for federal involvement, pre-commercial, non-incremental improvement and a solid R&D basis—the epitome of what the Subcommittee has expressed in earlier hearings.

The utilization of solar concentrating technologies has a pragmatic path to the marketplace if the pure and applied RD&D are sustained. Arizona Public Service, Public Service of New Mexico, and other utilities have shown a solid commitment and excitement on the prospects of this emerging technology. Aside from displacing the need for conventional fossil-fuel combustion when the sun is shining, the vast potential for utilizing clean-burning natural gas as a solar-hybrid-generator to make solar thermal electric generation fully dispatchable is a big plus. The hybrid solar/natural gas approach is used with great success today in the solar trough plants in California. The modularity of the technology also situates it as useful during a restructured era in the electric utility where incremental generation and investment provides far more flexibility than traditional large-scale baseload electric generation units.

The concentrating solar thermal industries urge you to support the fiscal year 2000 level of $18.5 million which includes specific language supporting pure and applied research, technology validation, and commercialization technical assistance. Thank you.

PREPARED STATEMENT OF DR. DONALD L. KLASS, PRESIDENT, BIOMASS ENERGY RESEARCH ASSOCIATION

This testimony pertains to the fiscal year 2000 appropriations for mission-oriented, biomass energy and fuels research, development, and deployment (RD&D) programs carried out by DOE's Office of Energy Efficiency and Renewable Energy (EERE). The Biomass Energy Research Association (BERA) is a non-profit association in Washington, DC. BERA was founded in 1982 by researchers and private organizations that are conducting biofuels research. Our objectives are to promote education and research on renewable biomass energy and waste-to-energy systems that can be economically utilized by the public, and to serve as a source of information on biomass policies and programs.

I would like to thank you, Mr. Chairman, on behalf of BERA's members for the opportunity to present our position on the federal funding of mission-oriented biomass RD&D. Continued support of this effort is essential to provide the stimulus to develop environmentally clean, indigenous energy resources that can displace fossil fuels, stimulate regional and national economic development and employment, reduce our dependence on imported oil, improve our energy security, and help to eliminate adverse climate and environmental changes.

I have examined EERE's appropriations request for biomass energy and fuels RD&D in fiscall year 2000, and would like to offer a few comments about our

Board's concerns before presenting BERA's recommendations. DOE continues to over-emphasize scale-up projects, the budgets for which are large and which adversely impact the research budgets. DOE has therefore been required to terminate research in several microbial and thermochemical conversion areas. We feel that a balanced research program should be sustained and protected, so BERA continues to recommend both a diversified portfolio of research and an appropriate amount of funding for scale-up without diminishing either EERE's research or scale-up programs. Also, DOE's research on biomass energy outside of EERE by the Office of Science (OS, former Office of Energy Research), which supports basic academic research, and by the EERE's Office of Industrial Technologies (OIT) on chemicals from biomass, complements EERE's biomass energy and fuels RD&D. All biomass programs should be internally coordinated and jointly managed at DOE Headquarters. Note that for fiscal year 2000, EERE's biomass-based research under the title Hydrogen Research in the funding request is included in BERA's recommendations, but our recommendations for OIT's Agriculture Vision chemicals-from-biomass program are presented in a separate BERA statement for the Interior and Related Agencies Bill.

EERE's appropriations request for biomass energy and fuels RD&D in fiscal year 2000 includes details that have normally not been presented in the past. We commend EERE for updating their biomass RD&D plan so that it is now reasonably clear which projects have been completed, terminated, or are new starts. Specifically, BERA recommends that $113.7 million be appropriated for biomass energy and fuels RD&D in fiscal year 2000. The highlights are:

—A total of $61.2 million for research and $52.5 million for industry cost-shared scale-up.

—$31.2 million for research and $28 million for industry cost-shared scale-up projects for Power Systems. The scale-up projects include the integrated biomass production-conversion and Vermont gasification projects.

—$25.5 million for research and $24 million for industry cost-shared scale-up projects for Transportation. The scale-up projects include the NREL ethanol pilot plant in Colorado, and commercial ethanol plants in Alaska, California, New York, and Louisiana.

—$4 million for biomass-based hydrogen research.

—$1 million for internal coordination and joint management of all DOE biomass programs.

ALLOCATION OF APPROPRIATION RECOMMENDED BY BERA

BERA recommends that the appropriation for fiscal year 2000 be allocated as shown in the table. BERA's recommendations are generally listed in the same order as DOE's request for fiscal year 2000, except we include several research areas that are either new or that BERA's Board recommends be restored to sustain a balanced program of research and scale-up. Note that the recommended budget for each scale-up category does not include industry cost-sharing, which is required to be a minimum of 50 percent of the total budget for each project.

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

Program area	Recommended budget	
	For research	For scale-up
Power Systems		
Thermochemical Conversion:		
Advanced Combustion	$2,000,000	.....
Advanced Gasification	2,500,000	.....
Advanced Pyrolysis	2,000,000	.....
Advanced Stationary Fuel Cells	2,000,000	.....
Improved Emission Control	2,000,000	.....
Wastewater Treatment	1,500,000	.....
Ash Disposal and New Uses	1,500,000	.....
Hot-Gas Clean-Up	2,000,000	.....
Advanced Materials	700,000	.....
Microbial Conversion: Advanced Anaerobic Digestion	2,000,000	.....
Systems Development:		
Vermont Gasifier	.....	$6,000,000
Integrated Production-Conversion	.....	19,000,000
Advanced Cofiring with Coal	2,000,000	.....
Small Modular Systems	2,500,000	.....

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY—Continued

Program area	Recommended budget	
	For research	For scale-up
Municipal Solid Waste	3,500,000	.....
Pelletized Biomass Fuel Systems	500,000	.....
Feedstock Production	2,000,000	2,000,000
Regional Biomass Energy Program	2,500,000	1,000,000
Subtotal	31,200,000	28,000,000
Transportation		
Fermentation Ethanol:		
Advanced Organisms	3,000,000	.....
Advanced Enzymes	3,000,000	.....
Advanced Pretreatment	2,000,000	.....
NREL Pretreatment Pilot Reactor	.....	3,000,000
NREL Fermentation Pilot Plant	.....	5,000,000
Commercial Ethanol Plants by Company and Location:		
BCI International, Gridley, CA [2]	.....	5,000,000
Massada Resources, NY [3] and Sealaska, AK [4]	.....	[7] 7,000,000
Arkenol, Rio Linda, CA [5]	.....	([8])
BCI International, Jenninqs, LA [6]	.....	([9])
Advanced Mobile Fuel Cells	3,000,000	.....
Biodiesel	1,000,000	.....
Feedstock Production	2,000,000	3,000,000
Thermochemical Conversion:		
Ethanol Production	3,000,000	.....
Mixed Alcohols Production	3,000,000	.....
Oxygenates from Biomass	3,000,000	.....
Regional Biomass Energy Program	2,500,000	1,000,000
Subtotal	25,500,000	24,000,000
Hydrogen Research [1]		
Advanced Thermal Processes	2,000,000	.....
Advanced Photolytic Processes	2,000,000	.....
Subtotal	4,000,000	.....
Integrated Bioenergy RD&D		
Coordination and Integration	500,000	500,000
Total	61,200,000	52,500,000
Grand Total	113,700,000	

[1] BERA's recommendations pertain only to the biomass-based portion of Hydrogen Research.
[2] Rice straw, dilute acid.
[3] Refuse-derived fuel, concentrated acid.
[4] Waste softwoods.
[5] Rice straw, concentrated acid.
[6] Bagasse, dilute acid.
[7] For Masada and Sealaska plants, and initiation of corn-enzyme hydrolysis and fossil-derived syngas-microbial ethanol production plants.
[8] DOE's share of funding completed.
[9] DOE supplied $4,000,000 in fiscal year 1999.

BERA RECOMMENDS $61.2 MILLION FOR RESEARCH AND $52.5 MILLION FOR INDUSTRY COST-SHARED, SCALE-UP PROJECTS FOR FISCAL YEAR 2000

BERA's recommendations consist of a balanced program of mission-oriented RD&D on feedstock production and conversion research and technology transfer to the private sector. Advanced power generation technologies and alternative liquid transportation fuels are emphasized.

In addition, BERA strongly urges that at least 50 percent of the federal funds for biomass research, excluding the funds for scale-up projects, are used to sustain a national biomass science and technology base via subcontractors outside DOE's national laboratories. While it is desirable for the national laboratories to monitor this research, increased support for US scientists and engineers in industry, academe, and research institutes that are unable to fund biomass research will encourage commercialization of emerging technologies and serious consideration of new ideas.

It will also help to expand the professional development and expertise of diverse researchers committed to the advancement of biomass technologies.

BERA's specific recommendations for research, the industry cost-shared scale-up projects, and the dollar allocations are listed in the table (page 2). Additional commentary on each program area is presented below in the same order as in the table.

POWER SYSTEMS

Thermochemical Conversion.—Currently, there is over 8,000 MW of electric power capacity fueled by biomass in the United States. Municipal solid wastes, forest and wood processing residues and pulping liquors are the primary fuels. Continued research to develop advanced biomass combustion, gasification, and pyrolysis methods could have environmental and economic benefits that can lead to significant growth in biomass power generation. Much of this research has been phased out by DOE. Research (not scale-up) should be initiated or re-stored with the goal of developing the next generation of thermochemical biomass conversion processes for power generation. Stationary, integrated biomass gasifier-fuel cell systems should be developed as potential, high-efficiency power generation systems. New fuel cells that can tolerate the sulfur levels found in certain biomass-derived fuel gases without sacrificing system affordability and the testing of integrated advanced fuel cell systems should be included in this work. In addition to the restoration of this important research, priority should also be given to the development of innovative enabling technologies consisting of advanced emission control systems, improved ash disposal methods and new ash uses, low-cost, hot-gas clean-up methods, and advanced materials that eliminate corrosion and erosion problems for thermochemical reactors and turbines. The status of these technologies is far from what is needed, yet they are essential for practical, low-cost thermochemical conversion of biomass.

Microbial Conversion.—Microbiological gasification by anaerobic digestion is unique in that it produces methane directly, the major component in natural gas, as a primary product from a full range of virgin and waste biomass feedstocks. However, DOE has terminated most of the research needed to develop advanced systems that yield low-cost methane by reducing capital and operating costs. This research can lead to the alleviation of numerous environmental problems encountered during waste treatment and disposal, and should be restored.

Systems Development.—The scale-up of biomass gasification for medium-Btu gas and power generation in Vermont continued in fiscal year 1999. This project should be funded in fiscal year 2000 to enable testing of an advanced turbine system for the generation of 8–12 MW from wood. The testing in Hawaii of the hot gas clean-up system, which was shown in the preliminary work to be effective, was not completed because the gasifier was shut down. This work should be completed, at another site if necessary, to perfect the technology. The integrated biomass production-power generation projects chosen by DOE for scale-up in Minnesota (alfalfa), New York (willow-coal cofiring), and Iowa (switchgrass-coal cofiring) as well as DOE's initiative to expand biomass-coal cofiring at additional sites should be continued. Plans should also be made to fund scale-up of the Whole Tree Energy system as part of this effort. Research on the development of advanced biomass-coal cofiring systems and small modular direct biomass combustion turbines should be sustained to develop advanced designs for small modular systems, and advanced combined cycle systems that can supply cogenerated power.

Municipal Solid Waste.—MSW disposal is a continuing national problem, which when combined with energy recovery, offers major opportunities for power generation and recycling. Advanced MSW disposal-energy recovery systems are needed for municipalities; there is also a need for small, low-cost systems. Research in each of these areas should be restored.

Pelletized Biomass Fuel Systems.—Research is needed to develop low-cost, high-productivity biomass pelletizing and supply systems, and automated residential and commercial heating units designed for these fuels. The unavailability of such systems has been a large barrier to the growth and expansion of residential and commercial biomass fuel markets.

Feedstock Production.—See Feedstock Production in next section.

Regional Biomass Energy Program.—The Regional Biomass Energy Program (RBEP), established by Congress in 1983, to take advantage of the regional differences in biomass resources and energy needs, are implemented through five separate regions located in the Southeast, Northwest, West, Great Lakes, and Northeast. The RBEP has been important in establishing individual state biomass programs, and in stimulating technology transfer and the development and commercialization of biomass energy in the private sector. RBEP activities have created awareness and a positive image for biomass energy while providing significant environmental en-

hancement and creating new jobs, especially in rural areas. The private sector and the states have been highly supportive of the RBEP and typically provide 2 to 4 times the federal investment as cost sharing. In fiscal year 2000, the RBEP will conduct activities to develop and encourage the commercialization of technologies for power generation with biomass, biomass-coal cofiring, small-scale distributed generation systems, and biogas systems. These activities may include several state-level, one-day workshops to educate stakeholders and to facilitate the addition of new generating capacity based on biomass fuels. Development of integrated disposal-biogas recovery systems will be continued because the disposal of large quantities of animal manures continues to be a major national problem.

TRANSPORTATION

Fermentation Ethanol.—Research on the conversion of low-cost lignocellulosics to fermentation ethanol should be continued. The targets should include the development of: genetically engineered organisms that can simultaneously ferment all the C5/C6 sugars in biomass; low-cost cellulase production for simultaneous saccharification-fermentation; and advanced pretreatment of low-cost biomass feedstocks, including the testing of the counter-current pretreatment pilot plant reactor recently installed at NREL. This research should focus on the development of accurate bases from which advanced technologies can be scaled-up for commercial use with confidence, and on advanced technologies that significantly reduce processing costs. NREL's ethanol pilot plant should be operated on an as-needed, cost-shared basis with DOE's industrial partners to support the commercial ethanol plant program

Commercial Ethanol Plants.—Several fermentation plants are being cost-shared by DOE in fiscal year 2000 as shown in the table on page 2. The processes used are conventional and advanced technologies, such as the microbial conversion of synthesis gas. The preliminary planning work for other plants should continue, but BERA recommends that the existing projects should produce operating data that confirm the technologies before new scale-up projects are started.

Advanced Mobile Fuel Cells.—Research should be initiated to design and perfect vehicular fuel cell systems equipped with on-board reforming units for biomass-based liquids. The goal should be the production of low-cost fuel gases suitable for direct use as motor fuels and as fuels for on-board fuel cells.

Biodiesel.—Research should be focused on increasing natural triglyceride yields to permit low-cost biodiesel production. Advanced transesterification processes are already available, and engine and emissions tests have been or are being performed by the engine manufacturers.

Feedstock Production.—Land-based biomass grown as energy crops can supply large amounts of fossil fuel substitutes. Considerable progress has been made on the efficient production of short-rotation woody crops, and on the growth of herbaceous species. In addition, research on tissue culture techniques and on the application of genetic engineering methods for low-cost energy crop production have shown promise. This research should be continued to develop advanced biomass production methods that can meet the anticipated feedstock demand. BERA also recommends that industry cost-shared, scale-up projects chosen by DOE of at least 1,000 acres in size be continued to develop large-scale, commercial energy plantations in which dedicated energy crops are grown and harvested for use as biomass resources. These projects should be strategically located and should utilize the advanced biomass production methods developed in the research programs. Successful completion of this work will help biomass energy attain its potential by providing the data and information needed to design, construct, and operate new biomass production systems that can supply low-cost feedstock for conversion to transportation fuels and electric power.

Thermochemical Conversion.—Almost all of DOE's RD&D on liquid transportation fuels from biomass emphasizes fermentation ethanol. Thermochemical conversion research should be started that targets liquid motor fuel production at costs competitive with those of gasolines and diesel fuels in the near-to-mid term. Research on the thermochemical conversion of low-grade biomass for use as motor fuels shows great promise. Preliminary research on the non-microbial conversion of synthesis gas illustrates the potential of producing ethanol, mixed alcohols and oxygenates, ethers, and coproducts at costs that are much less than the corresponding costs of liquids produced by microbial and fermentation processes. Some analysts project that fuel ethanol from low-grade biomass by thermochemical processes may be able to attain production costs in the same range as thermochemical methanol from natural gas feedstocks. Each of these areas should be added to DOE's program.

Regional Biomass Energy Program.—In fiscal year 2000, the RBEP will conduct cooperative projects with state and local governments on resource assessments, the selection of suitable sites for biomass-based transportation fuel production and distribution facilities, and multi-product biomass plants. Specifically, the RBEP will conduct a number of technology transfer activities related to the production of fuel ethanol from cellulosic raw materials. The activities will include several state-level, one-day workshops to educate stakeholders about fuel ethanol technologies, and the opportunities available in various regions to develop new fuel ethanol production capacity with low-grade biomass feedstocks. In conjunction with this work, the RBEP will complete several publications that address the educational needs related to the production of fuel ethanol. The RBEP will continue to provide national leadership in the development of biodiesel fuels with several engine testing programs, and will also work with the National Park Service to increase the use of biofuels in selected national parks that are encountering air quality problems.

HYDROGEN RESEARCH

Innovative research on the thermal reforming of biomass in a supercritical fluid reactor and in an advanced-design plasma reformer, and on water splitting with algae, which is the equivalent of photolysis, should be continued. Detailed study of each of these advanced conversion methods may lead to practical processes for the low-cost production of hydrogen.

INTEGRATED BIOENERGY RD&D

As mentioned on page 1, all of the biomass-related RD&D funded by EERE and OS should be coordinated internally and jointly managed at DOE Headquarters. The program managers at DOE Headquarters should be heavily involved in this activity. The organizational phase should be completed as soon as possible, after which the assigned management responsibilities should continue. This will significantly enhance the value of the total program for DOE and its industrial partners and stakeholders.

PREPARED STATEMENT OF THE CITY OF GRIDLEY, CA

Chairman Domenici and Ranking Member Reid: My name is Tom Sanford, and I am the Mayor Pro Tem of the City of Gridley, California. I also serve as Gridley's commissioner on the governing board of the Northern California Power Agency.

Thank you for the opportunity to submit this testimony to the Subcommittee regarding the progress that the City of Gridley has made in developing a biomass facility fueled by rice straw. I want to begin by thanking the Subcommittee for the past support it has provided for the Gridley Rice Straw Project. The federal funds which have been provided since fiscal year 1996 have been matched dollar for dollar and have brought about the completion of permitting and environmental assessments for the site of the facility so that construction can begin this year.

This will be the last time the City will request funds for development of this project. With this last installment of funds, the City will be able to secure the completion of a cost-effective, subsidy-independent, renewable source of liquid fuel for both transportation and power production purposes. In securing a final federal appropriation of $5 million in fiscal year 2000, the City of Gridley and its partners can ensure that the Gridley plant will be fully operational to use rice straw harvested during the year 2000.

In the Department of Energy's fiscal year 2000 budget request, there is $10 million in the biomass/biofuels account to support ongoing projects, and the Department has indicated its support of the Gridley project and has indicated its intention that $5 million for the Gridley project be provided within this amount of funds.

The City of Gridley, which operates its own utility, is involved in the development of this technology for a number of reasons. The City of Gridley is a rural community situated in the rice-growing region of the Sacramento Valley in Northern California. Our community and region are dependent upon an agricultural economy largely based upon rice production. Thousands of jobs and more than $500 million annually of the Sacramento Valley's economy are directly dependent upon the rice industry.

The rice industry, however, is coming under tremendous pressure because of new mandates to reduce air pollution and end open field burning of rice acreage. Currently, the State of California has statutorily reduced the burning of rice straw. By the year 2001, the automatic right to burn rice straw will be eliminated. Given that there are insufficient cost-effective mechanisms to remove rice straw from the fields, we are greatly concerned that the restrictions will lead to a reduction in rice acreage

in production. A substantial portion of the rice grown in the Sacramento Valley is grown on land with very heavy clay soil types that are suitable for very little other than rice. The elimination of burning as a means of dealing with the very tough rice straw is having significant impact upon the economics of rice growing in the Valley.

Since fiscal year 1996, the Subcommittee has shown its support for the development of a biomass facility that will effectively utilize rice straw in order to produce ethanol. Unlike the facilities of the Midwest, the Gridley rice straw project will be able to use multiple feedstocks to keep the plant operating year-round. The construction of the Gridley plant will develop the technologies and processes necessary for the cost-effective use of forest and timber industry byproducts as well as agricultural waste products. Clearly, this plant will expand biomass opportunities to a broad array of industries and agricultural commodities, which will be beneficial to other parts of the state as well as other regions of the country.

The Gridley Rice Straw Project will help the State of California meet the important air quality goal of ending open field burning, while at the same time provide rice farmers with an alternative rice disposal method that could generate an additional source of revenues for the grower. The Project will also create hundreds of direct and indirect jobs in Northern California communities with high levels of unemployment.

I appreciate the opportunity to submit this testimony and want to thank the Subcommittee again on behalf of the City of Gridley and communities in the Sacramento Valley and Northern California for its support in ensuring a federal partner for the Gridley Rice Straw Project, thus making this project a reality in the near future.

PREPARED STATEMENT OF PROF. DAVID K. WEHE, UNIVERSITY OF MICHIGAN

The U.S. Department of Energy (DOE) has provided support to the DOE University Research Program in Robotics to pursue long range research leading to the: "development and deployment of advanced robotic systems capable of reducing human exposure to hazardous environments, and of performing a broad spectrum of tasks more efficiently and effectively than utilizing humans."

The DOE University Research Program in Robotics (URPR) has proven highly effective in technology innovation, education, and DOE mission support. The URPR incorporates mission-oriented university research into DOE EM's Office of Science and Technology (OST) and, through close collaboration with the DOE national laboratories, provides an avenue for applying innovative solutions to problems of vital importance to DOE.

The URPR would like to thank the Committee members for their historically strong support of this successful program and is pleased that the URPR is included in the DOE Budget Request for fiscal year 2000 at $4.0M. The URPR is requesting the Committee consider augmenting this amount to $4.35M to compensate for DOE's expansion of the Consortium to include the University of New Mexico.

REQUEST FOR THE COMMITTEE

We request the Committee include explicit language directing $4.35M of ER&WM (EM–50) research funds to the University Research Program in Robotics (URPR) for development of safer, less expensive, and more effective robotic technology for environmental restoration and waste management solutions.

DEVELOPING ADVANCED ROBOTICS FOR DOE AND THE NATION

Develop robotic solutions for work in hazardous environments and facilitate cleanup operations

The goal of this program is to advance and utilize state-of-the-art robotic technology in order to remove humans from potentially hazardous environments and expedite remediation efforts now considered essential. Established by DOE in fiscal year 1987 to support advanced nuclear reactor concepts, the project was relocated to EM to support higher priority needs in environmental restoration. The project has produced an impressive array of technological innovations which have been incorporated into robotic solutions being employed across federal and commercial sectors. This successful program demonstrates efficient technology innovation while educating tomorrow's technologists, inventing our country's intelligent machine systems technology of the next century, and meeting today's technology needs for DOE.

Robotics: A Strategic National Technology

R&D funding is the most effective use of federal funds to promote the nation's well-being according to a 1997 published poll of respected academic economists. And, as documented in previous testimonies, key national studies (by the Council on Competitiveness, DOD, and former OTA technology assessment reports) consistently list robotics and advanced manufacturing among the five most vital strategic technologies for government support. During the past year, reports from NSF, the OSTP report on critical technologies, and the report from the President's Advisory Committee on Information Technology suggests that the areas of greatest concern to the nation are: the economy, education, health care, and the environment. The URPR is making technology contributions affecting each of these key areas. Furthermore, the reports note key technology areas include information technology and nanotechnology, and key enabling technologies include manufacturing and materials. The URPR actively participates in advancing these fields. The national need for an investment in the development of intelligent machines which can interact with their environment has been universally recognized for over a decade.

Intelligent Machines: Grand Challenge for the Next Millennium

Significant advances in computing power, sensor development and platform architectures (e.g., unmanned airborne vehicles) have opened new opportunities in intelligent machine technology. The long-range implications of intelligent mobile and dextrous machines which can assist humans to perform life tasks are clearly significant and represent one of technology's Grand Challenges for the next millennium. We can expect to see intelligent prosthetic devices, smart transport vehicles, and mobile devices capable of assisting or replacing the human, not only in potentially hazardous situations, but in daily life.

URPR: INNOVATION, EDUCATION, AND DOE MISSION SUPPORT

URPR: Refining the Right Paradigm

The URPR instantiates the new paradigm recommended for Federal investment in national S&T by the National Science Board (3/6/98) that emphasizes the integration of long-range research and education. The URPR's strategic mission is to make significant advances in our nation's intelligent machine and manufacturing technology base while emphasizing: education, technology innovation through basic R&D, and DOE mission support. Furthermore, the Consortium of Universities (Universities of Florida, Michigan, Tennessee, Texas, and New Mexico) are united as a powerful technology team, governed by a national Board of Directors, advised by a Technical Advisory Committee, and managed by a group of DOE and national laboratory officials. During fiscal year 1999, the Consortium has worked through 8–10 levels of DOE bureaucratic control, an unfortunate side effect of the current DOE structure which governs the URPR. It is only because of the Committee's explicit appropriations language that any funding has managed to pass through this system.

The URPR has demonstrated in earlier years that the advantages of operating as a consortium are significant. The institutions of the URPR partitioned the technical development into manageable sections which allowed each to concentrate within their area of expertise (efficiently maintaining world-class levels of excellence) while relying on their partners to supply supporting concentrations. With full cooperation of the host universities, this effort naturally generated the in-depth human and equipment capital required by the EM community. Practically, the long-term distributed interaction and planning among these universities in concert with the DOE labs and associated industry allows for effective technology development (with software and equipment compatibility and portability), for a vigorous and full response to application requirements (component technologies, system technologies, deployment issues, etc.), and for the supported application of the technology. Considering the remarkable achievements of URPR over its history and the enlightened commitment of EM–50 to this technology development, the URPR is now poised to enhance its prominent role in education, technology innovation, and DOE mission support.

Educating the New Millenium's Technologists

The URPR has already educated about 450 advanced degree students in the critical engineering fields, including many with earned doctoral degrees. These students have entered the work force, and lead an industrial resurgence based on intelligent machines, advanced manufacturing technology, and related fields. Graduates from this project have built successful startup companies and made industrial technology transfers in computer vision and robotic technology (MI, TN, TX) and medical imaging (MI), video databases (CA), and intelligent manufacturing (MI, FL, TX). We

have historically seen a strong demand for graduates educated through this project, even during the leanest of times.

DOE Mission Contribution—Environmental Cleanup

Since its inception, EM has recognized robotics as an essential technology to accomplish its mission. The motives for undertaking a comprehensive R&D effort in the application of advanced robotics to EM tasks in hazardous environments reflect both economic considerations, efficiency, effectiveness, and health and safety concerns. The RBX is a national laboratory program which primarily applies commercially available technology to current problems. In contrast, the URPR supports needs-driven applied research to develop innovative and synergistic technologies in support of EM focus areas.

URPR progress is annually evaluated by a thorough review of technical accomplishments, and then anticipated DOE technology needs are used to set the program's directions. The URPR has consistently received high rankings for providing both outstanding technical contributions and value. Future success of this program is expected to continue based upon the Consortium's productive history.

Over the past few years, the URPR projects successfully supported the following EM projects:

1. deployment and testing of SWAMI, an autonomous inspection robot for Fernald stored waste drums;
2. design, construction and testing of a robot to precisely map large DOE facilities, such as K–25 and K–27 in Oak Ridge, in preparation for decontamination and decommissioning (D&D);
3. delivery of a robotic handling system for an automated chemical and radiological analysis system to Los Alamos;
4. remote radiation mapping of the MSRE facility at ORNL during D&D operations;
5. design and implementation of a real-time controller for use at Hanford in support of the tank waste retrieval project; and
6. design and fabrication of a prototype Soil Sample Preparation Module in support of the Contaminant Analysis Automation project.

During fiscal year 1999, the URPR achievements have included:

—1998 Discover Magazine Award for Technological Innovation: Robotics. Personally presented by the Secretary of Energy.
—Invention of the room-temperature semiconductor radiation sensor that holds the world's record for energy resolution.
—Development of a mutisensor visualization platform to aid operators during D&D operations.
—Transfer of an inductive, radiation-resistant, high resolution position sensor to a commercial vendor.
—Development of a system to reduce the time between a site-defined need and a site-delivered implementation of the robotic and/or automation hardware using simulation of components.
—Codified algorithms for assembly of standardized modules to produce the complex manipulators needed for a wide range of hazardous tasks.

As shown above, these efforts are directly linked to cleanup operations in the DOE complex. During fiscal year 2000, the URPR plans to continue its focussed efforts on DOE field cleanup applications, while maintaining our commitment to research and education.

Innovation—the seed of future technology

The URPR has produced prodigious levels of innovation in research and development. While recent demonstrations reveal next-generation technologies, even more advanced capabilities are emerging from the laboratories. These include new types of locomotion, navigation techniques, sensing modalities (radiation cameras and laser imaging devices), environmentally hardened components, and dextrous open architecture manipulators. These devices will evolve and inspire the intelligent machines of the future, including smart automobiles, obstacle avoidance aids for the disabled, and agile manufacturing cells capable of being rapidly reconfigured.

This level of innovation can also be seen in the following statistics:

—Approximately 15 patents awarded or pending.
—Over 700 technical papers published in technical journals and conferences.
—The standard technical books for vision, radiation detection and imaging, and robotics are authored by researchers who have worked with this project. Faculty and senior scientists dedicated to this project are internationally renowned technologists of their fields.

—A suite of world-class robots (including CARMEL, winner of the AAAI Mobile Robot Competition) serve as the research testbeds for this project.

PROGRAM REQUEST

During fiscal year 1999, the URPR provided vital contributions to education and research while meeting DOE technology needs. The motivation for this project remains steadfast—removing humans from hazardous environments while enhancing safety, reducing costs, and increasing cleanup task productivity. EM–50 has recognized the URPR's role and mission and has requested $4M for the URPR in fiscal year 2000. We are requesting an additional $350K to fund the University of New Mexico, added by DOE to the Consortium in fiscal year 1998, at a level comparable to the other consortium members.

REQUEST FOR THE COMMITTEE

To continue this vital program, we request that the Committee include the following language into the fiscal year 2000 Energy and Water Appropriations Bill: For development of safer, less expensive, and more effective robotic technology for environmental restoration and waste management solutions, $4.35M of ER&WM (EM–50) funds are provided to the University Research Program in Robotics (URPR).

PREPARED STATEMENT OF THE REPI ACTION COALITION

The undersigned members of the REPI Action Coalition request that the Renewable Energy Production Incentive (REPI) program be funded at a level sufficient to cover payments for eligible projects. $20 million is needed in fiscal year 2000 to make full incentive payments for electricity produced by all qualified facilities through the end of fiscal year 1999. The current funding level of $4 million provides full incentive payments for only a few projects and insufficient revenues for the majority of projects.

Our coalition, which represents the interests of national consumer, business, environmental, energy and industry organizations, is incredulous that the Administration's fiscal year 2000 Budget Request of $1.5 million for REPI represents a 62.5 percent reduction from the existing funding level. At this level, most projects eligible for REPI funding—including projects receiving funds in the prior fiscal year—will not receive payments. This will cause irreparable damage to the incentive value of a program designed to encourage public power to reduce greenhouse gas emissions through a variety of projects including landfill gas-to-energy projects.

Created by the Energy Policy Act of 1992, REPI authorizes the Department of Energy to make payments of 1.5 cents per kWh of energy produced from eligible renewable energy sources to consumer-owned electric utilities. Unlike the tax credits awarded to investor-owned utilities, the public power REPI program is inherently uncertain because payments are dependent on the availability of annual appropriations. In funding shortfall years, projects in Tier 1 (solar, wind, geothermal and closed-loop biomass) are granted full payments. Inadequate leftover revenues are then dispersed on a pro rata basis to Tier 2 (landfill gas-to-energy) projects. Electricity for which payment is not made may then be added to the next fiscal year's electricity production and submitted by the qualifying facility for payment consideration.

Congress established REPI in large part to provide benefits commensurate with those available to investor-owned utilities through the renewable electricity production tax credit in Section 45 and the investment tax credit in Section 48 of the Internal Revenue Code. In the years since REPI incentives have been in place, private entities have enjoyed full access to their economic incentives while consumer-owned electric utilities have received only partial appropriations since 1996.

Since the program's inception, nearly $8.4 million in incentive payments have been made to the owners of qualifying facilities. The number of projects receiving REPI awards has increased from 6 projects in 1995 producing 43 million kWh of electricity to 16 projects in 1998 producing 549 million kWh of electricity. Due to inadequate appropriations, full payments for all eligible projects were last made in 1996. Every year since then, the majority of eligible projects have received only partial payment. Projects most impacted by the funding deficit have been landfill gas-to-energy projects.

Despite this shortcoming, REPI is the most significant incentive available to locally owned, not-for-profit electric utilities to make new investments in renewable energy projects. These projects provide important economic and environmental benefits to the communities served by the municipal utility. Along with significant air

quality benefits resulting from the accelerated use of emissions-free energy sources, new jobs are created each time these technologies are deployed.

An important and unique feature of the REPI program is its potential to assist municipalities, and the communities they serve, in reducing significant levels of greenhouse gases (ghg) through landfill gas-to-energy projects. Landfill gas is about 50 percent methane and methane is a potent ghg that is over 20 times more potent than carbon dioxide in contributing to climate change. There is potential to reduce over 2.3 million metric tons of carbon equivalent of ghg by deploying these projects on existing untapped landfills. The comparative economics of landfill-gas projects makes these facilities one of the most promising near-term renewable resources.

Despite the funding shortfalls and the volatility of the appropriations process, REPI is considered a true incentive among potential project owners. For example, a feasibility study for the construction of a municipally-owned wind farm in Iowa showed that REPI assistance made an impressive difference in the cost of the project.

The REPI program increases in importance as new air quality regulations and renewable energy mandates are imposed. Public power systems will be at a disadvantage under the currently structured REPI if renewable portfolio standards are included in electricity restructuring proposals. Unlike the certainty of the tax credits and incentives available to private entities, REPI funding is erratic and insufficient to offset the higher costs of using alternative energy resources.

In conclusion, REPI is an important tool in promoting renewable energy resources by consumer-owned utilities which could be greatly improved by program reform that addresses insufficient and uncertain appropriations. We strongly encourage your help this year in saving REPI by agreeing to restore funds at a level sufficient to cover on-going and future payments.

Thank you.

The American Public Power Association, The Large Public Power Council, City of Glendale, California, PACE Energy Project, Minnesota Municipal Utility Association, SUN DAY Campaign, American Wind Energy Association, Omaha Public Power District, American Bioenergy Association, Klickitat Public Utility District (Washington), Los Angeles Department of Water & Power, Global Bio Refineries Inc., University of California, Los Angeles, American Green Network, Business Council for Sustainable Energy, Solar Energy Industries Association, Bio Energy Industries Association, Bob Lawrence & Associates, Public Citizen, Monterey Regional Waste Management District (California), Solid Waste Association of North America, Board of Public Works, City of Auburn, Nebraska, Salt River Project (Arizona), Union of Concerned Scientists, Lincoln Electric Service (Nebraska), Friends of the Earth, Pacific Northwest Generating Cooperative, City of Tallahassee, Florida, Clean Fuels Foundation, American Solar Energy Society, International Brotherhood of Electrical Workers, Emerald Peoples' Utility District (Oregon), Austin Energy (Texas), Waverly Light and Power (Iowa), Nebraska Public Power District, Environmental and Energy Study Institute, New York Power Authority, JEA (Florida), Moorhead Public Service (MN), Geothermal Energy Association, Lycoming County Resource Management Services (PA), Potomac Resources, Windrush, Inc., Consumer Federation of America, City of Seattle, Traverse City Light & Power Department (Michigan), Michigan Public Power Agency, and Michigan Municipal Electric Association.

PREPARED STATEMENT OF THE AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association (APPA) is the national service organization representing the interests of over 2,000 municipal and other state and locally owned utilities throughout the United States. Collectively, public power utilities deliver electric energy to one of every seven U.S. electric consumers (about 40 million people), serving some of the nation's largest cities. The majority of APPA's member systems are located in small and medium-sized communities in every state except Hawaii.

We appreciate the opportunity to submit this testimony outlining our fiscal year 2000 appropriations priorities within your Subcommittee's jurisdiction.

RENEWABLE ENERGY PROGRAMS

APPA believes it is important to continue development and commercialization of clean, renewable energy resources as we face the prospect of increased competition in the electricity marketplace. Two of the most significant barriers to greater renewable energy use are cost and lack of demonstrated experience. Because of the requirement to supply electricity to customers on demand, with high reliability at a reasonable cost, electric utilities often are conservative when evaluating new technologies. Evolving deregulation, coupled with stable fuel prices, now adds a further challenge to greater adoption of relatively unproved renewable technologies.

We applaud the Administration's emphasis on DOE energy efficiency and renewable programs and ask that this Subcommittee work to ensure that renewable energy remains part of the full range of resource options available to our nation's electric utilities. APPA supports a minimum of $399 million for renewable energy technologies in fiscal year 2000. This funding level will go a long way in furthering the call for significant expansion of renewable energy R&D programs in order to meet the energy challenges and opportunities of the 21st century.

RENEWABLE ENERGY PRODUCTION INCENTIVE PROGRAM (REPI)

APPA urges this subcommittee's continued support for REPI, the renewable energy production incentive program authorized by the Energy Policy Act of 1992. Current funding is $4 million, but according to DOE's Golden Fields Laboratory estimates, which are based on incentive payments requested from qualified facilities, $20 million is needed to fully fund all eligible projects. At a funding level of $20 million, REPI will help the nation's locally owned, not-for-profit electric utilities spur renewable energy use and development. This benefits the environment because of the greater use of emissions-free energy sources, and the economy because of the job creation potential that is tied to the deployment of new technologies.

REPI permits DOE to make direct payments to publicly owned electric utilities at the rate of up to 1.5 cents/kWh of electricity generated from solar, wind, certain geothermal and biomass electric projects. Because projects of this nature often require a long lead-time for planning and construction, it is imperative that stable and predictable funding be provided.

REPI was established to ensure equity between investor-owned utilities that utilize renewable energy tax credit and production payments and not for profit electric utilities that are unable to do so. Several electric utility restructuring bills introduced in the 105th Congress, and bills in state legislatures, mandate use of renewable energy sources. REPI payments provide the singular financial incentive for publicly owned utilities to meet these increasing demands. In addition, production payments to utilities are an excellent market-based method to spur greater interest in renewables. They fit well with DOE's emphasis on market-led commercialization. APPA urges this subcommittee's support of REPI at $20 million to fully fund all eligible projects.

STORAGE FOR HIGH-LEVEL NUCLEAR WASTE

We support the Administration's budget request of $409 million for DOE's Office of Civilian Radioactive Waste Management. These funds will enable DOE to continue preparations to accept spent fuel as well as to continue scientific studies at Yucca Mountain leading to a second viability assessment to compliment the completion of the first assessment in late1998.

ADVANCED HYDROPOWER TURBINE PROGRAM

The Advanced Hydropower Turbine Program is a joint industry/government cost-share effort to develop a new, improved hydroelectric turbine superior in its ability to protect fish and aquatic habitat and operate efficiently over a wide range of flow levels. We support funding this program at $7 million in fiscal year 2000.

During the next 15 years, 220 hydroelectric projects will seek new licenses from the Federal Energy Regulatory Commission (FERC). Publicly owned projects constitute 50 percent of the total capacity that will be up for renewal. Many of these projects were originally licensed over 50 years ago. Newly imposed licensing conditions can cost hydro project owners 10 to 15 percent of power generation. A new, improved turbine could help assure any environmental conditions imposed at relicensing in the form of new conditioning, fish passages or reduced flows are not accomplished at the expense of energy production. This is particularly important due to the increasingly competitive electric market in which utilities operate today. Flow levels will affect the economics of each of these projects and many will be unable to compete if the current trend toward flow reductions continues.

The Advanced Hydropower Turbine Program is planned in three phases: (1) design development; (2) model design and testing, and (3) development of the final prototype. It is important that the prototype be in place in order to accommodate the many hydroelectric projects that will be up for relicensing after the year 2000.

FEDERAL POWER MARKETING ADMINISTRATIONS (PMAS)

APPA has consistently supported increased efficiency in PMA operations. However, Congress must recognize that federal power sales revenues cover all PMA operating expenses plus all Corps of Engineers and Bureau of Reclamation operations, maintenance, replacement and rehabilitation expenses for hydropower, and repayment of the federal investment in the construction of the projects plus interest. Power sales also support many nonpower-related expenses associated with these projects. Budget "scoring" rules aside, because the PMAs charge cost-based rates, reducing discretionary appropriations to PMAs actually costs the government nothing. As appropriations are lowered, power rates fall accordingly thus reducing mandatory receipts on the other side of the ledger. APPA urges members of the subcommittee to reassess the Department of Energy's policy change whereby the federal power marketing administrations would no longer purchase power. Customers of three of the federal power marketing administrations would have to make there own power purchase and transmission agreements directly with suppliers. It is essential that the PMAs be able to purchase power because it is used to firm up their hydro capacity, allowing them to meet their contractual agreements.

CORPS OF ENGINEERS AND BUREAU OF RECLAMATION

APPA supports the Administration's fiscal year 2000 Budget Request of $4,293 million for the Corp of Engineers and $857 million for the Bureau of Reclamation.

More than 500 public power systems purchase power generated at U.S. Army Corps of Engineers and Bureau of Reclamation dams and marketed by the four PMAs. APPA asks this subcommittee's support in assuring adequate appropriations are provided to the Corps and Bureau for operation, maintenance, major rehabilitation, upgrading and replacement of the equipment needed at the powerhouses. The Administration has requested reductions in several of these accounts for fiscal year 1999. Unfortunately, budget realities in the past often have required the Corps and Bureau to defer upgrades and maintenance resulting in efficiency losses affecting hydropower production.

Discussions are continuing in various project areas between customers and the operating agencies seeking alternatives to relieve the stress caused by the spiraling effects of deferred maintenance. We will keep this subcommittee apprised of our progress in this regard and look forward to working with you and the authorizing committees in seeking remedies to increase efficiencies and deal with ongoing maintenance problems.

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

APPA supports the Administration's budget request of $180 million in fiscal year 2000 for the Federal Energy Regulatory Commission (FERC), an increase of nearly eight-percent over last year. Adequate funding for the agency is particularly necessary at this time in order to provide the resources needed to continue implementation of electric utility industry restructuring and to address major issues such as open-access and stranded costs.

The FERC is charged with regulating certain interstate aspects of the natural gas, oil pipeline, hydropower, and electric industries. Such regulation includes issuing licenses and certificates for construction of facilities, approving rates, inspecting dams, implementing compliance and enforcement activities, and providing other services to regulated businesses. These businesses will pay fees and charges sufficient to recover the Government's full cost of operations.

CLIMATE CHANGE PROGRAMS

APPA generally supports the fiscal year 2000 Budget Request of $4 million to fund the Climate Change Technology Initiative. The initiative consists of a package of tax incentives and investments in research and development to stimulate increased energy efficiency and to encourage greater use of renewable energy sources. APPA is an aggressive advocate of federal support for energy research and development. While these programs do not directly provide benefits or incentives to public power systems, APPA supports them nevertheless because they will result in substantial improvements to the environment.

U.S. DOE programs under the Climate Change Initiative include a mix of tax credits and federal-spending programs designed to increase efficiency and greater use of renewable energy resources. Important elements of the initiative include support for the deployment of clean technologies for buildings, transportation industry and electricity. The request includes $122 million for DOE research on next-generation coal combustion technologies, including integrated gasification combined cycle and pressurized fluidized bed combustion.

PREPARED STATEMENT OF DWANE MILNES, EXECUTIVE DIRECTOR, SAN JOAQUIN AREA FLOOD CONTROL AGENCY AND CITY MANAGER CITY OF STOCKTON, CALIFORNIA

SUBJECT: SAN JOAQUIN RIVER BASIN, STOCKTON METROPOLITAN AREA (SECTION 211) INCREASE FISCAL YEAR 2000 PRESIDENT'S COE BUDGET FROM $200,000 TO $380,000 AND INCLUDE $10 MILLION OF THE EXPECTED $45 MILLION FEDERAL REIMBURSEMENT

Mr. Chairman and Members of the Subcommittee: My name is Dwane Milnes, Executive Director of the San Joaquin Area Flood Control Agency and the City Manager of the City of Stockton, California, located forty five miles south of Sacramento. Thank you for the opportunity to present testimony for the fiscal year 2000 budget for the U.S. Army Corps of Engineers.

The San Joaquin Area Flood Control Agency (SJAFCA) is a Joint Powers Authority (JPA) of the City of Stockton, California and San Joaquin County. SJAFCA was created to finance, design and construct a $70 million dollar Flood Protection Restoration Project (FPRP). The FPRP provides a 100 year level of flood protection for the City of Stockton and surrounding areas of San Joaquin County. The project was undertaken in response to a Federal Emergency Management Agency (FEMA) restudy of the area which identified a large new floodplain. The FPRP protects a population of approximately 300,000 and removed severe economic impacts to the region associated with floodplain designation by FEMA. Construction of the FPRP was completed in November 1998.

The Corps of Engineers (COE) completed a Reconnaissance study of the project area in 1997 and found a Federal interest. The COE is continuing with a Federal study to establish the amount of Federal reimbursement for the FPRP provided for in Section 211 of the Water Resource Development Act of 1996 (WRDA 96) as one of eight specifically named demonstration projects and a Feasibility Study to identify any additional flood protection improvements. The COE report is scheduled for completion in 1999.

The FPRP was initially financed completely with local funds collected through the formation of an assessment district. The assessment district provided $70 million dollars and was financed through the sale of bonds. Annual interest payments on the outstanding bonds are approximately $2.5 million. Therefore, it is important to receive Federal reimbursement as soon as possible so that these interest costs will cease. It should be noted that SJAFCA has already received reimbursement from the State of California in the amount of $12.6 million as the estimated state share of the FPRP costs.

The fiscal year 2000 President's Budget is currently programmed to fund the current companion COE studies (San Joaquin River Basin, Stockton Metropolitan Area (Section 211) for $200,000. The COE has a capability of performing $380,000 of work on these studies. Therefore, we are requesting an increase of $180,000 so that the COE can fully staff both studies and accomplish them on the current schedule. In anticipation of this report we also request that at least $10 million dollars of the expected $45 million of Federal reimbursement be included in fiscal year 2000 budget.

PREPARED STATEMENT OF THE SACRAMENTO AREA FLOOD CONTROL AGENCY

Dear Mr. Chairman and Members of the Subcommittee: We appreciate the opportunity to provide testimony to this Subcommittee, and extend our sincere appreciation for your past support of this community's efforts to protect the citizens and properties in the capital city of California. In our continuing efforts to protect the Sacramento metropolitan area, the Sacramento Area Flood Control Agency (SAFCA), and its member agencies, support the following Federal appropriations for fiscal year 2000:

[Millions of dollars]

Project	Funding type	President's budget	Recommended funding
American River—Common Elements	Construction	17.0	17.0
American River—Comprehensive Plan	PED	5.0	5.0
American River-North Area Project	Construction (Reimbursement)	4.0	4.0
Sacramento River Bank Protection	Construction	7.0	7.0
South Sacramento Streams Group	Construction	0.5	4.0 Construction [1]
Section 205 Continuing Authorities (Magpie Creek).	Construction	26.9 (Total Program)	Support
Lower Strong & Chicken Ranch Sloughs	Feasibility Study	0.5	0.5
Ueda Parkway Recreational Improvements	Construction		Support City of Sacramento

[1] Construction funds in fiscal year 2000 contingent upon authorization in 1999 WRDA.

Sacramento has the dubious distinction of being the urban area with the worst flood risk in the nation according to the U.S. Army Corps of Engineers. Addressing this problem is our region's most critical infrastructure issue as evidenced by the formation of a joint powers agency, the Sacramento Area Flood Control Agency (SAFCA) to solve the problem and the millions of dollars spent over the past ten years on improvements and countless engineering studies. A major flood on the American River, would cause between $7 and $16 billion in damage and likely result in lives being lost. The floodplain is home to over 400,000 residents, 150,000 homes, 5,000 businesses, the State Capitol, and 1,300 government facilities.

Sacramento's existing level of flood protection has been a moving target over the past year. Quantifying flood risk has been difficult for engineers to explain, frustrating for policy makers who must make decisions and virtually impossible for the general public to understand. However, all interests from engineers to environmentalists; corporations to small businesses; community activists to the local homeowner all agree Sacramento needs more flood protection and we need it now. The five largest floods on the American river this century have all occurred after 1950, including the two largest floods within the last eleven years (1986 and 1997). It is unclear if this signals a shift in our meteorologic climate, but it is clear the flood risk is much greater than was thought 50 years ago when the original flood control system was built. In fact, our existing system of Folsom Dam and the downstream levees, which was designed to protect Sacramento from a 250–300 year flood, now provides less than 100-year flood protection. This means there is a 25 to 30 percent chance over the next 30 years of having the worst flood disaster in this nation's history occur in Sacramento.

Sacramento has not been sitting idly since our near disaster in 1986. Over $80 million in local funds have been spent on flood control improvements, engineering studies, public education and other activities to further our region's flood control objectives. We have been a very pro-active and innovative community. Accomplishments to date include strengthening levees along the Sacramento River; raising and constructing new levees in North Sacramento and Natomas; raising levees protecting the Regional Wastewater Treatment Plant; negotiating an agreement for more flood space at Folsom; restoring bank erosion sites along the Lower American River; and development of a flood management plan including evacuation plans and development guidelines. The flood control improvements to our system played an important role in avoiding the devastating flood damages experienced by our neighbors to the north and south during the past few years. In addition, we have systematically re-evaluated the flood control system protecting this region and identified the projects necessary to significantly reduce our chances of a catastrophic flood. In order to advance these efforts, SAFCA supports fiscal year 2000 Federal appropriations for the following flood control projects in the metropolitan Sacramento area.

AMERICAN RIVER PROJECT

When Folsom Dam was completed along the American River in 1955, Sacramento was thought to have a very high level of flood protection (250 to 300-year) consistent with other urban areas in the nation. However, as described above, the five largest floods of this century on the American River have all occurred in the last 50 years which has led to a reduction in our credited flood protection to less than 100-year. This is significantly less than the authorized project in the 1950's and substantially less than other similarly situated major urban areas around the nation including St. Louis, Kansas City, Dallas, Omaha, Minneapolis, and Pittsburgh.

Following an exhaustive feasibility study by the Corps looking at all the flood control alternatives, Sacramento unsuccessfully sought Congressional authorization of

a comprehensive flood control project on the American River in 1992, 1996, and again in 1998. Sacramento is continuing efforts to gain authorization of a project as part of a 1999 WRDA. As part of the fiscal year 2000 Federal budget, we are seeking $5.0 million to move forward with Preconstruction, Engineering and Design of the one flood control improvement all parties to the debate support which is increasing the outlet capacity of Folsom Dam. The funds requested would also allow the Corps to provide more detailed information about flood control options in the event Congress fails to enact authorizing legislation this year.

Common Elements.—As part of the 1996 WRDA, Congress authorized flood control features which were common to all the long term alternatives being considered for Sacramento. These included 26 miles of levee stabilization along the lower American River, raising and strengthening 12 miles of the east levee of the Sacramento River south from the Natomas Cross Canal, three new telemetered gauges and other early flood warning improvements along the American River. As the recent floods in Northern California have demonstrated, we must continue to rehabilitate our existing system of levees to carry even their intended design flows. The levee modifications authorized under this project complement work done by the Corps in the early 1990's along the Sacramento River and will complete the job of stabilizing the existing levees protecting this community. The first contract was awarded on this project in 1998 to complete a two-mile stretch of the American River north levee. The Corps has an ambitious schedule to push forward with this project in 1999 and will require continuing appropriations in fiscal year 2000 so as not to delay the project. We support the Administration's budget request of $17.0 million in fiscal year 2000 to allow completion of the project on an efficient construction schedule and request this Committee's support.

North Area (Natomas) Levee Improvements.—In 1992, the recommended plan for the American River was construction of a flood detention dam at Auburn and levee improvements around Natomas and lower Dry and Arcade Creeks. Congress did not include this project in the WRDA for that year, but in subsequent legislation did authorize the levee improvements around the Natomas basin and North Sacramento. The authorizing legislation included provisions to reimburse the local agency for constructing levee improvements which were consistent with the Federal project. With over 75,000 residents at risk, subject to life threatening flood depths of 20 feet in some areas, SAFCA decided to initiate construction of the project using local funds with the potential for future Federal reimbursement. By borrowing heavily from other sources and debt financing through a capital assessment district, SAFCA proceeded with construction of the authorized project and has rapidly completed $60 million in flood control improvements. These improvements were instrumental in preventing flooding in recent years. However, the borrowing of funds, coupled with additional future flood control obligations, has severely strained SAFCA's financing capability to the point we are now seeking reimbursement as provided under the authorizing legislation. The Assistant Secretary of the Army has directed the Corps to negotiate and execute a crediting/reimbursement agreement with SAFCA. This agreement, which will be ready for execution later this year, provide's the basis for reimbursement of not less than $21 million agreed to by the Corps, and a future reimbursement as appropriate based on the final cost accounting for the project and further negotiations with the Corps. Congress included $9 million in fiscal year 1998 and $10 million in fiscal year 1999 which the Corps indicates is available to reimburse SAFCA once the agreement is executed. SAFCA supports the President's request of $4.0 million in fiscal year 2000. Two million completes the Federal share for the initial $21 million reimbursement the other $2.0 million is for additional constructed features, which SAFCA believes are consistent with the authorized project, and are the subject of future negotiations with the Corps. These funds can be used to stabilize SAFCA's financing capability so that additional flood control improvements could be planned and constructed.

In addition, SAFCA supports the City of Sacramento's efforts to obtain construction funds for implementation of the recreational improvements along the City's Ueda Parkway which were included as part of the federally authorized project described above. The recreational components are an integral part of creating a parkway which serves both as an open space corridor and a floodway. By maintaining the open space, we can insure channel capacity is maintained in the future.

SACRAMENTO BANK PROTECTION PROJECT (AMERICAN RIVER LEVEES)

SAFCA, the State of California and the Corps have found that bank protection improvements are needed to stop erosion which threatens urban levees along the lower American River. Over the last four years SAFCA has led a collaborative process through which flood control, environmental and neighborhood interests have

reached agreement on how to complete this work in a manner which protects the sensitive environmental and aesthetic values of the American River in addition to improving the reliability of the levee system. As a result, a bank protection program to be implemented over the next several years has been established to address the most critical reaches of the river system. Construction on this project commenced in 1996. The President's proposed budget includes $7.0 million in Construction funds for several American River sites in fiscal year 2000. SAFCA supports this funding which provides for an efficient construction schedule on the lower American River sites.

SOUTH SACRAMENTO STREAMS PROJECT

In 1995, homes in the South Sacramento area were threatened by rain swollen creeks which reached to within a foot, and in some areas less, of overtopping the levees and channels and flooding adjacent residential subdivisions. The recently completed Feasibility Study by the Corps shows much of the urban area of South Sacramento has less than 50-year flood protection from these urban streams. There are over 100,000 people and 41,000 structures in the floodplain of Morrison, Unionhouse, Florin and Elder Creeks which make up the study area. Because of the significant flood risk, SAFCA constructed a portion of the levee improvements using local funds in 1996 under the U.S. Army Corps of Engineers Section 104 crediting provisions. In its Chief's Report, the Corps has recommended an NED project which provides the entire area with a consistent 500-year level of flood protection. We are seeking authorization of this project as part of the 1999 WRDA. We therefore request your committee's support for $4.0 million in new start Construction in fiscal year 2000 contingent upon obtaining Congressional authorization. The Corps has indicated they are on schedule to deliver the first construction contract in early 2000 and would have a capability of spending at least $4.0 million on construction during that fiscal year. If funding is not provided, construction would be unnecessarily delayed for a year. The President's proposed budget includes only $500,000 to complete PED which would appropriate if there was not WRDA until 2000.

MAGPIE CREEK (SECTION 205 CONTINUING AUTHORITIES PROGRAM)

The Magpie Creek Diversion Project, constructed by the Corps in the 1950's as an extension of the Sacramento River Flood Control Project, is inadequate for even the 100-year flood event using new hydrologic data. The resulting floodplain encompasses residential and commercial developments downstream and would close Interstate 80, the major east-west transportation route through Sacramento. These improvements have a benefit to cost ratio of 2.5 to 1 and not only protect existing urban development but are essential to provide capacity for future improvements on McClellen Air Force Base to allow for orderly redevelopment activities as part of the base conversion process. Congress earmarked funds in last year's Energy and Water Appropriations bill to initiate work on this project, but construction has been delayed. SAFCA supports the Administration's proposed fiscal year 2000 budget for the Section 205 Program and requests the Corps be directed to initiate construction of the Magpie Creek Diversion Project within these available funds.

LOWER STRONG AND CHICKEN RANCH SLOUGHS

SAFCA, in cooperation with Sacramento County, support the President's proposed budget of $500,000 in fiscal year 2000 for a Feasibility Study of the Lower Strong and Chicken Ranch Sloughs. Floodwaters from these urban streams are collected at the base of the American River levees and pumped into the river. In 1986 and again in 1997, the limited channel and pumping capacity led to significant flood damages to a number of residential and commercial structures. Most of the flooding occurs when the American River is at a high stage due to releases from Folsom Dam. The original pump station was built by the Corps as part of the American River and Folsom project in the 1950's but has proven inadequate with the revised hydrologies. The Corps is currently conducting a Reconnaissance level study as directed by your Committee last year. They anticipate finding a Federal interest in pursuing a Feasibility level study to identify potential solutions and to determine if the originally authorized Federal project is deficient.

CALIFORNIA NAVIGATION AND RELATED PROJECTS

PREPARED STATEMENT OF THEODORE STEIN, JR., COMMISSION PRESIDENT, PORT OF LOS ANGELES BOARD OF HARBOR COMMISSIONERS

Mr. Chairman and Members of the Subcommittee: I am Ted Stein, President of the City of Los Angeles Board of Harbor Commissioners which oversees the activities of the Port of Los Angeles. My testimony, for the City of Los Angeles and its Board of Harbor Commissioners, speaks in support of continuation of the Federal role in the implementation of the major navigation improvements underway at the San Pedro Bay, California. Specifically, I am speaking of the Pier 400 Dredging and Landfill Navigation Project and its funding in fiscal year 2000. I am also presenting testimony on our project to deepen the Main Channel which is presently under study. At the outset, let me say that we sincerely appreciate the support of the Committee, over the past three years, in providing funds that have kept construction of the Pier 400 Project—a vital and urgently needed project at the Port of Los Angeles—on schedule.

PIER 400 IMPLEMENTATION UNDER THE 2020 DEVELOPMENT PLAN

The San Pedro Bay ports of Los Angeles and Long Beach, and the U.S. Army Corps of Engineers, acknowledged years ago, that a dramatic increase in Pacific Rim trade volumes would likely take place over the next several decades. To meet the anticipated burgeoning international trade needs of the region and the Nation, the Port of Los Angeles engaged in a long-term, cooperative planning effort with the Corps of Engineers known as the 2020 Development Plan. The 2020 Plan accurately predicted the phenomenal growth of trade through the San Pedro Bay ports, and is a blueprint for the ports' infrastructure development that will accommodate the projected growth well into the 21st century. While the Port of Long Beach has since withdrawn from this collaboration, the Port of Los Angeles has moved forward with its implementation of the 2020 Plan.

Divided into phases, Stage 2 of the 2020 Plan is a Federal deep-draft navigation project—known as the Pier 400 Dredging and Landfill Navigation Project—which is currently under construction. The Commissioners, management and staff at the Port of Los Angeles have been working with the Corps of Engineers since 1985 toward the implementation of the 2020 Plan which was authorized in the Water Resources Development Act of 1986 (WRDA) (Public Law99–662), and further sanctioned in WRDA 1988 (Public Law100–371) and WRDA 1990 (Public Law101–640).

The contracts for Stage 1 construction were completed by the Port in 1997 and we received a credit of $63.8 million toward our share of Stage 2 construction. Stage 1 included the dredging of new Federal deep-draft navigation channels that abut existing land at Pier 300 and the reclamation of 265 acres of new land at Pier 400. Stage 2 includes the dredging of new and deeper channels to Pier 300 and Pier 400, and the creation of an additional 315 acres of new land at Pier 400 upon which new state-of-the-art marine terminals will be built.

STAGE 2 CONSTRUCTION

I am pleased to inform the Subcommittee that, based on funds increased by this panel and Congress in fiscal year 1999, Stage 2 construction is on schedule with completion expected in January 2000. The President's Budget for fiscal year 2000 includes $9.7 million to complete Stage 2 construction. We support this amount.

MAIN CHANNEL DEEPENING PROJECT

The Port of Los Angeles also requests that your Subcommittee include $750,000 for the Federal share of the Preconstruction, Engineering and Design (PE&D) phase of the project to deepen the Main Channel. Although part of the Pier 400 Project includes deepening of some of the channels for safer and more efficient container ship navigation, the Main Channel's current depth is inadequate to accommodate the new state-of-the-art container vessels that carry more than 6,000 TEU's. These vessels are longer and wider than most of the current vessels, and most significantly, now draft up to 46 feet in depth. Presently, five of the major container shippers in the San Pedro Bay have vessels that draft 46 feet. Another 50 of this new generation of vessels is either under construction or on order, and they will meet the competitive requirements for shipping efficiencies in the 21st century.

To accommodate the industry's shift to larger container vessels, the Port must deepen existing deep-draft navigation channels by at least an additional five feet, from the present depth of 45 feet Mean Lower Low Water (MLLW) to a minimum of 50 feet, to allow for safe shipping operation. This depth will accommodate the

new generation vessels at 46-foot drafts plus an allowance for tides and under-keel clearance. The Main Channel project includes dredging approximately 4.5 million cubic yards of sediment not only from the Main Channel, but also from the Turning Basin, the West and East Basins, and the East Basin Channel. The estimated cost for the project is approximately $40 million.

Typically, the Corps of Engineers, in initiating a Federal project, would perform preliminary studies. Based on favorable findings in these studies, the Port would then seek a Congressional appropriation to fund the feasibility study and other related studies. These steps can take more than two years to complete before the feasibility study is begun. To expedite this process, Section 203 of WRDA 1986 allows the local project sponsor to pay the full cost of the feasibility study. If the study shows a Federal interest, Section 203 further allows Federal reimbursement to the local sponsor in an amount equal to 50 percent of the costs. The Port of Los Angeles has undertaken a Section 203 Study of the Main Channel's dredging needs and has signed a Memorandum of Agreement (MOA) with the Los Angeles District Corps of Engineers. The MOA provides the framework under which the study will be completed and details the responsibilities of both the Port and the Corps of Engineers. The MOA also provides that support agreements are prepared for the Port to have the Corps of Engineers complete and pay for the work required for the studies.

The Port anticipates that the Section 203 Report will be completed in less than a year. Ultimately, the Secretary of the Army will transmit to Congress his recommendations in time for authorization in the WRDA 2000 legislation. Consistent with the Corps of Engineers' seamless funding, once the Section 203 Report is sent to Washington for review by the Secretary, the PE&D phase can be undertaken by the Corps of Engineers early in fiscal year 2000.

ONGOING MAINTENANCE OF EXISTING FEDERAL CHANNELS AND THE HARBOR BREAKWATER

Related to the efficient operation of the completed Pier 400 Project is the required ongoing maintenance of the existing Federal navigation channels at the Port of Los Angeles. The Port requests your Subcommittee to support an appropriation of $350,000 for ongoing maintenance of the existing navigation channels and the harbor breakwater. Specifically, $150,000 is needed for the Corps to perform engineering design for the maintenance dredging of the West Basin; $100,000 would enable the Corps of Engineers to continue their condition survey of the Federal channels; and, an additional $100,000 would fund the continued rehabilitation of the harbor breakwater. This work is critical. Ongoing maintenance of the navigation channels will ensure that they remain at depths in which fully loaded container ships can safely navigate and guarantee the stability of the breakwater during severe storms.

I might add, Mr. Chairman, that the Port of Los Angeles has been a "donor port," under the Harbor Maintenance Tax (HMT) program, contributing approximately $70 million per year in HMT revenues since the inception of the fee in 1986. In contrast, the Port has been allocated only about $700,000 in Operation and Maintenance dollars because our maintenance dredging needs have been minimal. Consequently, we urge your support for the full appropriation of $350,000 to pay for the ongoing maintenance dredging of the Federal navigation channels at the Port, and the other ongoing channel and breakwater maintenance needs.

CONTINUED FUNDING OF THE LOS ANGELES HARBOR MODEL

The Port of Los Angeles further requests your Subcommittee to provide an appropriation of $165,000 for ongoing maintenance of the Port's harbor model at the Corps of Engineers' Waterways Experiment Station (WES) at Vicksburg, Mississippi. In addition, $355,000 is required for continued wave data collection. This information is necessary to validate the numerical and physical models used for ongoing project designs. During the state-of-the-art design phase for the Pier 400 Project land reclamation, eight separate, but related, models, were used and maintained by the scientists and engineers at WES and were, likewise, used by the engineers at the Port of Los Angeles and the Corps' Los Angeles District personnel.

Maintenance of the hydraulic and physical models at WES, and their prototype data acquisition facilities, remains an essential resource for the Corps' Los Angeles District and for the Port of Los Angeles.

ECONOMIC IMPACT OF THE PIER 400 PROJECT

The Port of Los Angeles has testified in previous years on the economic impact its operations have on the Nation's economy; it cannot be over emphasized. Cargo throughput for the San Pedro Bay continues to grow and is estimated to more than triple in the next two decades. Actual growth in cargo handling, from 1990 through

1998, has already exceeded the forecast growth for that period. The trend is only upward. The ability of the Port to meet the continued demand of this phenomenal growth is dependent upon sufficiently deep water channels (such as those being constructed under the Pier 400 Project and planned for the Main Channel) that can accommodate the largest state-of-the-art deep-draft cargo vessels that are now on line in the world fleet of container ships. These new vessels provide greater efficiencies in cargo transportation, thereby offering consumers lower prices on imported goods, as well as more competitive exports from the United States to foreign markets.

The Pier 400 Project is clearly a project of national significance, providing such economic benefits to the United States as: more than one million permanent well-paying jobs across the country; more than one billion dollars in wages and salaries; and, sales and income tax revenues, including increased U.S. Customs Service revenues. The return on the Federal investment is real and quantifiable, and is expected to surpass the cost-benefit ratio as determined by the Corps of Engineers' project feasibility study. The Federal investment in the Pier 400 Project has, and we hope will continue, to ensure that the Nation's busiest container port remains competitive well into the 21st century.

IN SUMMARY

Mr. Chairman, the Port of Los Angeles respectfully urges your Subcommittee to include in the Corps of Engineers' fiscal year 2000 appropriation, the following funds to support the Corps of Engineers' work on behalf of the Port of Los Angeles:

—$9.7 million for the Pier 400 Dredging and Landfill Navigation Project;
—$750,000 to fund the Preconstruction, Engineering and Design phase of the Main Channel Deepening Project;
—$350,000 for ongoing maintenance dredging, breakwater rehabilitation and condition survey;
—$165,000 for ongoing maintenance of the Los Angeles Harbor Models at WES; and,
—$355,000 for continued collection of wave data on the San Pedro Bay and Port of Los Angeles channels.

The Port of Los Angeles has long valued your Subcommittee's demonstrated support for and understanding of the importance of the port industry to the economic vitality of the United States, and, in particular, of the Port's role in contributing to this country's economic vigor. This understanding has been evidenced by the appropriation of scarce Federal dollars for harbor and navigation projects such as our Pier 400 Project.

Thank you, Mr. Chairman, for the opportunity to submit this testimony in support of continued funding for the Federal navigation activities at the Port of Los Angeles.

PREPARED STATEMENT OF DON KNABE, CHAIRMAN OF THE BOARD, SUPERVISOR, FOURTH DISTRICT, COUNTY OF LOS ANGELES

Los Angeles County respectfully requests that the Congress of the United States include funds in the fiscal year 2000 Energy and Water appropriations bill for the following projects, which are urgently required to preserve public safety in Marina del Rey and to begin the process of planned shoreline protection in Los Angeles County.

Marina del Rey Entrance Channel Dredging ($6,500,000)

The U. S. Army Corps of Engineers is responsible for maintenance dredging of the Marina del Rey's entrances and main channel, pursuant to a perpetual right of way and easement agreement with the County. The last design-depth dredging of Marina del Rey occurred in 1969. Since then, contaminants in some of the Marina's sediments have prevented thorough dredging. While small, clean-sediment dredging projects were conducted in 1987, 1994, 1996, and 1998, the south entrance to the Marina is nearly closed. This situation jeopardizes the safety of thousands of boaters who use our harbor, and it precludes prompt response by the Coast Guard and others to air-sea disasters off of LAX and other ocean emergencies.

This year, the Port of Long Beach is constructing a new terminal by filling in a large slip. This project provides a unique opportunity, which will not be duplicated in the foreseeable future, to remove and safely dispose of 300,000 cubic meters of contaminated sediment from Marina del Rey. The Port's project schedule calls for acceptance of the Marina's sediments between October 1 and December 31, 1999, requiring funding in fiscal year 2000. If implemented as planned, this project will result in eliminating the need to dredge in Marina del Rey for many years. It will

also remove contaminants from the Santa Monica Bay, provide clean material for beach replenishment, and greatly improve boating safety.

It is critical that we take full advantage of this extraordinary opportunity to dispose of contaminated sediments in an environmentally safe and economical manner. The President's fiscal year 2000 budget does not include any funds to perform maintenance dredging at Marina del Rey. We are, therefore, requesting your support for an appropriation of $6.5 million to remove the 300,000 cubic meters of contaminated sediment, and as much clean sediment as is possible for beach replenishment. Without a thorough dredging in 1999, the Marina's entrances will continue to close, which could threaten the ability of the U. S. Coast Guard, the County Sheriff's Harbor Patrol, the County Lifeguards and the City and County Fire Departments to respond to emergencies. As these agencies are the critical core of the LAX Air-Sea Disaster Response Team, it is imperative that the Marina's entrances remain open and safely navigable.

Marina del Rey and Ballona Creek Feasibility Study ($100,000)

Some of the sediments creating navigational hazards in Marina del Rey's entrances contain contaminants that make dredging and disposal difficult and costly. The U. S. Army Corps of Engineers completed a reconnaissance study in 1996, which established that there is a Federal interest in solving this problem.

The study is focused on economical and environmentally safe disposal options for the contaminated sediments, as well as on actions that can be taken in the Ballona Creek watershed that will eliminate or reduce the flow of contaminated sediments into Marina del Rey's entrance. Dedicated staff from the County, the Corps, the City of Los Angeles, the Santa Monica Bay Restoration Project, Heal the Bay, and other environmental and regulatory agencies have worked to limit the scope, time, and cost of this study. Based on the approved plan, the study was expected to require three years to complete, at a total cost of $2.7 million. The study has been ongoing for two years and is progressing on schedule toward completion next year. As the Los Angeles County Board of Supervisors has agreed to pay 50 percent of the study's costs, we are pleased that there are funds in the President's fiscal year 2000 budget for completion of this study. We, therefore, ask your support of the President's budget request of $100,000, for the Federal share of the cost in fiscal year 2000.

Regional Dredged Material Management Plan Feasibility Study ($400,000)

It is estimated that approximately 2.5 million cubic yards of contaminated marine sediments will need to be dredged from the harbor waters of Los Angels County over the next five years. Unfortunately, permanent sites for the disposal of these sediments are not available. As a result, routine maintenance dredging and port expansion activities have been critically hampered, impeding both navigation safety and the livelihood of the area's economy. In addition, the continuous buildup of contaminated sediments within the Los Angeles Region's coastal waterways raises concerns with respect to potential impacts to public health and the health of the marine environment.

A multi-agency Contaminated Sediments Task Force has been formed to address these concerns and to try to solve the problems associated with the dredging and disposal of contaminated sediments. This Task Force is comprised of representatives from Federal and State regulatory and resource agencies, ports and harbors, local agencies, research institutions, and local environmental groups.

Recognizing the fact that contaminated sediments are a serious problem for the Los Angeles Region, the State of California has committed $1 million over a five-year period to fund the administrative cost (staff time and coordination efforts) of the Task Force. Its objective is to develop a management strategy to control and dispose contaminated dredged material. However, the Task Force quickly discovered that these funds are not sufficient to acquire the necessary data, investigate disposal site alternatives, and initiate pilot projects to analyze promising new technologies. These efforts need to be accomplished to support development of regional management strategy for contaminated sediments.

This letter is, therefore, to request your support for $400,000 in Federal funds in fiscal year 2000 to prepare a Feasibility Project Study Plan (PSP), negotiate and sign a Feasibility Cost Sharing Agreement (FCSA) between the Federal government and non-federal interests, and to initiate the feasibility study following the execution of the FCSA. The feasibility study will develop a regional dredged material management plan for the ports, harbors, and marinas within the coastal waters of Los Angeles County. The study plan will include: (1) gathering data; (2) investigating sediment threshold levels for the disposal of contaminated dredged sediments; (3) analyzing potential regional disposal site alternatives having economic

and environmental viability; and (4) preparing a framework to analyze innovative dredged material treatment technologies through a series of pilot projects.

It is understood that, as non-federal stakeholders, the Task Force members will need to cost share the regional dredged material management plan feasibility study with the Federal government, and we are committed to work with the other members to secure funding for this very important study.

Coast of California Study—Los Angeles County ($400,000)

Los Angeles County is famous for its beautiful, sandy beaches that attract over 50 million visitors each year. What is little known is that these beaches are not naturally sandy. Since the 1930's, over 35 million cubic yards of sand have been removed from various public works projects and used to widen the beaches. Unfortunately, there has been no planned approach to protecting and maintaining these beaches, which are important parts of our infrastructure and a major economic engine for the region. In fact, our beaches protect critical highways, utilities, public beach facilities, as well as homes and businesses. Based on data from a university study, the Economic Development Corporation of Los Angeles has estimated that the annual economic value of Los Angeles County's beaches is $20.7 billion.

The El Nino storms of 1998 caused severe erosion of some of our beaches, resulting in the creation of a Los Angeles County Beach Replenishment Task Force, which is intended to develop a long-term management plan for our beaches, as well as to seek out funding sources for beach restoration projects. The Task Force has determined that the County's beaches have not been regularly surveyed since the early 1970's, or studied at all since the early 1990's. Effective beach managmenet requires a thorough baseline study and annual surveys for monitoring erosion and acretion.

The Coast of California Study, as authorized by the Water Resources Development Act, is an ideal starting point for development of a long-term beach management plan. Based on studies already completed for San Diego and Orange Counties, your support for an fiscal year 2000 appropriation of $400,000 for a Los Angeles County—Coast of California Study is requested.

PREPARED STATEMENT OF RICHARD W. PARSONS, DREDGING PROGRAM MANAGER, VENTURA PORT DISTRICT

The Ventura Port District respectfully requests that the Congress:

1. Include $3,500,000 in the fiscal year 2000 Energy and Water Development Appropriations Bill for the U.S. Army Corps of Engineers maintenance dredging of the Ventura Harbor federal channel and sand traps and repair of a groin.
2. Include $300,000 in the fiscal year 2000 Energy and Water Development Appropriations Bill to continue a cost shared Feasibility Study to determine the advisability of modifying the existing Federal navigation project at Ventura Harbor to include a sand bypass system.

BACKGROUND

Ventura Harbor, homeport to 1,500 vessels, is located along the Southern California coastline in the City of San Buenaventura, approximately 60 miles northwest of the City of Los Angeles. The harbor opened in 1963. Annual dredging of the harbor entrance area is usually necessary in order to assure a navigationally adequate channel. In 1968, the 90th Congress made the harbor a Federal project and committed the U. S. Army Corps of Engineers to provide for the maintenance of the entrance structures and the dredging of the entrance channel and sand traps.

The harbor presently generates more than $40 million in gross receipts annually. That, of course, translates into thousands of both direct and indirect jobs. A significant portion of those jobs are associated with the commercial fishing industry (over 30 million pounds of fish products were landed in 1996), and with vessels serving the offshore oil industry. Additionally, the headquarters for the Channel Islands National Park is located within the harbor, and the commercial vessels transporting the nearly 100,000 visitors per year to and from the Park islands offshore, operate out of the harbor. All of the operations of the harbor, particularly those related to commercial fishing, the support boats for the oil industry, and the visitor transport vessels for the Channel Islands National Park are highly dependent upon a navigationally adequate entrance to the harbor.

OPERATIONS & MAINTENANCE NEEDS

Dredging

The Corps of Engineers has determined that $2,875,000 will be required to perform routine maintenance dredging of the harbor's entrance channel and sand traps during fiscal year 1999. This dredging work is absolutely essential to the continued operation of the harbor.

Groin Repairs

It is estimated that $625,000 will be required during fiscal year 2000 for the Corps of Engineers to repair extensive El Nino related storm damage to the South Beach Groin. This structure is an important component of the harbor's entrance system and its repair must be accomplished expeditiously in order to assure the maintenance of a navigationally adequate entrance channel. Additionally, it should be noted that the failure to repair this structure will result in increased maintenance dredging costs in subsequent years.

STUDY NEEDS

The Corps of Engineers has asked that $100,000 be provided in fiscal year 2000 to continue a cost shared Feasibility Study to determine the advisability of modifying the existing Federal navigation project at Ventura Harbor to include a sand bypass system. Given the continuing need for maintenance dredging, it is respectfully requested that the funding be increased to $300,000 in order to expedite this effort to determine if a sand bypass system or other measures can accomplish the maintenance of the harbor in a manner that is more efficient and cost effective than the current contract dredging approach.

PREPARED STATEMENT OF ALEXANDER KRYGSMAN, DIRECTOR, PORT OF STOCKTON

Mr. Chairman: I am Alexander Krygsman, Port Director of the Port of Stockton in Stockton, California.

The San Francisco Bay to Stockton Ship Channels Project is an authorized project.

The Port of Stockton is primarily a bulk port that serves industry and agriculture in the San Joaquin Valley in California, and the bulk imports and exports of the Western States.

The Port of Stockton recognized as far back as 1952 that deeper channels would be needed for the movements of bulk cargoes and requested the Corps of Engineers to deepen the channel in 1952. Coal, grain, fertilizers and many other bulk materials require deeper channels to serve the larger bulk carriers.

The Nation needs ports that can handle larger, more economical and more fuel-efficient vessels close to the production areas, both agricultural and industrial.

The Port of Stockton is such a port.

The dredging of the Stockton Channel portion of the project to thirty-five (35) feet was completed in 1987. A copy of the Port of Stockton's most recent annual report is attached. Cargo volume has increased since the dredging of the Stockton Channel was completed; and the project is certainly paying off.

Therefore, we requested the Corps of Engineers for a new navigation study (reconnaissance study) to deepen the Channel further, to forty (40) feet or more, if economically feasible. The funding for this study was appropriated in fiscal year 1998. The reconnaissance study determined that there is a Federal interest in further deepening the Channel.

For the 2000 fiscal year, we are requesting three-hundred-thousand dollars ($300,000) for the feasibility study. Because this study has to be coordinated for proper timing with the U.S. Navy's project to deepen the Channels to the Concord Weapons Station, this study needs to be done now. The feasibility study is fifty percent (50 percent) cost-shared.

The President's proposed 2000 budget only contains one-hundred-fifty-thousand dollars ($150,000) for the feasibility study, but the feasibility study and the eventual construction, needs to be closely tied to the deepening of the Channel through San Pablo Bay, and this project needs to be timed appropriately with that construction. Deferring one-hundred-fifty-thousand dollars ($150,000) now could cost millions in extra cost later.

The President's proposed 2000 budget includes one-million-six-hundred-sixty-two-thousand dollars ($1,662,000) for maintenance. This is insufficient. Every time insufficient funds are provided for complete maintenance, and the maintenance dredging, therefore, cannot be completed at one time, an additional mobilization and de-

mobilization cost of between five-hundred-thousand dollars ($500,000) and one-million dollars ($1,000,000) is incurred when it is completed. Three-million dollars ($3,000,000) is required for an average, complete maintenance dredging job. Appropriating less than three-million dollars ($3,000,000) results in extra mobilization and de-mobilization cost between five-hundred-thousand dollars ($500,000) and one-million dollars ($1,000,000) United States Senate Energy and Water Development Appropriations Sub-Committee of the Senate Appropriations Committee Page three each time each additional maintenance job, which increases the cost by thirty percent (30 percent) to sixty percent (60 percent), not counting staff time, testing cost, permitting cost, et cetera. It could very well double the actual cost.

We urge you to appropriate three-hundred-thousand dollars ($300,000) for the Stockton Deep Water Channel Feasibility Study. We also strongly urge that three-million dollars ($3,000,000) be appropriated to maintain the Channels so that the present benefits also may continue to accrue, and to avoid the additional cost incurred when insufficient funds are provided to complete the required maintenance at one time.

PREPARED STATEMENT OF MAYOR RODGER ANDERSON, CITY OF MORRO BAY

During World War II the Army Corps of Engineers (ACOE) designed and constructed a new harbor entrance at Morro Bay with two rock breakwaters. Since the initial construction, over 50 years ago, the Federal government has maintained the harbor entrance, breakwaters and navigational channels.

In fiscal year 1995 the ACOE completed the Morro Bay Harbor entrance improvement project to improve safety for commercial fishing and navigation. The City of Morro Bay was the local sponsor and contributed over $900,000 in cash and in-kind services. Morro Bay is a small city of 10,000 with very limited resources but made this project one of its highest priorities for almost 10 years because of the regional importance of the harbor. Without continued Federal maintenance, all of the past local and federal investment will be lost.

Morro Bay Harbor is the only all-weather harbor of refuge between Santa Barbara and Monterey on the West Coast. Our Harbor directly supports almost 250 home-ported fishing vessels and marine dependent businesses. We provide irreplaceable maritime facilities for both recreational and commercial interests. Businesses that depend on the harbor generate $53,500,000 annually and employ over 700 people. The United States Coast Guard (USCG) maintains a 15 person search and rescue station at Morro Bay Harbor to provide the Coast Guard services for the entire Central California Coast.

Exposure to the open ocean and strong winter currents carrying sediment into the harbor create the need for a routine maintenance schedule to insure that the harbor entrance and federally designated navigation channels remain safe and navigable. It is imperative that the federally constructed navigation channels and protective jetties be maintained to insure safe commerce and navigation on a 300 mile stretch of the California Coast.

This year, the President's budget recommend $2.5 million to maintain our harbor in the fiscal year 2000 budget. We are requesting your distinguished Subcommittee approve the funding as recommended in the President's budget. This funding will be utilized for maintenance of the federally designated navigation channels. It is estimated that an additional $5.2 million in fiscal year 2001 will be required to complete this crucial maintenance project, including maintenance of the entrance area and the south jetty.

In addition to being home port to over 250 commercial fishing vessels, Morro Bay Harbor is part of the federally designated National Estuary Program. The Morro Bay Estuary was the subject of an ACOE reconnaissance study (funded by Congress in 1998) of potential projects to and restore sensitive habitat through improving tidal circulation. The Bay Foundation, a local non-profit conservation group, has put together a coalition to act as local sponsor for the Feasibility Phase of the Ecosystem Rehabilitation Project. We also request you approve the President's recommendation for $100,000 to initiate a feasibility study for this project in fiscal year 2000.

Our thanks again for your actions and continued support. I am grateful for the opportunity to present these requests to your Subcommittee on behalf of the citizens of the City of Morro Bay.

PREPARED STATEMENT OF PETER GREEN, MAYOR, CITY OF HUNTINGTON BEACH, CALIFORNIA

Mr. Chairman and Members of the Subcommittee: My name is Peter Green, and I am the Mayor of Huntington Beach, California. Thank you for the opportunity to present testimony regarding the fiscal year 2000 budget for the U.S. Army Corps of Engineers.

The City of Huntington Beach requests $300,000 for a feasibility study for the continuing Huntington Beach Coastal Bluff Restoration Project at Blufftop Park. Although the Corps completed an initial reconnaissance study in March of 1995, finding that the erosion of the cliffs has been and will be gradual and attributable to normal wind and wave erosion, in fiscal year 1999, Congress appropriated $100,000 to amend the Corps initial reconnaissance study to include storm damage as an accelerator to the normal bluff erosion. Several major Pacific storms in the past ten years have caused major damage to these cliffs, and it is anticipated that the amended reconnaissance Study will find Federal interest in restoration of our coastal bluffs.

In February of 1995, while the Corps was performing its measurements for the initial Reconnaissance study, a major Pacific storm struck. Damage from this storm resulted in a state and Federal disaster being declared. The Corps took cliff face measurements before and after the storm event. This one storm event, it was discovered, had created eight new embayments, causing the cliff face to retreat between 6 and 15 feet, over only a two-day period. With only a few more storms such as this one, not only would Blufftop Park be gone, but Pacific Coast Highway would also be threatened.

The initial study defined an 8,000 feet stretch of coastal bluffs extending from the southern boundary of Bolsa Chica State Beach to 17th Street. The "Central Reach" runs northward from the vicinity of Goldenwest Street for approximately 4,600 feet. This portion of cliff-face rises 30 to 40 feet above the Pacific Ocean. These cliffs consist of poorly consolidated alluvium and marine terrace deposits. They are subject to erosion from wave action, wind and storm damage. The slope of the cliff-face is relatively steep. In the central and southeastern portions of this reach, the beach berm is absent and wave run-up routinely reaches the cliff base at high tide. Most of the cliff base and portions of the cliff face have been protected by a non-engineered revetment consisting of concrete rubble and quarrystone. Erosion embayments exist in the cliff base and cliff face where revetment coverage is sparse or absent.

This "Central Reach" contains the highest concentration of park facilities along the cliff top, including safety railing, security lights, pedestrian walkway, bicycle path, irrigated landscaping, picnic tables, benches, bicycle racks, drinking fountains, metered parking lots and a paved ramp leading from the cliff top to the beach at each end of the reach. Records indicate that the pedestrian walkway and the bicycle path are used by over 700,000 people annually. A closure would cause an estimated annual recreational loss of $238,200. Seaward of the northern parking lot, the bluffs are approaching failure in four large embayments (total length of about 700 feet). The City has closed the most seaward of the two trails. Four measures were considered for reducing or eliminating loss under the assumption that the cliff will retreat 8 feet in the next 25 years and 25 feet in the next 50 years. The four measures include simply relocating park facilities and three alternative methods of constructing engineered revetment. Three of the four measured display a positive benefit to cost ratio.

PREPARED STATEMENT OF DICK LYON, MAYOR, CITY OF OCEANSIDE

OCEANSIDE HARBOR MAINTENANCE AND OPERATION DREDGING PROGRAM

The City of Oceanside and the Oceanside Harbor District request your support of $1,170,000 in the fiscal year 2000 budget for the Oceanside Harbor Maintenance Dredging Program.

In 1960, Congress authorized full federal funding for maintenance of the Oceanside Harbor entrance (House Document 456, 86th Congress, 2nd Session, Public law 85–500.) in recognition of the fact that the Harbor entrance was constructed as an emergency wartime measure in 1942. To this day, the Oceanside Harbor entrance continues to serve the vital military installation of Camp Pendleton Harbor. In 1992, the Harbor District partnered with the federal government in a local cost share agreement to modify the harbor entrance and the authorized channel depth to reduce storm damage, provide surge protection to the harbor's infrastructure and provide significant reduction of navigational hazards that have produced 11 deaths,

49 serious injuries, 134 boating accidents and $1,500,000 of damage to vessels in the harbor entrance.

Oceanside Harbor would experience severe negative impacts should the dredging project not be funded. Such action would prevent access to the Pacific Ocean to the United States Navy and Marine Corps as joint users of the entrance channel, as well as the U.S. Coast Guard Cutter Point Hobart, which is also based in Oceanside. The economic impact upon the local fishing fleet, the commercial sportfishing fleet and the 1,000 recreational vessels berthed here, as well as the businesses supported by the harbor, would be critically impacted.

The maintenance program is essential for the safe navigation into Oceanside Harbor and the U.S. Marine Corps Base Camp Pendleton Harbor. The program also provides beach sand restoration, shoreline protection, recreational and commerce benefits.

Thank you for the opportunity to provide this testimony and for your consideration of the request.

SAN DIEGO COUNTY REGIONAL SHORELINE STUDY

The City of Oceanside is seeking $1,500,000 as an addition to the fiscal year 2000 budget for a San Diego County Regional Shoreline Study. The funds for this project are not included in the Administration budget.

Oceanside has a 57-year history of beach erosion resulting from the Camp Pendleton Harbor construction that began in 1942. The federal government acknowledged its responsibility for Oceanside's beach erosion in 1953. A letter report to the U.S. Navy from the Army Corps of Engineers noted that the construction of the Camp Pendleton jetties had compartmentalized the littoral cell and resulted in the loss of 1.5 million cubic yards of sand in Oceanside during 1950–1952. An additional U.S. Army Corps of Engineers report to Congress in 1956 concluded that only restoration of the protective beach at Oceanside would protect the upland area and restore and maintain a satisfactory recreational beach. In 1958, the Navy extended the north harbor jetty to reduce the entrance channel maintenance problems. This action further aggravated the erosion of the beaches.

In 1967, congress authorized a review study of beach erosion at Oceanside resulting in the Office of the Chief of Engineers confirming 100 percent federal responsibility.

Despite numerous and significant efforts in placing sand on the beach, periodic nourishment of the beach from maintenance dredging of the harbor entrance and sand bypassing project, no permanent solution to the massive erosion problem has yet to be achieved.

The 1994 U.S. Army Corps of Engineers Reconnaissance Report on the Oceanside Shoreline concluded that there is a federal interest in maintaining the Oceanside beach and suggested several planned alternatives, including a beach fill, a groin system with beach fill, and a submerged breakwater system. However, federal cost-sharing law provides that non-federal interests (the City) pay 35 percent of the project construction costs and annual maintenance. The federal rules also require a 50 percent cost-sharing for the feasibility phase of the project study. The City of Oceanside has been advised that Congress can only provide special 100 percent funding for a beach restoration project if there is a study that would quantitatively justify a larger federal cost-share based on the project being required to "mitigate" a federal action (i.e. the federal construction of the Camp Pendleton Harbor). If the study documents that the erosion is 100 percent the result of the federal construction of the harbor, full federal funding would be justified on a future project. The City of Oceanside is seeking $1.5 million to conduct the study to justify special federal cost-sharing.

The language for the study is as follows:

SAN DIEGO COUNTY REGIONAL SHORELINE STUDY. In recognition of the findings of past studies by the U.S. Army Corps of Engineers as published in House Document 456, 86th Congress, 2nd session and other related reports which conclude that the erosion of Oceanside Beach and other downcoast beaches has been caused by the construction of Camp Pendleton Harbor as a wartime measure, without provision for bypassing material to the downcoast beaches; and in equity restoration and maintenance of downcoast beach conditions that would be existing today if adequate bypassing was provided as part of harbor construction should be a Federal responsibility; therefore the Secretary, acting through the U.S. Army Corps of Engineers is directed to conduct a study to determine the extent of the erosion impact caused by Camp Pendleton Harbor, and to develop plans to mitigate these impacts. The cost of the study should be 100 percent Federal cost and not exceed $1.5 million.

Thank you for the opportunity to provide this testimony and for your consideration of the request.

PREPARED STATEMENT OF BRIAN E. FOSS, PORT DIRECTOR, SANTA CRUZ PORT DISTRICT COMMISSION

Santa Cruz Harbor is an active small craft harbor at the north section of Monterey Bay, California. It was authorized as a federal navigation project in 1958, constructed in 1964, and expanded in 1972. A 1986 joint-venture between the U.S. Army Corps of Engineers and the Santa Cruz Port District provided for a permanent sand bypass system to solve the ocean-driven shoaling problem at its entrance. The Port District has successfully operated that system for the past thirteen winters. However, the Port District has been unable to solve the siltation problem emanating from the three-square mile watershed which terminates at the north end of Santa Cruz Harbor.

Silt from Arana Gulch fills berths, fairways, and channels in the harbor, making them hazardous and unusable. At this time, the siltation is not solvable by the existing sand bypass system. The soil characteristics of the watershed make beach disposal impractical at this time. Arana Gulch sediment must either be taken upland or delivered by barge offshore—both of these disposal options are quite wasteful. They are also extremely expensive and cost the Port District hundreds of thousands of dollars each year. Additionally, the 1998 El Nino storms brought 15,000 cubic yards of material into the north harbor alone from Arana Gulch. The event was declared a federal disaster, and FEMA and the State of California are spending in excess of $400,000 to return the harbor to charted depths.

On June 25, 1998, the House Committee on Transportation and Infrastructure passed Resolution Docket 2565 authorizing the Secretary of the Army to review the Arana Gulch watershed siltation problem.

The Port District respectfully requests that $100,000 be appropriated for the Arana Gulch reconnaissance study for fiscal year 2000.

PREPARED STATEMENT OF JIMMY SMITH, COMMISSION PRESIDENT, HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT, EUREKA, CALIFORNIA

Mr. Chairman and members of the subcommittee: Thank you for the opportunity for me, Jimmy Smith, as Commission Chairman of the Humboldt Bay Harbor, Recreation and Conservation District in Eureka, California to submit prepared remarks to you for the record in support of the Fiscal Year 2000 Energy and Water regular appropriations measure to fund the U.S. Army Corps of Engineers into the new millennium. Commissioner Roy Curless and Chief Executive Officer David Hull will represent the Commission and District in meetings with subcommittee staff and agency representatives and respond to any project-related questions that arise during those meetings and appearances.

The Commission recognizes and expresses its debt of gratitude to our retired Congressman Frank Riggs and retired Congressman Fazio (both former members of this subcommittee), our new Congressman (and former State senator) Mike Thompson, Subcommittee Chairman Packard from California, and the other members of this subcommittee and staff for their continuing efforts in funding the Humboldt Harbor and Bay Navigation Project. This project is of critical importance to the future development of Humboldt Bay and county, and the entire north coast region of the State of California.

With your support, the conference report on fiscal year 1999 appropriations contained six million dollars for our project as a new construction start we support the President's budget request in the amount of $3.2 million in the construction general account to complete project construction in fiscal year 2000.

We are likewise grateful to the subcommittee for including $3.910 million in the operations and maintenance general account for fiscal year 1999. We support the President's budget request for an additional $4.189 million in the operations and maintenance general account for fiscal year 2000 and request the subcommittee increase this amount to $5.689 million dollars.

The increased budget request from fiscal year 1999 is derived from three sources. $300,000 is attributable to annualized cost increases and additional survey work to monitor the new hydrodynamics of the channel after completion of project construction. A second element of the additional request above the President's budget will permit the Corps to extend their survey south of the navigation channel to determine how the sand accumulation is impacting the main channel saving additional money over the long term. This survey effort will cost an estimated $150,000. The

last element included in the request is for an additional $1.35 million to be appropriated to dredge this same area.

Although the exact quantities to be dredged will not be determined until the survey is complete, our estimates and the emergency nature of this request accounts for the additional $1.5 million sought over the President's budget request for the operations and maintenance general account.

Completion of the long sought new construction project (the harbor deepening project) will vastly improve the safety of navigation in Humboldt Bay and help us begin to diversify our maritime economy. For those unfamiliar with the geography, Humboldt Bay is the only deep-draft natural harbor strategically situated along five hundred miles of Pacific coastline between San Francisco and Coos Bay, Oregon. Extreme winter storm conditions at the Humboldt Bay and entrance have posed extreme navigation safety hazards, resulting in loss of life and significant property damage over the years.

To us, regular maintenance dredging can be a life and death, as well as economic, survival matter. For example, in a commendable effort to save Federal and local sponsor financial resources, the Corps' San Francisco District previously scheduled combined operations/maintenance and construction dredging for this spring. An unanticipated delay in final approval of our project cooperation agreement has resulted in dangerous shoaling of portions of the bar and entrance channel being allowed to persist for more than four months. Deep draft vessels and commercial fishermen have encountered shoaling conditions currently at 18′ in places where normally it would be 40′ deep. This shoaling poses additional safety risks of ship grounding over and beyond those inherently unsafe seasonal conditions intended to be remedied by the channel improvement project itself.

Recently a Corps hopper dredge itself was damaged by high wave action while attempting to undertake emergency maintenance dredging of the shoals. Indicative of adverse economic impacts, a vessel calling at a Louisiana-Pacific Corporation facility was delayed by shoaling conditions resulting in $1.5 million in delay penalties and lost sales. This furthers the perception of an unreliable harbor entrance and could have significant adverse impacts to the wood chip export market. Completion of the construction will substantially alleviate these conditions.

Project completion will provide unique economic development opportunities for the North coast region. These capitalize upon our natural resources base enabling us to ship our commodities to world markets at competitive freight rates, and ship more of our imports and exports by water rather than transship them long distances by road or rail to market. At the same time, it will permit us to diversify our economic base by improving our transportation infrastructure and attracting new industrial activity to an area largely dependent upon the economic well-being of the forest products industry. We are currently suffering from closure of major facilities and continuing uncertainty surrounding the industry's future as a major contributor to our long term economic base.

With the support of then Congressman Riggs, Congress authorized the Humboldt Harbor and Bay 38 foot deep draft navigation project in section 101 of the Water Resources Development Act of 1996 (WRDA 1996) (Public Law 104–303) at an estimated total construction cost of $15,178,000 with a required local contribution of $5,180,000 and a first Federal cost of $10,000,000. The project has a 1.9 to 1 favorable benefit cost ratio. It has no significant environmental impacts and enjoys the consensus support of Federal, State, regional and local agencies.

In June 1998, with the support of the California Maritime Infrastructure Authority in the first of its kind issuance of revenue bonds to finance a Federal navigation project, we were able to raise $3.9 million matched by an additional $1.0 million in local redevelopment agency funds from the city of Eureka to meet our required local contribution to the project construction cost. Since then, we have been waiting for a final approved project cooperation agreement and commencement of construction. The Harbor District Board of Commissioners voted unanimously to authorize execution of the final agreement on March 16, 1999.

In order to provide an additional revenue stream from which to service the debt incurred in meeting its financial obligations, the district has implemented the first of its kind harbor user fee under section 208 of WRDA 1986 so that vessels and cargo benefitting from the navigation improvements will share in the cost of providing them.

Thanks to an accelerated final review by Secretary Westphal's staff, we anticipate his approval of the agreement this week with advertisement and contract award to follow soon in the second quarter this fiscal year and completion of construction on schedule next fiscal year.

On behalf of the members of the commission and district, we appreciate those prior occasions in which we have had the opportunity to appear before the sub-

committee and look forward to appearing before this subcommittee on future occasions to provide progress reports concerning the successful completion of this project. We are prepared to supplement our prepared remarks for the record in response to any questions that the Chair, subcommittee members or staff may wish to have us answer.

Thank you Mr. Chairman and members of the subcommittee. This concludes my prepared remarks.

PREPARED STATEMENT OF E.D. ALLEN, CHIEF HARBOR ENGINEER, PORT OF LONG BEACH

I am E. D. Allen, Chief Harbor Engineer for the Port of Long Beach, California. The Port of Long Beach is this nation's largest container port. I have been authorized by the Board of Harbor Commissioners of the City of Long Beach to represent the Port of Long Beach in regard to appropriations for the Los Angeles and Long Beach Harbors Model Study and Wave Data Collection Program; construction of the Queen's Gate Deepening Project as part of our on-going 2020 Plan; Los Angeles River maintenance dredging; Feasibility Studies for beach erosion; and Reconnaissance and Feasibility Studies for Contaminated Sediment Disposal.

In addition to the following specific project appropriation requests, I am recommending the committee recognize the need for a standby Corps dredging capability to supplement private contractors in the event of emergencies.. I specifically recommend a standby dredging and personnel training capability be funded without a minimum dredge quantity per year. This will allow:

(1) private contractors to benefit from receiving previous Corps annual dredging quantities and

(2) Corps of Engineers equipment to be used in emergencies without a project funding appropriation.

As a result, minor maintenance dredging could be undertaken at the Corps' discretion for training purposes which would provide a tremendous benefit to the smaller ports and harbors. Many of the needs of the smaller ports have not been met due to the lack of a program such as this.

My more specific requests follow for listed projects.

HARBORS MODEL MAINTENANCE (CIVIL WORKS BUDGET CATEGORY—O&M)

The Water Resources Development Act of 1976, Section 123, authorized the Chief of Engineers to operate and maintain the Los Angeles-Long Beach Harbor Hydraulic Model at the U.S. Army Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi as part of the Los Angeles and Long Beach Harbors Model Study. This model encompasses both port complexes in San Pedro Bay, which, as the third largest container port complex in the world, are ports of national strategic and defense significance. The hydraulic model, along with several numeric models, provide state-of-the-art methodology that can be used to provide operational improvements to the San Pedro Bay ports and many other harbor complexes. In addition, the Port, as the local agency, is assisting in the Corps effort to provide collection of continuous wave-gauge data by providing necessary support personnel and equipment for the maintenance of portions of the systems located at the Port.

In fiscal year 1999, $165,000 was appropriated for maintenance of the physical model of San Pedro Bay. During this time, the Port also used the model to analyze necessary navigation-related modifications to our upcoming expansion within the Navy Basin and validate numerical model results. This effort is being funded by the Port and is on-going. It is necessary that the model remain ready for service such as this. Funding in fiscal year 2000, in the amount of $165,000, would continue annual maintenance on the model. Additionally, we are requesting $335,000 in continued funding for the wave gage (prototype) data acquisition and analysis program. The wave data gathering program is essential as it provides real-world information to compare to model performance. The wave data acquisition program began in 1987 to provide validation of the design of the 2020 Plan, our Master Plan for port expansion and navigation improvements. This program has now evolved to construction monitoring and model verification which needs to continue to confirm expected levels of impacts of the expansion plans. The shipping industry's increasingly larger vessel size continues to challenge port engineers. The need for modeling and wave gage data acquisition continues to be a critical tool supporting the ports ability to create facilities compatible with changing trade conditions and operations. Therefore, Congress is respectfully requested to appropriate $500,000 for fiscal year 2000 to perform this work.

PORT OF LONG BEACH DEEPENING, QUEENS GATE (CIVIL WORKS BUDGET CATEGORY—CONSTRUCTION)

The Port of Long Beach developed a long-range master plan, referred to as the 2020 Plan, which demonstrates the need for deeper navigation channels at the Queens Gate entrance to San Pedro Bay and additional landfill development through the year 2020.

Section 201(b) of the Water Resources Development Act of 1986 authorized construction of the 2020 Plan upon recommendations of a feasibility report and completion of a favorable Chief of Engineers Report. The Chief's Report was issued July 26, 1996 and the Office of Management of Budget has approved the Report. The first phase of the Plan deepens the Long Beach Main Channel to a depth of 76 feet. This project is known as the Port of Long Beach Deepening. Together with the approach channel deepening outside the federal breakwater, the dredging was evaluated for Federal interest in the feasibility study because it permits deeper draft crude petroleum vessels to call at the Port of Long Beach.

This project was funded in 1998 and 1999 and is on-going. We fully anticipate that the Corps will provide sufficient programmed funds to complete this project with no additional funding appropriations. I am pleased to note that the Corps specified the work in such a manner that we can achieve a measurable benefit from the project as each foot of depth is dredged.

LOS ANGELES RIVER MAINTENANCE DREDGING (CIVIL WORKS BUDGET CATEGORY—O&M)

The Port of Long Beach also concurs with and supports the recommendation of C-MANC and the City of Long Beach to federal fund remedial maintenance dredging to remove accumulated flood-deposited silt in the mouth of the Los Angeles River. During the storms of 1995, flood-deposited silt closed the mouth of the Los Angeles River to navigation. This restricted regularly scheduled water route transportation between the cities of Long Beach and Avalon, creating an economic emergency. Reacting to this, the U. S. Army Corps of Engineers removed 300,000 cubic yards from the channel which allowed for minimal resumption of navigation.

On a yearly basis substantial quantities of silt remain in the channel. These silt deposits create the likelihood of future serious restrictions and safety hazards to commercial and recreational boating activity in, and adjacent to, the Long Beach Harbor District and the associated businesses in Long Beach. Such restrictions and hazards have resulted in accidents and litigation.

The Port supports the City in recommending that these silt deposits be removed on an annual basis as a scheduled work item. In the draft of "Project Plan for Los Angeles River Estuary Maintenance Dredging, Long Beach, CA, October 1994" (Draft Project Plan–1994), the Corps of Engineers estimated an average annual deposit of silt in the estuary of 485,000 cubic yards. The rate of such deposits is influenced by operational decisions at the Corps of Engineers' dams located at the headwaters of the river. It is imperative for our current operations, that a long range remedy be found for the Los Angeles River mouth, if navigational utility and effective flood control capability is to be maintained.

It is estimated by the Corps of Engineers, that maintenance dredging of the channel to a minimum usable width requires removal of approximately 185,000 cubic yards at an annual cost of over $2,000,000. Congress is requested therefore, to appropriate $2,000,000 for annual silt removal. This work is included in the line item known as Los Angeles Long Beach Harbors in the Civil Works Budget. Please note, if there was a standby/training budget for Corps dredges that I earlier proposed, it is possible that this type of work could be more easily scheduled at Corps' discretion rather than via emergency provisions.

CONTAMINATED SEDIMENT DISPOSAL (CIVIL WORKS BUDGET CATEGORY—GENERAL INVESTIGATIONS)

The Contaminated Sediment Task Force, of which the Los Angeles District of the US Army Corps of Engineers is a key member, is charged with investigating the major issues involved in formulating and implementing a regional contaminated sediment management strategy including four major issues:

1. *Upland Disposal*.—Blending of contaminated sediments with clean sediment to make structural fill as a promising disposal option. However, there is no quantitative data on proportions, handling methods, and desired end products that would support management decisions on disposal/reuse options. There is great need to undertake a pilot handling project to collect that information.

2. *Screening Guidelines*.—Quantitative sediment chemistry guidelines are required to screen sediments for aquatic disposal and necessitate gathering historical

regional data on sediment chemistry, toxicity, and bio-accumulation to be analyzed for region-specific relationships between sediment chemistry and toxicity.

3. *Watershed Management*.—Control of future contamination via land runoff as a key management issue. Field and modeling study of sediment and contaminant transport in the Los Angeles region are required both to build on existing watershed efforts and to acquire specific data on the movement of contaminants into harbors.

4. *Aquatic Disposal*.—A regional confined aquatic disposal facility is a promising management tool which provides a multi-user site active over a period of many years. The approach requires an engineering feasibility study of such issues as: quantifying the containment disposal capability, the interface chemistry between sediments of multiple users, and determining best management practices.

The program would be managed by the Los Angeles District and requires $400,000 in Federal funding; substantial additional funding would come from State and local sources. Congress is therefore requested to appropriate $400,000 in fiscal year 2000 to support the Contaminated Sediment Task Force in their effort to initiate a Regional Contaminated Sediment Disposal Planning Study.

FEASIBILITY STUDY BEACH EROSION (CIVIL WORKS BUDGET CATEGORY—GENERAL INVESTIGATIONS)

The Port of Long Beach also supports C-MANC and the City of Long Beach on their request for federal funding to initiate a Corps of Engineers feasibility study on beach erosion. This beach erosion problem is directly related to the focusing affect the federal breakwater has on our large commercial harbor complex and surrounding beaches. In southeastern Long Beach, east of the Port's land and channels, and directly opposite the federal breakwater, a beach and seawall protects approximately $200,000,000 worth of homes based on the 1990 US census. We expect the current home value to be significantly higher. Steady erosion has reduced the beach from an optimum of 175 feet to 50 feet prior to City's efforts in late 1994 to rebuild the beach. Winter storms continue to reduce the beach width.

The City has also experienced erosion in the west beach area. Although homes are not endangered, public improvements, including lifeguard stations, public restrooms, a bicycle and pedestrian trail, and a parking lot, are at risk. The cause of the new problem is unclear, indicating the need for a thorough study of the beach erosion problem inside the federal breakwater.

The primary method of protecting the homes has been annual rebuilding of sand berms during high tides or expected storms. The City has invested over $5,500,000 in capital improvement projects, annual beach rebuilding, and storm protection to control the beach erosion over the past 17 years. Despite this effort, in 1989 and 1993, storm waves eroded the beach and breached the protective seawall, causing damage to homes. The City is also defending itself against a lawsuit by one of the homeowners who is claiming that the City failed to halt erosion that narrowed the beaches in front of his home to less than the desired width adopted in the 1980 Local Coastal Plan.

In fiscal year 1997, $252,000 was appropriated to complete the reconnaissance study of the beach erosion problem within the City of Long Beach. It is now requested that Congress appropriate $500,000 in fiscal year 2000 to initiate the feasibility study.

Attached hereto is a Resolution to be adopted by the Board of Harbor Commissioners of the City of Long Beach on March 22, 1998, which contains data relating to the background of the Los Angeles and Long Beach Harbors Model Study, the 2020 Plan implementation, the Los Angeles River dredging, the Contaminated Sediment Task Force, the beach erosion problem in Long Beach, and other related navigation and economic matters. The resolution stresses the need for federal assistance in developing economic, technical and environmental background information essential to the design and permitting of Port facilities vital to regional and national interests. The Port of Long Beach is the largest container port in the United States and is the economic engine bringing $3.7 billion in customs receipts from both Los Angeles and Long Beach ports and jobs for 500,000 people. We are truly a port and harbor of national significance.

We kindly ask that Congress continue its support of these projects in fiscal year 2000 by appropriating the requested funds.

Thank you for permitting me the privilege of this testimony.

RESOLUTION NO. HD–1958

A resolution of the Board of Harbor Commissioners of the city of Long Beach, California, requesting the Congress of the United States to appropriate funds to the United States Army Corps of Engineers in order to continue planning, engineering

and design for the San Pedro Bay 2020 Plan, to continue the Los Angeles and Long Beach Harbors model study relating to improvements in San Pedro Bay, to conduct maintenance dredging at the mouth of the Los Angeles River, to conduct feasibility studies of beach erosion, and to develop a regional contaminated sediment management strategy

WHEREAS, the Ports of Long Beach and Los Angeles in San Pedro Bay, California, are two of a limited number of sites on the West Coast of the United States which possess the potential for deep water port facilities as recommended in the West Coast Deep Water Port Facility Study conducted by the United States Army Corps of Engineers; and WHEREAS, the Ports of Long Beach and Los Angeles have a record of both physical and fiscal growth to the extent that together the two ports are presently handling over 185.9 million metric revenue tons including 7.23 million twenty-foot equivalent units of container cargo annually (fiscal year 1998), and the international cargo handled is valued at over $159 billion annually (calendar year 1997); and

WHEREAS, the growth and activity of the Ports of Long Beach and Los Angeles have a significant regional and national economic effect; and

WHEREAS, in 1998 the Los Angeles Customs District remained the Nation's top entry and exit point for international cargo, valued at over $181 billion, generating approximately $3.7 billion in Federal revenues collected as United States Customs duties, approximately 85 percent of which is generated by the Long Beach and Los Angeles Ports; and

WHEREAS, both Ports are now, and are increasingly becoming, hard-pressed to provide facilities to meet the needs of the shipping industry, and to that end are conducting extensive studies, in conjunction with federal studies, to determine navigational, transportation, and environmental requirements necessary to provide economic and adequate surge-free berthing and cargo handling facilities; and

WHEREAS, all existing land in the Port of Long Beach which can be developed for shipping operations has been utilized or is in the process of being developed and, in order to meet the needs of the following decade, the design, permitting and construction of new lands must continue; and

WHEREAS, continuation of the studies currently underway by the United States Army Corps of Engineers, consisting of the Los Angeles and Long Beach Harbors Model Study, including maintenance and operation of the San Pedro Bay Hydraulic Model at Vicksburg, Mississippi, as authorized by Section 123 of the Water Resources Development Act of 1976, is needed for use in the design and permitting processes for future landfills for port development; and

WHEREAS, the Port of Long Beach handled over 27 million metric tons of liquid bulk cargo (fiscal year 1998). Because of economies of scale, liquid bulk cargo brought in by deeper draft vessels will have lower transportation costs and environmental benefits in the form of less vessel traffic. However, the existing navigation channel depths leading to the Port limit the size of calling vessels until such time as the Long Beach Deepening Project is complete; and

WHEREAS, the Los Angeles River is the largest of numerous flood-control channels constructed and maintained jointly by the Los Angeles County Flood Control District and the United States Army Corps of Engineers, and silt deposit from storm runoff accumulating in the mouth of the Los Angeles River in the City of Long Beach constitutes a restriction and hazard to both commercial and recreational boating; and

WHEREAS, the Southern California region has a significant volume of contaminated sediments from area runoff and other activities and the Los Angeles District of the US Army Corps of Engineers is a key member of a Task Force charged with the investigation of major issues involved in formulating and implementing a regional contaminated sediment management strategy; and

WHEREAS, the Board of Harbor Commissioners of the City of Long Beach, as a properly constituted and financially responsible local agency, by its Resolution No. HD–890, adopted August 3, 1965, expressed its intent to enter into such agreements as may be reasonably required to further federal projects for the development and improvement of Long Beach and Los Angeles Harbors; and

WHEREAS, at southeastern Long Beach in front of Alamitos Bay a beach and seawall protects $200 million worth of homes (1990 US census data). The primary method of protecting the homes has been annual beach rebuilding and sand berms during storms. Steady erosion has reduced the beach from optimum width of 175 feet to 50 feet and continues to reduce beach width despite rebuilding efforts in 1994. The City has invested over $5.5 million in capital improvement projects, annual beach rebuilding, and storm protection to control the beach erosion over the past 17 years. Despite this effort, in 1989 and 1993, storm waves eroded the beach and breached the protective seawall causing damage to homes.

NOW, THEREFORE, the Board of Harbor Commissioners of the City of Long Beach resolves as follows:

Section 1. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to maintain the San Pedro Bay Hydraulic Model at the Waterways Experiment Station at Vicksburg, Mississippi, as part of the Los Angeles and Long Beach Harbors Model Study.

Sec. 2. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to continue the existing wave gauge (prototype) data acquisition and analysis program.

Sec. 3. That the Congress of the United States be, and is hereby, respectfully requested to support the Chief of Engineers, United States Army Corps of Engineers, to complete construction of dredging deeper navigation channels to the Port of Long Beach to the full project depth.

Sec. 4. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, in conjunction with the Los Angeles County Flood Control District, to engage in the necessary maintenance dredging at the mouth of the Los Angeles River to remove silt deposits which have accumulated at that location.

Sec. 5. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to complete feasibility studies to develop protective measures to prevent beach erosion within the City of Long Beach.

Sec. 6. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to complete feasibility studies to develop and implement a regional contaminated sediment management strategy for Southern California.

Sec. 7. That the Executive Director of the Long Beach Harbor Department be, and he is hereby, directed to send copies of this resolution to the United States Senators and to Members of the House of Representatives from California, with a letter requesting their assistance in presenting this resolution before the proper Congressional committees.

Sec. 8. That the Executive Director of the Long Beach Harbor Department be, and he is hereby, further directed to send copies of this resolution to the President of the United States; the Director, Office of Management and Budget; the Secretary of the Army; the Chief of Engineers, the Director, Directorate of Civil Works, the Division Engineer-South Pacific Division and the District Engineer-Los Angeles, all of the United States Army Corps of Engineers; and to such other interested persons as he may deem appropriate.

The Secretary of the Board shall certify to the passage of this resolution by the Board of Harbor Commissioners of the City of Long Beach, shall cause the same to be posted in three (3) conspicuous places in the City of Long Beach, and shall cause a certified copy of this resolution to be filed forthwith with the City Clerk of the City of Long Beach and it shall thereupon take effect.

PREPARED STATEMENT OF JOHN BRIDLEY, WATERFRONT DIRECTOR, CITY OF SANTA BARBARA, CALIFORNIA

OPERATIONS AND MAINTENANCE DREDGING

As your distinguished Subcommittee writes the fiscal year 2000 Energy and Water Resources Appropriations Bill, I would like to bring a very important Corps of Engineers project to your attention.

About 400,000 cubic yards of sand piles up every winter at Santa Barbara Harbor, and in years of severe storms, the accumulated sand can close the channel bringing local fishing and other businesses in the Harbor to a standstill.

There is an important Federal interest in maintaining dredging at the Harbor. It provides slips and moorings for over 1,100 commercial, emergency and recreational boats. It is also an important part of Coast Guard operations on California's central coast.

The President's fiscal year 2000 Budget Request includes $1,646,000 for operations and maintenance for Santa Barbara Harbor. I respectfully request that the U.S. Senate, through your Subcommittee, maintain that level of funding.

NEW CONSTRUCTION PROJECT—DREDGE ACQUISITION

The President's fiscal year 2000 Budget recommendation also includes project funding for a potential new construction project in Santa Barbara. The City of Santa Barbara and the Corps of Engineers have pursued a proposal to design and construct a dredge for annual operation and maintenance dredging of our Harbor. Under this proposal, the City of Santa Barbara would contribute 20 percent funding (approximately $1.6 million) with the Corps of Engineers funding $4,960,000 for the acquisition of the dredge. The City would then take over the annual costs to operate the dredge, which are estimated to be $750,000–$1 million.

Unfortunately, the recommendation to proceed with funding of this project cannot come at a worse time for the City. During the past year, the City suffered severe damage from El Nino storms causing over $1 million in damage to the Harbor and Stearns Wharf. In November 1998, Stearns Wharf was hit with a catastrophic fire causing over $10 million in damage destroying a portion of the wharf and closing five businesses. The financial impacts of these natural disasters have severely impacted the City's ability to proceed with the dredge procurement and operations at this time.

Although the City remains interested and committed to the dredge acquisition in the future, due to the financial hardships of the fire and winter storms last year, I respectfully request that the U. S. Senate through your Subcommittee defer funding of this project.

Thank you for the opportunity to submit this statement.

LIST OF WITNESSES, COMMUNICATIONS, AND PREPARED STATEMENTS

Page

Akin, Richard, Supervisor, County of Sutter, California, prepared statement .. 598
Alabama Electric Cooperative, Inc., prepared statement 622
Allen, E.D., Chief Harbor Engineer, Port of Long Beach, prepared statement .. 861
Allen, W. Ron, President, National Congress of American Indians, prepared statement 603
American Chemical Society, prepared statement 821
American Farm Bureau Federation, prepared statement 600
American Public Power Association, prepared statement 843
American Society for Microbiology, prepared statement 790
American Society of Mechanical Engineers, prepared statement 827
Anderson, James S., President, Blue Valley Association, prepared statement .. 727
Anderson, Mayor Rodger, City of Morro Bay, prepared statement 856
Arkansas River Basin Interstate Committee, prepared statement 701
Armstrong, Michael D., General Manager, Monterey County Water Resources Agency (MCWRA), prepared statement 585
Arveschoug, Steve, District General Manager, Southeastern Colorado Water Conservancy District, prepared statement 704
Association of State Dam Safety Officials, prepared statement 609
Audrey J. LaPlace, President, Board of Commissioners, Pontchartrain Levee District, Lutcher, LA, prepared statement 681

Baldwin, Dr. David E., Senior Vice President, General Atomics, et al., prepared statement 799
Ballard, Lt. Gen. Joe N., Chief of Engineers, Corps of Engineers—Civil, Department of the Army, Department of Defense—Civil 63
  Prepared statement 82
  Statement of 79
Barnett, Jack A., Executive Director, Colorado River Basin Salinity Control Forum, prepared statement 766
Barrett, Lake H., Acting Director, Office of Civilian Radioactive Waste Management, Environmental Management and Civilian Waste Management Programs, Department of Energy 269
  Prepared statement 297
  Statement of 294
Beachem, Philip, Chairman, New Jersey Maritime Advisory Council, letter from 612
Beier, Keith E., Mayor Pro Tem, City of Escondido, California, prepared statement 556
Belza, Tib, Chairman, Yuba County Water Agency, prepared statement 567
Beneke, Patricia, Assistant Secretary of the Interior, Water and Science, Bureau of Reclamation, Department of the Interior 1
  Prepared statement 5
  Statement of 3
Bennett, Hon. Robert F., U.S. Senator from Utah:
  Questions submitted by 168
  Statement of 15
Biggs, Otha Lee, Judge of Probate & President, Monroe County Commission, Monroeville, AL, prepared statement 637
Blum, Carl L., Deputy Director, Department of Public Works, Los Angeles County, California, prepared statement 579
Bollinger, Donald T., Chairman, Louisiana Governor's Task Force on Maritime Industry, prepared statement 656

Page

Borrone, Lillian C., Director, Port Commerce Department of the Port Authority of New York & New Jersey, prepared statement 615
Boyd, Bernadine, President, Fort McDowell Tribal Council, Fort McDowell Indian Community, prepared statement 761
Brakken, William A., Community Liaison/Central Oregon Team Leader, Northwest Area Foundation, prepared statement 778
Bransford, Donald, President, Glenn-Colusa Irrigation District, prepared statement, ... 547
Brescia, Christopher J., President, Midwest Area River Coalition 2000, prepared statement 713
Bridley, John, Waterfront Director, City of Santa Barbara, California, prepared statement 865
Brinson, J. Ron, President and Chief Executive Officer, Port of New Orleans, New Orleans, LA, prepared statement 667
Brown, Lynne P., Ph.D., Associate Vice President for Government and Community Relations, Center for Cognition, Learning, Emotion and Memory, New York University, prepared statement 802
Burns, Hon. Conrad, U.S. Senator from Montana:
Questions submitted by 54, 170, 497
Statement of 29
Business Council For Sustainable Energy, prepared statement 817
Byrd, Hon. Robert C., U.S. Senator from West Virginia, questions submitted by 178
Byrnes, Robert J., Mayor, City of Marshall, MN, prepared statement 738

Caddo/Bossier Port Commission, Shreveport, LA, prepared statement 698
Campbell, Joseph L., President, Board of Directors, Contra Costa Water District, prepared statement, ... 546
Campbell, Hon. Ben Nighthorse, U.S. Senator from Colorado, statement of 270
Castro, Richard, Chairman, El Paso Water Utilities Public Service Board, prepared statement 748
Cherokee Canal, Sediment Removal and Streambed Alteration Project, Butte County, prepared statement, ... 568
City of Gridley, CA, prepared statement 838
City of Miami Beach, Florida, prepared statement 649
City of Stockton, California, prepared statement 574
Clemens, Ralph O., Jr., President, Coosa-Alabama River Improvement Association, Inc., prepared statement 634
Coachella Valley Water District, prepared statement 549
Cochran, Hon. Thad, U.S. Senator from Mississippi, questions submitted by 165, 381
Colvin, Joe F., President and Chief Executive Officer, Nuclear Energy Institute, prepared statement 814
Corbett, Kevin S., Executive Director, Port Authority Affairs, State of New York, Empire State Development Corporation, prepared statement 615
County of San Joaquin and the San Joaquin County Flood Control and Water Conservation District, California, prepared statement 557
Craig, Hon. Larry, U.S. Senator from Utah, questions submitted by 60, 173, 265, 501
Curry, Darrel G., Vice President, Missouri River Bank Stabilization Association, prepared statement 728

DeCosmo, James M., Manager of Lands, Research and Procurement, Southeast Timberlands, Kimberly-Clark, Mobile, AL, prepared statement 626
Delesdernier, Capt. Mark, Jr., President, Crescent River Port Pilots' Association, Belle Chasse, LA, prepared statement 670
Department of Water and Power, City of Los Angeles, prepared statement 568
DiGiorgio, Michael, Mayor, City of Novato, California, prepared statement 589
Domenici, Hon. Pete V., U.S. Senator from New Mexico:
Opening statement 383
Questions submitted by 35, 117, 246, 337
Dorgan, Hon. Byron L., U.S. Senator from North Dakota:
Questions submitted by 60, 190, 521
Statement of 387
Dry Prairie Rural Water, prepared statement 785
Duffy, George E., President, Navios Ship Agencies, Inc., Mobile, AL, prepared statement 627

Page

Evans, Mayor Donna, City of West Jordan, Utah, prepared statement 783

Farris, Chester A., III, Chairman, Photovoltaics Division, Solar Energy Industries Association (SEIA), prepared statement 830
Felty, Billy J., Chief Engineer, St. Francis Levee District of Arkansas, prepared statement 677
Fort Peck Assiniboine and Sioux, prepared statement 785
Foss, Brian E., Port Director, Santa Cruz Port District Commission, prepared statement 859
Foster, Gov. M.J., Jr., on Behalf of the Louisiana Department of Transportation and Development, Office of Public Works and Intermodal Transportation, prepared statement 671
Fraser, Gale Wm., II, P.E., General Manager/Chief Engineer, Clark County Regional Flood Control District, prepared statement 755
Fuhrman, Maj. Gen. Russell L., Director of Civil Works, Corps of Engineers—Civil, Department of the Army, Department of Defense—Civil 63
Futter, Dr. Ellen, President, American Museum of Natural History, prepared statement 793

George, Bruce, Manager, Kaweah Delta Water Conservation District, prepared statement 588
George, Merv, Jr., Chairman, Hoopa Valley Tribe, prepared statement 775
Geringer, Hon. Jim, Governor, State of Wyoming, prepared statement 788
Gieringer, Wallace A., Chairman for Arkansas, Arkansas River Basin Interstate Committee, prepared statement 702
Gottemoeller, Rose E., Director, Office of Nonproliferation and National Security, Atomic Energy Defense and Nonproliferation Programs, Department of Energy 193
  Prepared statement 210
  Statement of 207
Gravois, Aubrey, President, Board of Commissioners, Lafourche Basin Levee District, Vacherie, LA, prepared statement 676
Green, Peter, Mayor, City of Huntington Beach, California, prepared statement 857

Haak, Norman, Chairman, Garrison Diversion Conservancy District, prepared statement 729
Haun, Charles A., Executive Vice President, Parker Towing Company, Inc., Tuscaloosa, AL, prepared statement 628
Hayden, Channing F., Jr., President, Steamship Association of Louisiana, prepared statement 663
Henderson, Ed, Chairman, Napa County Flood Control and Water Conservation District, prepared statement 570
Henry, Allen, President, Henry Marine Service, Inc., Spanish Fort, Alabama, prepared statement 625
Hewgley, James M., Jr., Chairman for Oklahoma Arkansas River Basin Interstate Committee, prepared statement 709
Hodges, James H., Governor, State of South Carolina, Columbia, SC, prepared statement 642
Hodges, William D., President, Board of Directors, Trinity River Authority of Texas, prepared statement 748
Holgate, Laura S.H., Director, Office of Fissile Materials Disposition, Atomic Energy Defense and Nonproliferation Programs, Department of Energy 193
  Prepared statement 217
  Statement of 214
Holland, Lisa S., Chair, Association of State Floodplain Managers, Inc., prepared statement 611
Hollingsworth, Tom, Mayor, City of Rancho Palos Verdes, California, prepared statement 598
Holman, Gerald H., Chairman for Kansas, Arkansas River Basin Interstate Committee, prepared statement 706
Hunter, Dr. Sam M., President, Little River Drainage District, prepared statement 725

Israel, Keith, General Manager, Monterey Regional Water Pollution Control Agency (MRWPCA), prepared statement 587

Page

James, Hon. Sharpe, Mayor, City of Newark, New Jersey, prepared statement 614
Jansen, Keith H., Director, Raw Materials Planning Procurement Distribution and Sales, U.S. Steel, Pittsburgh, PA, prepared statement 631
Johansson, Lennart, Chairman, Solar Thermalpower Division, Solar Energy Industries Association (SEIA), prepared statement 832
Jollivette, Cyrus M., Vice President for Government Relations, University of Miami, prepared statement 644
Jordan, James T., Director, J.T. Jordan Cotton, Inc., letter from 638
Joseph, William F., Jr., Chairman, Montgomery County Commission, Montgomery, AL, prepared statement 637

Kendall, Donald R., Ph.D., P.E., General Manager, Calleguas Municipal Water District, prepared statement 581
Kimble, Jay L., Mayor, City of Stillwater, MN, prepared statement 744
King, T. Keith, P.E., President and CEO, David Volkert & Associates, Inc., Mobile, AL, prepared statement 631
Klass, Dr. Donald L., President, Biomass Energy Research Association, prepared statement 833
Knabe, Don, Chairman of the Board, Supervisor, Fourth District, County of Los Angeles, prepared statement 852
Kornegay, H. Thomas, Executive Director, Port of Houston Authority, prepared statement 749
Krebs, Dr. Martha, Director, Office of Science, Department of Energy 383
  Prepared statement 393
  Statement of 388
Krygsman, Alexander, Director, Port of Stockton, prepared statement 855

LaGrange, Gary P., Executive Director/CEO, Port of South Louisiana, LaPlace, LA, prepared statement 667
Langjahr, Joseph H., Vice President and General Counsel, Foss Maritime, letter from 624
LaPlace, Aubrey J., President, Board of Commissioners, Pontchartrain Levee District, Lutcher, LA, prepared statement 683
Lee, Jan, Executive Director, Oregon Water Resources Congress, prepared statement 781
Lema, Joseph E., Vice President, Manufacturers and Services Division, National Mining Association, prepared statement 653
LeVake, Barbara, President, the Resources Agency and the Reclamation Board, State of California, prepared statement, ... 542
Levine, John L., Jr., President, Associated Branch Pilots, Metairie, LA, prepared statement 669
Libeu, Larry, President, Western Coalition of Arid States (WESTCAS):
  Letter from 595
  Prepared statement 768
Lopez, Gaye, Manager, Colusa Basin Drainage District, prepared statement ... 545
Losoya, Milton, Mayor, City of Woodland, prepared statement 551
Lowe, A. Lynn, President, Red River Valley Association, prepared statement .. 688
Lyon, Dick, Mayor, City of Oceanside, CA, prepared statements 580, 857

Mackey, Karan, Chair, Board of Supervisors, County of Lake, California, prepared statement 597
Madigan, Michael D., Chairman, California Water Commission, prepared statement 525
Magwood, Bill, Director, Office of Nuclear Energy, Science and Technology, Department of Energy 383
  Prepared statement 419
  Statement of 415
Martin, William, Chairman, Tumalo Irrigation District, prepared statement ... 783
Martinez, Eluid, Commissioner, Bureau of Reclamation, Bureau of Reclamation, Department of the Interior 1
  Prepared statement 8
  Statement of 7
Mauderly, Joe L., Senior Scientist and Director of External Affairs, The Lovelace Respiratory Research Institute, prepared statement 796
McClelland, John S., Jr., Midstream Fuel Service, Inc., Mobile, AL, prepared statement 626

Page

McConnell, Hon. Mitch, U.S. Senator from Kentucky, questions submitted by 495
McCrory, Robert L., Professor and Director, Laboratory for Laser Energetics, University of Rochester, prepared statement 807
McDonough, Frank M., Executive Director, New Jersey Maritime Resources, State of New Jersey, Commerce & Economic Growth Commission, prepared statement 615
McKenzie Watershed Council, prepared statement 782
Melton, Carlton J., Regional Vice President, Gulf & Inland Region, Stevedoring Services of America, Mobile, AL, prepared statement 630
Merrihew, Lawrence L., Senior Vice President, Regions Bank, Mobile, AL, prepared statement 629
Metropolitan Water District of Southern California, prepared statement 592
Mikels, Jon D., Chairman, Supervisor, Second District, County of San Bernardino, prepared statement 552
Miklos, Mayor Steve, City of Folsom, California, prepared statements 595, 597
Miller, Chairman Harold, Chairman, Crow Creek Sioux Tribe, prepared statement 741
Miller, George, Mayor, City of Tucson, prepared statement 758
Milnes, Dwane, Executive Director, San Joaquin Area Flood Control Agency and City Manager, City of Stockton, California, prepared statement 846
Minnesota-Wisconsin Boundary Area Commission, prepared statement 747
Minsky, Reynold S., President, Board of Commissioners, Fifth Louisiana Levee District, Tallulah, LA, prepared statement 680
Mni Wiconi Project, prepared statement 733
Morgan, Carl, President, Economic Development Authority, Selma, AL, prepared statement 640
Morgan, Sheldon L., President, Warrior-Tombigbee Waterway Association, prepared statement 620
Mosher, Carl W., Director, Environmental Services Department, City of San Jose, California, prepared statement 547
Murray, Hon. Patty, U.S. Senator from Washington, questions submitted by 188

National Waterways Alliance, prepared statement 599
Nelson, Les, Chairman, Solar Thermal & Building Products Division, Solar Energy Industries Association (SEIA), prepared statement 831
Nelson, Ron, Chairman, Deschutes Basin Resources Conservancy, prepared statement 779
Noble, Vernon A., Chairman, Green Brook Flood Control Commission, prepared statement 619
Northwest Power Planning Council, prepared statement 770
Nuisance Flooding Near the 3B's Portion of the Butte Basin Overflow, Sacramento River, Butte County, California, prepared statement 568

O'Brien, Terrence J. President, Metropolitan Water Reclamation District of Greater Chicago, prepared statement 699
Orillion, Wayne, President, Board of Commissioners, Atchafalaya Basin Levee District, Port Allen, LA, prepared statement 678
Owendoff, James M., Acting Assistant Secretary for Environmental Management, Environmental Management and Civilian Waste Management Programs, Department of Energy 269
  Prepared statement 273
  Statement of 271

Pace, W.O., Chairman, Autauga County Commission, letter from 639
Palmer, R. Barry, Executive Director, DINAMO, prepared statement 651
Parsons, Richard W., Dredging Program Manager, Ventura Port District, prepared statement 854
Perrenot, Frederick A., P.E., General Manager, City of Houston, prepared statement 752
Peterson, J. M., President, Missouri River Bank Stabilization Association, prepared statement 728
Peterson, R. Max, Executive Vice President, International Association of Fish and Wildlife Agencies, prepared statement 606
Pettygrove, Hon. George, Mayor, City of Fairfield, California, prepared statements 551, 596

Page

Pfeifle, Kurt, General Manager, Mid-Dakota Rural Water Project (Public Law 102–575), prepared statement 729

Rabbon, Peter D., General Manager, the Resources Agency and the Reclamation Board, State of California, prepared statement 542
Ravan, Jack E., Director and Chief Executive Officer, Alabama State Docks Department, Mobile, AL, prepared statement 633
Red River Waterway Commission, Natchitoches, LA, prepared statement 698
Reicher, Dan, Assistance Secretary, Office of Energy Efficiency and Renewable Energy, Department of Energy:
Prepared statement 449
Statements of..... 383, 438
Reid, Hon. Harry, U.S. Senator from Nevada:
Prepared statement 3
Questions submitted by 176, 509
Statements of..... 2, 194, 384
Reis, Dr. Victor H., Assistant Secretary, Office of Defense Programs, Atomic Energy Defense and Nonproliferation Programs, Department of Energy 193
Prepared statement 198
Statement of 195
Renner, George, President, Board of Directors, Central Arizona Water Conservation District, prepared statement 757
REPI Action Coalition, prepared statement 842
Richard, Roger P., Executive Director, Port of Greater Baton Rouge, Port Allen, LA, prepared statement 668
Richmond, George R., President and Chief Operating Officer, Jim Walter Resources, Inc., letter from, ... 632
Rimsza, Skip, Mayor, City of Phoenix, prepared statement 764
Rogers, Ross, General Manager, Merced Irrigation District, prepared statement 550
Rousselle, Benny, Plaquemines Parish Government, Belle Chasse, LA, prepared statement 669

Sacramento Area Flood Control Agency, prepared statement 846
San Diego, California, Water Reclamation Program, prepared statement 564
Sanguinotti, Phillip A., President, The Anniston Star, Anniston, AL, prepared statement 636
Santa Clara Valley Water District, San Jose, California, prepared statement .. 559
Schafer, R. L., District Engineer, Cawelo Water District, Bakersfield, California, prepared statement 569
Schafer, R. L., Secretary/Watermaster, Tule River Association, Porterville, California, prepared statement 569
Seminole Tribe of Florida, prepared statement 647
Serna, Joe, Jr., Mayor, City of Sacramento, California, prepared statement 590
Sherrill, Lynn, Vice President, Operations, Crounse Corporation, Paducah, KY, prepared statement 623
Smith, Jimmy, Commission President, Humboldt Bay Harbor, Recreation and Conservation District, Eureka, California, prepared statement 859
Smith, Sandy, Executive Director, Monroeville Area Chamber of Commerce, Monroeville, AL, prepared statement 637
Stein, Theodore, Jr., Commission President, Port of Los Angeles Board of Harbor Commissioners, prepared statement 850
Stepan, J. Craig, General Manager, Warrior & Gulf Navigation Company, Chickasaw, AL, prepared statement 632
Steve, Jaime, Legislative Director, American Wind Energy Association, prepared statement 822
Stevens, Hon. Ted, U.S. Senator from Alaska:
Questions submitted by 520
Statement of 63
Stewart, Jerry L., Vice President Fuel Services, Southern Company Generation, letter from 629
Story, Charles, Vice President Governmental & Public Affairs, Degussa-Huls, Theodore, AL, prepared statement 624
Sublette, Kerry L., Sarkeys Professor of Environmental Engineering, University of Tulsa, prepared statement 804
Svendson, Douglass W., Jr., Executive Director, Gulf Intracoastal Canal Association, prepared statement 752

Page

Thomas, Fred, Sr., Chairman, Pikitanoi Rural Water Supply System, Kickapoo Tribe, prepared statement 718
Thompson, Michael D., President, Thompson Power Systems, Birmingham, AL, prepared statement 630

U.S. Army Corps of Engineers, prepared statement 621
University of Medicine and Dentistry of New Jersey, prepared statement 810
Upper Mississippi River Basin Association, prepared statement 722

Vann, James A., Jr., President and Chief Executive Officer, Alabama Electric Cooperative, Inc., Andalusia, AL, prepared statement 622
Vanselow, Glenn, Executive Director, Pacific Northwest Waterways Association, prepared statement 773
Venable, Jim, Chairman, Board of Supervisors, Riverside County Flood Control and Water Conservation District, prepared statement 576
Volusia County, Florida, prepared statement 646

Waldon, Donald G., Administrator, Tennessee-Tombigbee Waterway Development Authority, Columbus, MS, prepared statement 640
Waldron, Marie, Council Member, City of Escondido, California, prepared statement 556
Wallace, James D., President, Selma and Dallas County Chamber of Commerce, Selma, AL, prepared statement 639
Wanamaker, James E., Chief Engineer, Board of Mississippi Levee Commissioners, prepared statement 686
Wehe, Prof. David K., University of Michigan, prepared statement 839
Weiland, Kenneth L., P.E., CEO and Chief Engineer, Yazoo-Mississippi Delta (YMD) Levee Board, prepared statement 683
West, Carol W., Executive Director, Tucson Regional Water Council, prepared statement 764
Westphal, Dr. Joseph W., Assistant Secretary of the Army for Civil Works, Corps of Engineers—Civil, Department of the Army, Department of Defense—Civil:
  Prepared statement 68
  Statements of 63, 65
Whetstone, Mayor David D., Jr., letter from 638
White, M. Dean, Port Captain, Orsouth Midland Enterprises, Orsouth Transport Co., letter from 628
Wilk, J. Tim, Hunt Crude Oil Supply Co., Tuscaloosa, AL, prepared statement 625
Williams, M.V., President, West Tennessee Tributaries Association, Friendship, TN and Chairman, Executive Committee, Mississippi Valley Flood Control Association, prepared statement 674
Wiseman, Glenwood W., Executive Director, Lake Charles Harbor & Terminal District, Lake Charles, LA, prepared statement 668
Wolf, George E., Jr., P.E., Assistant City Manager/Director of Public Works, Kansas City, Missouri, prepared statement 717

Zieschang, Ernie, President, Port of Liberty Commission, prepared statement 754

SUBJECT INDEX

DEPARTMENT OF ENERGY

Atomic Energy Defense and Nonproliferation Programs

Page

Advanced driver development 250
Aging nuclear scientists of concern 235
BN–600 reactor 266
Budget request, sufficiency of 234
Canadian reactors 265
Chemical and biological:
  Threats 212
  Weapons 209
Chemistry and Metallurgical Research (CMR) building upgrade 255
Chiles Commission Report 246
  Recommendations 223
Chinese nuclear weapons 245
Comprehensive Test Ban Treaty 234
Contamination:
  Explosive testing 226
  Resulting from explosive testing 226
Core technologies and NEPA compliance 221
Critical needs not addressed in budget 223
Declassification initiative 213
Domestic security 209, 244
Emergency management 210
Emergency response 213
  Capability 228
Environmental Safety Center 232
Environmental Surety Program 231
Experimental facilities, progress on major 204
Experimental programs 202
50 Tons, Definition of 263
Fiscal year:
  1999 emergency supplemental appropriation 216
  2000 budget request 210, 214
Fissile material storage, surplus 221
GAS U.S.-Russian reactor technology development 216
Idaho Operations Office 256
Immobilization 218
Independent project review 254
Initiatives for Proliferation Prevention (IPP), GAO Report on 241, 260
International nuclear safety 208
  Cooperation 212
Kazakhstan BN–350 activities 266
Manufacturing capabilities 200
Material Protection, Control and Accounting [MPC&A] 207, 211, 259
Mixed oxide fuel fabrication and irradiation services 219
MOX vs. Vitrification 264
National Ignition Facility 249
National security challenges 212
New construction projects 243
New weapons, production of 240
Nonproliferation technology 265
Nuclear Cities Initiatives (NCI) 243, 262, 266

Page

Nuclear:
Emergency Response and Technology Partnerships programs 205
Emergency Response Program 228
Power plant in Cuba, status of 237
Smuggling 229
Weapons stockpile, condition of the 246
Russia's production of 242
Office of Counterintelligence fiscal year 2000 budget request 257
Parallel U.S. and Russia Programs 263
Pit:
Disassembly and conversion 218
Production, reestablishing 241, 252
Plutonium disposition:
Activities, budget request summary for 220
Progress with Russia on 239
Presidential Initiative 258
Prior year balances, use of 257
Production plants and labs funding, balance of 223
Program:
Direction 222
Integration 206
Proliferation prevention and nuclear cities initiative (IPP), initiatives for 208, 212, 229, 261
RBMK reactors 224
Research and development 213
Russia:
Cooperative efforts with 237
Nuclear power plants in 224
Work with 220
Russian:
Assistance to Iran, concern about 235
Breeder reactors 233
Naval fuel assistance 232
Navy Fleet 266
Plutonium disposition 219, 239
Talks, status of 262
Schedule 265
Simulation and computation 204
Skilled workers, attract and maintain 227
START II 236
Stewardship:
Lab missions flow from 196
Production complex response to 197
Stockpile:
Life extension and surveillance 200
Management, Funding for 251
Safety reliability and security 222
Stewardship 247
Challenge, meeting the 195
Interagency coordination 198
Is working, how 199
Y2K concerns 225
Surplus:
Nuclear materials threat 222
Plutonium disposition summary 217
Test readiness, maintaining 226
Tritium 202
Production 197, 237, 252
U.S.-Russia plutonium agreement 215, 225
Uranium disposition, highly enriched 221
Weapons activities, funding for 246
Y2K impact on Chernobyl-type reactors 224

ENVIRONMENTAL MANAGEMENT AND CIVILIAN WASTE MANAGEMENT PROGRAMS

Accomplishments 345
Fiscal year 1998–fiscal year 1999 299
Major program 308

Page

Accomplishments—Continued
Progress—cleaning up and closing sites 274
Actinide packaging and storage facility 374
Advanced mixed waste treatment project (AMWTP) 363
Cleanup:
Budget 362
Complex-wide integration to support 279
Estimated cost of 318
Level of 319
Outyear funding requirements for 331
Program to Corps of Engineers, impact of transferring 347
Progress toward completing 277
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Cleanup at DOE Sites 344
Defense spent fuel and waste 331
DOE:
Cleanup Program, cost of 339, 344
Cleanup with previous estimates, comparison of cost of 318
DWPF, canister production at 377
Earthquake threats 314
EM Program, the fiscal year 2000 request reflects the evolution of the 275
Environmental legacy, meeting the challenge of the 274
Environmental Management Centers 379
EPA groundwater standard 320
External oversight and payments-equal-to-taxes 339
Fiscal year:
2000 budget request 272, 296
Application of the 302
Summary of the 280, 299
2001, funding requirements for 320
FUSRAP sites 319
Groundwater:
Contamination 321
Potential problems 336
Hanford:
Activities 272
Reprogramming/EM Program accountability and control 355
Site 365
Budget 317, 322
Manager 317
Heavy water, processing of 377
Idaho National Engineering & Environmental Laboratory 330, 362
Long-range plan at 334
Idaho, shipment of transuranic waste out of 328
In-tank precipitation project (ITP) 375
Integration effort, complex-wide 335
Jack Ass Flats radiation exposure 335
Litigation 298
Local government, payments to the State and affected units of 299
Los Alamos Environmental Restoration Program 354
Management reforms 276
Nuclear waste, costs of transporting 337
Oak Ridge National Laboratory 377
On-site:
Disposal, costs to set up 336
Storage costs 332
Alternative options to 338
Maintenance costs of 337
Nuclear regulatory commission 334
Regulatory concerns for 333
Utility compensation for 332
Pit 9:
At Inel 329
Project 364
Plutonium oxide stabilization 315
Program goals and progress 271
Program management and integration 302, 306, 311
Quality assurance 299

Page

Recent accomplishments 295
Rock fractures 313
Rocky Flats:
  Additional workload at 315
  Alternatives for storage at 326
  Cleanup 361
  Funding 324
  Site 323
  Storage of waste at 315
S–608 334
Savannah River site 373
Science and technology 278, 358, 381
Spent Nuclear Fuel:
  On-site interim storage of 337
  Programs 329
Tank waste remediation system (TWRS) 367
  Privatization 317
    Project 320
Three Mile Island fuel storage 329
Transuranic waste 316
2006 completion, funding for 361
Viability assessment 295, 297
Waste acceptance, storage, and transportation 301, 306, 311
Waste Isolation Pilot Plant (WIPP) 322, 352, 381
  Costs associated with delay in opening 326
  Lawsuit at 316
  Opening 362
  Project 272
  Shipping non-mixed waste to 326
Work requirements, additional 324
Yucca Mountain 299, 302, 308
  Milestones, acceleration of 338
  Schedule 295
  Site, total spent at the 336
  Water migration 312

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

Appropriated funding, appropriate use of 469
Biofuels programs 440
Biopower/biofuels 461
Carbon fuel tax 471
Electric energy systems and storage 467
Fiscal year 2000 budget request 447
Geothermal energy 465
Hydrogen 466
Hydropower 466
International Solar Energy Program 468
Kyoto accord 471
National Renewable Energy Laboratory 464
Photovoltaic 439
  Energy systems 457
Program accomplishments 439
Renewable Energy Production Incentive Program 463
Renewable energy technologies 385
Solar and renewable energy technologies, overview of the fiscal year 2000 request for 455
Solar building technology research 456
Solar Power Program:
  Concentrating 459
  Direction 469
  Support 463
Sole source vs. competitively awarded grants 448
Superconductivity 447
Wind energy systems 460

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

Accelerator transmutation of waste 492

Page

Advanced radioisotope power systems 427
Department of Energy, developing 422, 424
EBR–II 475
Energy diversity and security, providing for 420
Environmental future, securing our 426
Fast flux test facility [FFTF] 433, 475
Isotope support 431
Maintaining vital nuclear research facilities and supporting a strong educational infrastructure 424
Mission critical technologies 422
Moly-99 program 474
Nuclear energy plant optimization 417
    Advisory committee 418
    Program 429, 476
Nuclear energy research:
    Advisory committee 475
    And development (R&D) 416, 427
Nuclear Energy Research Initiative [NERI] 417, 429, 473
Nuclear energy, science and technology 415
Nuclear power, importance of 437
Nuclear powerplant relicensing 473
Program direction 435
Roadmap for the 21st century 420
Termination costs 433
Test reactor area landlord 428
University reactor fuel assistance and support 430
Uranium programs 434

OFFICE OF SCIENCE

Bates Laboratory funding 491
Biological and environmental research 404
Climate change:
    Budget request 384
    Technology initiative 492
Computational and technology research 411
Employment levels 486
Energy research analyses 413
Energy supply R&D programs 414
Facilities support 412
Field structure 487
Fiscal year 2000 budget request 390
Fusion energy sciences 410
GAO study 392
Goals and strategies, rethinking our 395
High energy physics 406
High flux beam reactor 490
Human genome projects 387
Low dose radiation research 488
Multi program energy laboratories 412
Nuclear energy programs 386
Nuclear physics 409
Our mission hasn't changed 394
Potential programmic problem areas 493
Program accomplishments 390
Program overview 389
Sandia, micro-machines program at 478
Science education 413
Science program:
    Basic energy sciences 402
    Direction 413
Science research budget request 386
Scientific simulation initiative 392
Spallation neutron source [SNS] 391, 479
Strategies—initiatives for fiscal year 2000, implementing the 397
Technical information management 414

Page

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

1
Animas-La Plata 38
Bay-Delta:
Ecosystem funding 25
Funding by agency 26
Budget:
Priorities, stakeholders' input into 29
Request 2
Bureau of Reclamation 6
Bureauwide operation and maintenance costs 28
California Bay-Delta Ecosystem Restoration (CALFED) 5, 41
Appropriations and expenditures 26
Expenditures 27
Program 4
Status of spending on 31
Central Arizona project 49
Central Utah project 5, 15
Central Utah Project Completion Act 6
Competing water demands, managing 42
Cost Overruns 56
CVP, American River Division 49
Dakota Resources Act 17
Dam Safety Program 20, 45
Dams:
Corrective actions, initiate safety of 45
Initiate safety of 45
Safety evaluation of existing 45
Desalination 11, 21
Funding in Federal Government Agencies 22, 23
Reclamation's Future Focus 12
Role in 11
Drought:
Assistance 20
Funding 21
Emergency planning and disaster response program 52
Garrison diversion unit 60
Glendive, Montana 31
Indian water settlements 25
Lake Powell draining 16
Land management and fish & wildlife activities 60
Long Beach water reclamation and reuse 51
Lower Yellowstone title transfer—intake diversionary dam 55
Montana safety of dams projects 54
MR&I needs of Indian tribes 18
New Mexico drought conditions 34
Nimbus fish hatchery interpretive facility 49
O&M activities, staffing levels for 29
Operation and maintenance costs 42
Overall Program Goals 13
Pueblo Dam 46
Reclamation:
Grazing permits 30
Recreation Management Program—Title XXVIII 38
Red Butte Dam 15
Red River Valley Water Need Studies 19
Safety of dams 19
Program 7
Salinity control program 15
Salton Sea, California research project 39
San Juan Gallup—Navajo water supply study 36
San Juan River project 24
Gallup, Mount Taylor pipeline 35
Snake River plain aquifer 60
Taos Indian water rights settlement 36

Page

Technical/Emphasis Areas 13
Title XVI water reclamation and reuse program 54
Water reuse program 16
Truckee River Operating Agreement 10
Upper Rio Grande basin water management 37
Ute Reservoir pipeline project, Curry and Roosevelt Counties, NM 37
Year 2000 compliance 47
Yellowstone River flooding conditions 30
Yellowtail Dam & Bighorn Lake operations 58
Yuma:
Area projects 52
Desalting plant 50

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

Acequias irrigation system, New Mexico 116, 163
Administrative appeals 112
Bluestone:
Dam safety project 186
Drift and debris 185
Bonneville and the Dalles powerhouse:
Projects replace generating units 189
Rehabilitation 102
Bonneville powerhouse phase II, Oregon and Washington (major rehabilitation) 103
Budget:
Overview 66
Themes 65
Business operations, improvement in 88
Caspian tern 96
Challenge 21 program 176
Civil Works program:
Budget, fiscal year 2000 69
Performance 69
Clarkston and Lewiston, ports of 96
Coastal environmental impact study, Mississippi 167
Columbia and Snake Rivers 101
Columbia River fish mitigation project 188
Construction:
Capabilities, fiscal year 2000 120
General 71, 85
Continuing authorities 176
Cooperative agreements 187
Corps of Engineers:
Dam Safety Program 115
Financial management system 89
Vision 90
Credits and reimbursements 104
Dam safety 115
Devils Lake:
Dikes 190
North Dakota 97
Outlet 98
Divisions 87
Drawdown studies 103
Economy and the environment 70
Efficiency and responsive measures 79
Emergency operations organization 87
Environmental:
Programs 67
Projects and aquatic ecosystems 179
Erosion control, demonstration 167
Fiscal year 2000:
Civil Works program budget 82

Page

Fiscal year 2000—Continued
Continuing program, highlights of the 71
FUSRAP program 80
General expenses 86
Account 81
Appropriation request 146
General investigations 85
Government performance and results 89
Grand Forks:
Dikes 191
North Dakota 98
Greenbrier basin flood protection 181
Harbor service:
Fee, support for the 111
Fund 67, 109, 118, 176
Proposal 69
Headquarters 87
And division offices, restructuring of 177
Investigations, general 72
Island Creek at Logan 186
Jackson County, Mississippi 166
John Day Dam drawdown study 102
Lafarge Lake, WI 99
Level deferred maintenance 113
Libby Dam, MT 175
London lock and Dam 187
Lower Las Vegas wash wetlands 177
Lower Mud River 187
Marmet locks and Dam 180
Milo Creek 174
Mississippi River and tributaries 149, 165
Budget request 100
Mississippi River levees 166
Natchez, Mississippi 166
New funding 83
New investments 71
New study starts 105
O&M increase 179
Operation and maintenance:
Budget request 160
General 71, 85
Program 81
Program execution 80, 161
Outlook 84
Project:
Conditions 114
Cost sharing problems 64
Management 79, 88
Projects budgeted for fiscal year 2000, fully funded 120
Regulatory administrative appeals process 99
Regulatory appeals process 177
Regulatory program 67, 73, 81, 93, 170
Administrative appeal 147, 168, 173
Reimbursed program 84
Reimbursements and credits 146
Remedial Action Program, formerly utilized sites 85, 160
Restructuring 86
Robert C. Byrd locks and Dam 184
Santa Ynez, CA study 109
Small Business Program 89
Snake River Dam removal 93
South Pacific division 163
Staffing 84
Strategic planning 88
Technical centers of expertise 163
2000 funding level, impact of 180
Upper Jordan River restoration project, section 206 91
Upper Rio Grande water operation model, New Mexico 116, 163

Page

Water resource development process 66
Water Resources Development Acts of 1999 and 2000 69
West Virginia:
    Statewide flood protection plan 184
    Tug Fork flood protection projects 182
Wheeling riverfront 183
Winfield lock & Dam 185
Yellowtail Dam, MT 98

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