S. HRG. 107–314

ARMY CORPS OF ENGINEERS: MANAGEMENT OF FEASIBILITY STUDIES

HEARING

BEFORE THE

SUBCOMMITTEE ON
TRANSPORTATION AND INFRASTRUCTURE

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

ON

MANAGEMENT PRACTICES OF THE CORPS IN CONDUCTING STUDIES OF NEW PROJECTS, ESPECIALLY THE UPPER MISSISSIPPI RIVER-ILLINOIS RIVER WATERWAY FEASIBILITY STUDY

MARCH 15, 2001

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ARMY CORPS OF ENGINEERS CONDUCTS FEASIBILITY STUDIES

THURSDAY, MARCH 15, 2001

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The committee met, pursuant to notice, at 9:32 a.m. in room 406, Senate Dirksen Building, the Hon. James M. Inhofe [chairman of the subcommittee] presiding.

Present: Senators Inhofe, Bond, Baucus, Graham, and Voinovich.

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. The committee will come to order.

Today the subcommittee will receive testimony from General Robert B. Flowers, Chief of Engineers, U.S. Army Corps of Engineers regarding how the U.S. Corps manages projects and, more specifically, how project management should be changed to ensure that the U.S. taxpayers receive the greatest amount of benefit for their investment.

Over the past several months, a reoccurring theme has emerged from those critical of the Corps. Specifically, it is alleged that the Corps has a pro-construction mentality, which has resulted in Corps officers seeking out opportunities to quote "grow the Corps," which presumably means, the bigger the construction project, the better; even though a nonstructural option maybe a better alternative.

It is my hope that today's hearing will begin to address these concerns. Recently, much of the attention has been directed at the Upper Mississippi River and Illinois Waterway Feasibility Study.

In February of 2000, Dr. Donald Sweeney, a Corps of Engineer economist, working on the Upper Mississippi River and Illinois Waterway Feasibility Study, filed a disclosure with the Office of the Special Council alleging senior Corps officials manipulated the study to produce results favorable to large scale construction.

As a result, the U.S. Army Inspector General did an investigation, which found evidence to suggest that there is an inherent preference by Corps senior officers for large scale construction.

Furthermore, the Army Inspector General concluded that many in the Corps felt an obligation to work for the interest of the navigational industry, as opposed to being an honest broker for the national benefit for waterway development.

The subcommittee will be holding a separate hearing concerning this subject later on this year. However, I hope that the Chief will touch briefly on what he believes can be done to reverse this negative public perception of the Corps, following the Army Inspector General's investigation.

We have with us Senator Kip Bond, who also has an intense interest in that same subject, so we will recognize him for his opening statement at this time.

OPENING STATEMENT OF HON. CHRISTOPHER S. BOND, U.S. SENATOR FROM THE STATE OF MISSOURI

Senator BOND. Thank very much, Mr. Chairman.

Like many of my colleagues, I have a full schedule today. I would like to be able to stay here for the whole preceding. I am not sure that I can. However, I do have some comments and very strong views, as some of you may know, that I wish to convey today.

If the purpose of reform is to get better data, sooner and in a less expensive way, then I am absolutely for it. If the purpose of so-called reform is simply to raise the bar and make it harder to approve projects, then I oppose it.

Clearly, if you do not like the Corps, if you do not like flood protection, and you do not like river transportation, and you do like railroad monopolies, then reform could be used in a way to paralyze any movement toward construction. That is not reform. That is obstruction. That is bureaucracy, and it is also expensive.

It threatens to cost our farmers in the agriculture heartland of America their access to the world markets. We are the most efficient producers of food in the world. We need an efficient transportation system. If we do not have that efficiency transportation system, we are going to lose those markets; the countries in Latin America, where they are building waterway infrastructure.

They are applauding and cheering all of the opposition to modernizing our waterways. There is nothing that would make them happier than to follow the editorial reviews in the Washington Post, and fail to modernize our river infrastructure.

I had some African American constituents come to Washington last September for a meeting that I arranged to plead with EPA to let the Corps provide them flood protection. These people come from minority farming communities in Southeast Missouri, a part of what President Clinton designated as rural enterprise community.

Mr. RUSH AND MR. Kasell outlined to officials at EPA that when they experience backwater flooding, they have to load up children in livestock trailers to haul them to school. The contamination from the flood waters has lead to sickness and death. These people have been promised flood control since 1976. After 24 years of study and restudy and delay, they know that further review is the code word for "the wealthy get flood protection and the poor get flood water."

Then there is the matter of the river study. I am pleased that we will have a hearing in April that will focus on whether we will have a modern waterway system or whether we will not.

For the benefit of my colleagues, who I hope will be joining us today, I want to stress the one thing for you to comprehend as you consider the Upper Mississippi River Feasibility Study.

We spent 12 years and $60 million trying to do a 50 year projection. Hear me please. The Corps of Engineers is attempting to predict demand for water transportation between now and the year 2050, and calculate 50 years of environmental benefits and costs.

We have members of this body who are quite skeptical that the Nation's forecasters can predict the GNP over the next 10 year period, because that is the basis on which people are objecting to tax reductions.

Hey, they want us to do a 50 year projection of economic benefits. We are asking the Corps to tell us how many metric terms of beans, corn, coal, gravel, and petrochemicals we will transport in the year 2040, and at what price.

Following is the national NAS conclusion that was not reported in the media. This is what the National Academy of Science said. "No one can predict with confidence the demand for water transport, or almost anything else, 50 or more years in the future."

The National Academy of Sciences noted that the economists, not the uniformed Corps officials, while well intentioned, produced models that were flawed and not based on realistic assumptions.

I could tell you today that if we are waiting for the economists to agree on a 50 year forecast, then the forecast will be complete in roughly 50 years. Unfortunately, we do not have what President Truman always asked for, which is a one-handed economist, so he could not say on one hand this, and on the one hand, the other.

The economists are never going to agree on where we are going to be in 50 years. It is tough enough to get them to agree on where we are this year and next year. In the meantime, to the delight of our foreign competitors, we have spent $60 million, and our aging system is 12 years older.

Furthermore, if we have inadequate capacity, we will place a limiting ceiling on exports, and assure that a negative 50 year projection is correct.

I continue to believe that Congress may have to do what we are paid to do, and that is to decide if we are going to modernize our heartland's principal artery to the world, or if we are going to disarm unilaterally, because we cannot agree on a 50-year projection.

In closing, General Flowers, I think it is easy for us to be abstract around here. As you and I know, Colonel Jim Mudd took the fall for this study, and I think you know what happened in the process. Jim Mudd was an essential part of the Schwartzkopf effort in Dessert Storm; a man of great integrity and ability.

I do not know what your commanders permit you to say here today, and I do not want to get you into trouble for telling the truth. But I certainly hope that you are at liberty to add enough to paint the big picture here. I am convinced, as opponents to modernization are, that the Inspector General report is ready to be incorporated into a New Testament.

Mr. Chairman, Colonel Jim Mudd is now a civilian. He served in General Schwartzkopf's office, and helped plan the Gulf War. He is getting the opportunity to tell the second side of the story before House Caucus Hearing. We have a copy of the statement that I would like to place in the record here today.

Just to give you an excerpt, he discusses the things that have been said about him and the charges that have been raised. He re-

fers to the person who is the centerpiece of the attacks on the Corps, Dr. Sweeney. He was the guest of honor at the Office of Special Counsel's press conference on December 6. He was asked, "At the time you were removed from the head of Economic Study Team for the Upper Mississippi Project, was the model in any shape to be used to compute any de-benefits?"

Donald Sweeney responded, "No, with respect to the demand curves, an incorrect functional form was developed to allow for rapid evaluation to see how the various components worked together."

What he just admitted was that the model which Dr. Sweeney had been responsible to produce, and which was several months behind schedule when Dr. Sweeney was replaced as manager of the economical panel, was not adequate to the task at hand. That is also what the National Academy of Sciences found to be the case.

Senator INHOFE. Without objection, that will be entered in the record.

Senator BOND. Thank you. I appreciate that.

[The prepared statement of Sen. Bond and the referenced document follow:]

TESTIMONY OF JAMES V. MUDD CONGRESSIONAL MISSISSIPPI RIVER CAUCUS MARCH 15, 2001

Co-Chairmen Hulshof and Boswell, members of the Caucus, my name is James V. Mudd. I appear here today as a private citizen. A year has past since the last time I have spoken to this Caucus, then as District Engineer from Rock Island with responsibility for the Upper Mississippi Navigation study.

Since that time a lot has happened to us in regard to the Upper Mississippi Navigation Study.

I have been questioned by the DAIG, the congressional S&I staff and numerous other people, citizens and reporters alike. We have seen the release of the DAIG investigation, we watched three honorable officers get letters of admonishment from the VCSA for their part in the Navigation Study and mast recently we have seen the NAS interim report on their investigation. All three of these actions sent mixed signals to the public.

I would like to talk about all three of these actions.

To say that I am disappointed with the DAIG report on the Upper Mississippi and Illinois Waterway Navigation Study would be an understatement. A travesty of justice is more appropriate. I have read the letter of admonishment that the VCSA issued me several times.

I have reflected on my actions during the time that I was the District Commander of the Rhode Island District and I wouldn't change a thing. I would not make any decisions differently under the same circumstances.

I would like to thank the VCSA for his reasoned actions in this case.

I think he saw the folly in all of this and the political motivation for the DAIG outcome. For that reason, he took the least possible disciplinary action that would protect his wronged officers and still bring the investigation to a close. The VCSA said in my case, "The reason I am not officially reprimanding you for your conduct is because I believe your decision to change certain values in the study was based on your own methodology which you believed was more appropriate and reasonable in accounting for certain variables in the study."

I have also read the DAIG report many times and I find the written product wrought with misinformation, hearsay, and paraphrasing. There was an extreme lack of crosschecking of the facts from testimony given and the overwhelming paper trail surrounding the decisions over a 2-year period was seemingly neglected.

I find this almost criminal in itself. I have seen the words the 'preponderance of the evidence indicated that' . . . throughout the DAIG report. Last time I looked in the dictionary evidence has a truth part to it and I find the search for it in this investigation to be seriously lacking.

The Office of Special Counsel's press conference on 6 December 2000, when the DAIG investigation went public is quite telling. Dr. Sweeney was a guest of honor at the proceedings. The question and answer period was most revealing. Dr.

Sweeney was asked, "At the time you were removed from the head of the economics study team for the Upper Mississippi project, was the model in any shape to be used to compute NED benefits." Sweeney responded, "No. With respect to the demand curves, an incorrect functional form was developed to allow for a rapid evaluation to see how the various components worked together." What he just admitted, Congressmen, was that the model, which Dr. Sweeney had been responsible to produce, and which was several months behind schedule when Dr. Sweeney was replaced as manager of the economics panel, was not adequate to the task at hand.

This is also what the National Academy of Sciences (NAS) found to be the case. The NAS was complimentary, as were many other qualified reviewers, of the spatial equilibrium model (SEM) theory, which was espoused by Dr. Sweeney. The SEM served as the theoretical basis far what was to follow as an analytical tool. The detailed work was to be done with what Dr. Sweeney called the *Essence* model. The NAS found that "The *Essence* model does not, however, adequately use the most important concepts of the spatial equilibrium model. . . ."[1] The NAS discovered, in its review, just as I and my subordinate managers had discovered in 1998, that the *Essence* model was not capable of using variables as input, rather it was hard wired to produce a do-nothing solution on the Mississippi and Illinois Rivers.

The inherently flawed output of this flawed model is the same information that the Environmental Groups took as gospel in early 1998. Why didn't the DAIG find that little tidbit during their investigation? If they would have, the whole investigation and the allegations brought by Dr. Sweeney would have been dismissed.

For your information, the DAIG did have this information, reference page 83 (4), Mr. Marmorstein (Dr. Sweeney's right hand man), admits that he invented N-value to quantify the elasticity of demand. The DATG team did nothing with that information.

But the press conference provides even more revealing information. Dr. Sweeney was asked another very provocative question, "Given that even at this late date, there still remains no empirical validation of any of the Corps "N" values for agricultural products, would you be comfortable with an NED benefit calculation from the Corps' model using any of the "N" values that have been discussed, 1.2, 1.5, 2.0?

Sweeney's reply, "No. If I could start all over from a blank piece of paper and begin from scratch, I would not use "N" values at all but a different functional form altogether."

There it is. Dr. Sweeney developed a model that didn't have data to make it work but he spent millions of taxpayer dollars developing it and then he convinced everyone inside and outside of the Corps of Engineers that it was reliable, predictive and better than any model that the Corps had in its inventory. Through his own words, he lied to us all.

Why didn't the DAIG discover these facts? If they did, there would be no investigation, it would have been thrown out. It is puzzling to me that the VCSA would send the letters of admonishment to the officers in question after these statements were made in public.

As you know, I was the District Commander of the Rock Island District from 1997 to 2000. I watched a very dedicated group of public servants (minus a few on the economics team) work on one of the most challenging civil works studies in US history. Nobody deliberately tried to "cook the books" (except perhaps Dr. Sweeney) as has been claimed. What I observed was a bunch of great human beings trying to wrestle with a very hard problem/task. Predict the future for the next 50 years with a reasonable level of certainty? I'm not sure it can be done.

And with the NAS release of their interim review of the Navigation Study this week, I know and so do you that we can't do it with the Sweeney economic model. As head of the Navigation study's economics study team prior to 1998, Dr. Sweeney was responsible for the development of the model's traffic forecasts.

He also oversaw and supervised the development of the transportation rate data prepared for the model by the Tennessee Valley Authority. Finally, Sweeney was the primary author of the Essence model and its controversial demand curve assumptions and 'N' values.

The NAS found all of these elements to be seriously flawed to the point where the entire model is analytically useless. This brings me to the point at hand. Much has been said about the "N" value for grain currently in use in the study. I have been accused by the DATG of improperly taking or directing actions, which I knew, or reasonably should have known, would contribute to the production of a feasibility study that failed to meet standards established in law and regulation. In the letter of admonishment to me, the VCSA went on to say that, "by improperly directing

[1] See page 3 of executive summary of NAS report "Inland Navigation System Planning: The Upper Mississippi River-Illinois Waterway," released 28 February 2001.

that certain feasibility study data be altered, you directly influenced the outcome of the study pertaining to the Upper Mississippi. River and Illinois Waterway".

I made a decision in June 1999 to use an "N" value of 1.2 for Grain in the Essence model. I listened to all the proponents of the Essence model, the critics, my economists and staff. My economists had previously stated to several working groups and the public that the value of "N" was 1.5. I questioned that value and how they came up with it. I was told that they selected it because it was the median number of the expert elicitation panel's range of "N" values, it produced believable results, and the economic study team was comfortable with it. That rationale was, and is, weak and insufficient for an important and far reaching study. It didn't work then and it doesn't work now. I asked them to use the information that we had available (primarily the Iowa Grain Flow Survey) and try to at least develop a reasoned methodology for the selection of an "N" value for grain. Using this reasoned methodology, the "N" value for grain was calculated to be 1.2.

Many have stated their opinion that we overlooked Illinois. Illinois is pivotal in the navigation study because it exports more than the other states in the upper mid-west (Illinois ships by water more tonnage than any of the other four states and its total is almost half of all the five states combined). If we would have had Illinois Grain Flow Data, it probably would have shown the dependency of this State on waterborne transportation and therefore the N value of grain for this State would be mare inelastic than the rest. We didn't have that data, however, so we didn't fabricate a solution.

We did the best we could with the information and data that we had at the time. In that regard, I have provided you with an attached document prepared by Mr. Rayford Wilbanks, a recently hired senior economist for the Mississippi Valley Division (MVD) of the Corps of Engineers. His report was generated for MG Phillip Anderson, then commander of the MVD, after the Department of the Army Inspector General (DAIG) interviewed the General. MG Anderson was concerned because it seemed as if the DAIG was questioning the mathematical accuracy of the N value of 1.2. Mr. Wilbanks' report to General Anderson is attached as Exhibit l.

After consulting with other economists and mathematicians, Mr. Wilbanks concluded that his "...professional opinion is that there is no mathematical 'error', i.e., you can apply a linear 'N' value to a nonlinear equation. Secondly, I believe the real concern or issue is what is the so-called 'correct' 'N' value and how should it be derived? The utilization of a weighted average of 'N' does have economic merit in that it was derived from actual available data that logically weights the grain distance from the waterway. I do not see a flaw in this approach."

At the time of Mr. Wilbanks' opinion, he had no exposure to the navigation study. Yes, it would have been nice to have commodity flow data, especially grain, from all five states for multiple years. This would have provided us with better information from which to derive expected values for "N" for each State to be used in the model. That luxury didn't exist then and it doesn't exist now. We did the best we could with the one data set (the Iowa grain data). I did ask the grain grower organizations in the five State area if much had changed in the way grain is shipped and/or used in the Midwest since the 1994 Iowa Grain Flow Survey, Their answer was an emphatic, N0! They also said they were probably more dependent upon cheap water transportation which helps offset lower than normal commodity prices. This review contradicts the DAIG finding that the mathematical methodology used to estimate the "N" Value of 1.2 was flawed. There is no similar scientific investigation in the DAIG report, just conclusions totally based on hearsay and false testimony.

As a further validation of the uncertainties surrounding the N-value, I submit a direct quotation from Mr. Manguno's affidavit, dated 1 April 2000, before the U.S. Senate Committee on Environment and Public Works;

"7. Given the current state of the Study's investigation into the subject of waterway demand elasticities, I cannot conclude that the waterway demand elasticity that corresponds to an 'N' of 1.2 for grain falls outside of my notion of the uncertainty bounds surrounding the actual elasticity values."

Although this is a somewhat obtuse way of saying it, I believe Mr. Manguno states in the above quotation that an "N" of 1.2 is within the range of uncertainty bounds, and thus may be the right answer. I find it to be very strange that the news media, and apparently the DAIG, concluded that Mr. Manguno's affidavit supported Dr. Sweeney's allegations completely. I believe that Mr. Manguno's statement refutes Dr. Sweeney's allegations, and supports my decisions concerning the derivation of an "N" of 1.2. Either the DAIG ignored paragraph 7, quoted above, or they did not understand it.

I would also like to point out that the NAS on page 40 of their report state that the "N" value of grain that Dr. Sweeney espoused is not equal to 2.0 but is equal to a lower value of N. (Exhibit 2) They also state that the supply of grain is not

uniform across all farms, and that farms face somewhat different local alternatives. Congressmen, what the NAS just told you is the "N" value is not 2, which Dr. Sweeney adamantly supported, and it is not 1.5, which is the mean of the uniform distribution used by Mr. Manguno. They go on to say that we should have based the "N" on actual historical data and actual shipper behavior—that is what I told my team to do when we calculated "N" equal to 1.2

In hindsight, the selection of a value of "N" of 1.2 is probably too high/-too elastic. On that note, T would also like to provide you a letter from Dr. Hauser from the University of Illinois (Exhibit 3), who did a study with one of the members of the National Academy of Science team investigating the study also, Dr. Baumel. Although this study s dated, he indicates that the value of "N" of 1.2 is at the upper bound of the feasible range of legitimate "N" values. He also indicates that the movement of grain has gotten mare inelastic since the time of his report. Why Dr. Baumel (Chief economic spokesperson for the Upper Mississippi environmental movement and now member of the NAS review team), who has been an active member of the navigation, study economic team/advisors, didn't provide this information to Dr. Sweeney in the early stages of his model development is still puzzling. Or, if he did, why Dr. Sweeney didn't use it is puzzling to me. To the best of my knowledge, the Hauser, Beaulieu and Baumel (HBB) report is the only totally empirically based grain elasticity information the Study team has to date. The DAIG investigators had this letter and the HBB original study. With this information in hand, I question haw the DAIG could conclude that I directed actions which I knew, or reasonably should have known, would contribute to the production of a feasibility study failing to meet standards . . . If anything, my direction got the study into a range of the plausible "N" values for grain.

My directions were not only appropriate but based on a solid mathematical foundation, using the only available empirical data available and the result was closer than any other to grain's true demand elasticity.

My direction was on the mark.

As to the insinuation that I knew what the outcome would be is anything farther than the truth.

In this regard, I submit an E-mail sent by my head economist, Mr. Manguno, written right after the decision to use an "N" Value of 1.2. (Exhibit 4) Mr. Manguno clearly states that any previous model runs are subject to change because the system environmental impacts (costs) had to be incorporated in the model and the optimal timing of benefits to costs had to be determined.

These two facts did have a large impact on the outcome. There was no way for me to have known any of this before Mr. Manguno ran the models.

The DATG had this information and the E-mail and did nothing with these facts either.

On another note, the Navigation Industry folks were telling my economists verbally and in several written reviews that the model they were using was severely flawed. The Corps economists chase to ignore these critics.

MG Anderson was found by the DAIG to have let the industry folks get too close to the study.

The NAS interim report finds the same things wrong with the Navigation economic model that the Navigation Industry was trying to point out. To MG Anderson's credit, he has a good eye for the truth. How the DAIG could find something inappropriate in this regard is totally wrong. And to top it off the Corps regulations tell its planners to seek out the knowledgeable judgment of navigation economists and industry experts. (Exhibit 5) I find the DAIG findings in this regard truly appalling.

I have tried to figure out how the DAIG could come up with the conclusions it did. I am always left with three outcomes, they were politically coerced by the last administration, they were duped by Dr. Sweeney's affidavit, his quasi-expert testimony and that of the other questionable Corps economists, or the IG investigators were in a highly technical investigation that put them at severe disadvantage—they were quite inept for the task.

All three speak to a sad day for the Army. Not only is this report an embarrassment for the Army but also it could be divisive to our soldier's confidence in the IG process.

These are my conclusions: I find the DATG report nothing more than slanderous drivel;

I find the VCSA actions against the only people in the Corps asking the hard questions of Corps economists, who were totally wrong, unconscionable; and I find the NAS findings totally enlightening but almost lost by the public, press and Office of Special Counsel.

It's not every day that a whistleblower blows the whistle on his own incompetence. How ironic.

I still wonder how the congressional S&I investigation turned out but it wouldn't surprise me if they find Dr. Sweeney lacking in good management traits. Rather than supporting Sweeney's allegations and the resulting report prepared by the DAIG, the NAS findings seriously question Dr. Sweeney's professional credibility and his integrity. I feel that Dr. Sweeney owes the American taxpayer a huge apology for wasting more than fours years of effort and millions of dollars in taxpayer funds developing a useless model, not to mention the recent three plus years and millions of dollars that it took us to find out it was useless.

I don't know how this injustice can be corrected. I respectfully request your thoughtful consideration of any options you may have to help correct them. I thank you for your attention to all I've said today, and for any actions that you may undertake as a result.

Subject to your questions this completes my testimony.

EXHIBIT 1

To: Anderson, Phillip, R MG MVD
'subject: "N" Values Issues

Sir, Attached is my assessment of subject issues per your request. I stopped short of contacting economists from universities in the Upper Mississippi region due to the sensitivity of the project and not knowing if it could be getting unbiased opinions. I would welcome a short meeting to relay additional insight after you have had a chance to review.

Upper Mississippi River-Illinois Waterway System Navigation Study

METHODOLOGY FOR COMPUTATION OF "N" VALUE

Task

Is there a mathematical "error" in the Upper Mississippi River-Illinois Waterway System Navigation Study Economic Study Panel's application of the derived "N" value? Would the economic community have contradictory views concerning the methodology, procedures, and application of the Study Panel's derived "N" value to estimate the demand for waterway transportation?

Background

In June 1999 Dr. Donald Sweeney expressed concern to the Economic Study Panel for the Upper Mississippi River-Illinois Waterway System Navigation Study regarding the computation of the "N" value being used in the formula for the demand curve in the *Essence* model. The following paragraph, which explains Dr. Sweeney's concerns, is taken from an E-mail message dated June 29, 1999, from Dr. Sweeney to members of the Economic panel. Dr. Sweeney alleges that the method of computing the "N" value was erroneous in the concluding sentences of the paragraph.

The methodology adopted by the study team for estimating farm product, origin-destination specific, "N" values in the Essence spreadsheet is inappropriate for three reasons. As I understand the methodology, information from the expert elicitation panel for farm products movements regarding reasonable upper and lower bounds for possible "N" values (determined by the panel to be 2 and 1, respectively), along with that panel 's conclusion that agricultural producers located nearer the river are more likely to be inelastic than producers distant from the river with respect to their demand for water transportation, and information regarding aggregated commodity flow data from the report entitled "The Iowa Grain Flow Survey ", 1996, are used to compute an "expected value" of "N" for all farm product movements. The weights used in estimating the expected value for "N" are derived from the proportion of total tonnage of movements of corn and soybeans to the river for the entire State of Iowa from an eastern band (near the river, N=1), a band for central Iowa (further from the river, N=1.5) and a band for western Iowa (distant from the river, N=2). Following this procedure yields an estimate of 1.2 for "N" for all movements of farm products. The first problem with this procedure is that it completely ignores the critical role that the end users of the product have in determining the derived demand for water transportation. It is the interplay of the willingness of producers to supply product to the river and the willingness of end users to pay that determines the characteristics of the demand for water transportation. The other problems with this procedure are immediately evident when the existing flows of grain from Iowa origins to other areas is examined. Most pools on the Upper Mississippi River and Illinois Waterway originate relatively small quantities of grain water movements. These pools do not "draw" grain from western Iowa or anywhere rel-

atively distant from the terminals located in the pool. A few pools (with rail access to the river) originate relatively large volumes of water grain movements and draw a large proportion of their volume from relatively distant ultimate sources. Consequently, the larger volume movements should have higher "N" values and the more numerous smaller movements should have lower "N" values. If the study team wants to adopt some similar methodology, then it should apply the suggested methodology to specific origin, destination, and commodity movements. In other words, each farm product movement should have its own "N" value estimated as a function of the distribution of the ultimate origins of grain and destination for that movement. The final problem with computing the "expected value" of "N" in the manner adopted by the study team mathematical. Computing the weighted average of "N" values and then inserting that average into the non-linear functional form in the spreadsheet does not produce a weighted "average" demand curve due to the non-linearity of the functional form in the spreadsheet.

Methodology

The "N" value of 1.2 for grain is a weighted average that incorporates information from the August 1998 expert elicitation panel and the 1994 Iowa Grain Flow Survey. Info from the panel was used to identify a range of "N" values. Data from the Iowa Grain Flow Survey was used to develop the weights that were applied to the specific "N" values. The weighted average that resulted from this calculation was applied to all grain movements shipped from all origins.

The conclusion of the expert panel was that the "N" value for grain ranged between limit values of 1.0 and 2.0. These limit values were used in conjunction with the three Iowa east-to-west crop reporting regions. The panel had concluded that grain originating closer to the river was relatively more inelastic as compared to grain originating farther from the river. Consequently the limit "N" value of 1.0 was assigned to eastern region and the limit "N" value of 2.0 was assigned to the western region. The mid-point of the "N" value range, 1.5, was assigned to the central region.

Weights were assigned to the three crop reporting regions in Iowa. This was accomplished by using the Iowa data, which described the proportion of each region's corn production that moved to the river. These proportions were converted to weights and assigned to the appropriate region. With assigned "N" values and weights for each region, the overall weighted average of 1.2 was applied to all grain movement shipped from all origins.

Research / Contacts

- Dr. Darren Hudson, Assistant Professor of Agricultural Economics, Mississippi State University
- Dr. Richard Kasul, Statistician Environmental Lad, ERDC
- Mr. Jerry Ballard, Mathematician/Computer Scientist Environmental Lab, ERDC
- Mr. Rich Manguno, Chief Economic and Social Analysis Branch, New Orleans District

Dr. Hudson indicated the methodology utilized does not derive a weighted demand function, but is a demand function with a weighted constant "N" value, i.e., assumes the "N" is constant across the demand function. Dr. Hudson said the methodology utilized of assuming a constant "N" value or elasticity is the standard method to estimate a demand function, a constant "N" is all right to use, and the method utilized has derived an approximation of the effect distance from the waterway has on grain movement.

Dr. Hudson said that with the lack of historical data and time for detailed analysis the weighted average "N" value is a good approximation. He said if you had 20 years of data on grain origins and movements you could run a least squares regression on the log of the quantity using barges and might be able to derive an approximation of N. Until the historical data and analysis is analyzed one cannot tell if the elasticity is higher or lower, although Dr. Hudson said an "N" of 1.2 seems too high. He said you could argue that grain along the waterway is more inelastic (<1) because the facilities for river transportation are readily available, the cost of river transportation is lower than other transportation forms, and there are no real substitutes for river transportation available to grain along the river. He indicated barge and rail are not perfect substitutes, therefore, barge transportation should be less than 1.2. He said that dividing the area into more segments (smaller areas) would most likely result in smaller "N" values because it would more precisely measure the effects of distance. Dr. Hudson said the lack of data and resources dictates the utilization of economic methodology and although you give up some precision the analysis becomes manageable.

Mr. Jerry Ballard, Mathematician, ERDC, indicated the equation utilized is mathematically correct. Also, the application of the linear "N" value is fine for the nonlinear equation for Q. Mr. Ballard indicated that his assessment of the question raised has to do more with doing something other than banding the region.

Dr. Richard Kasul indicated there was nothing wrong with the mathematical application. He said that when you run something through a non-linear equation the expectation may be different than the total, i.e., non-linear equations cannot with certainty be mapped from one non-linear relationship to another therefore, expected results may differ. Dr. Kasul said that two questions are raised, 1) what is the correct "N" value? 2) was the correct application methodology utilized? The first is what the expert panel determined. The methodology and application of a weighted "average" "N" value should yield a better estimation of "N" and therefore should be better than using the mean or midpoint between 1 and 2.

Mr. Rich Manguno said it is recognized the process utilized did not produce a weighted composite demand curve reflecting the distribution and weights indicated. However, the process did incorporate the concept of a distribution of "N" values and was based on the only empirical data available at the time. The process recognized the significant degree of uncertainty that surrounds the estimation of grain demand curves. This uncertainty includes not only the appropriate range of N-values but also the weights that would apply to the N-values. While the weights are known with reasonable certainty for the State of Iowa, the same cannot be said for grain produced in other locations of the study area. For example, most of the grain shipped from the State of Illinois is within 90 miles of a navigable waterway, therefore, strict adherence to a mathematically precise aggregate demand function was not deemed to be critical.

Observations Regarding Methodology

My answer to the question of a mathematical "error" is, NO, there is no mathematical "error". The application of the linear "N" value is fine for the nonlinear equation for Q. It is mathematically proper to utilize the weighted average of "N" in a demand function that is nonlinear. The method to derive the weighted average of "N" produces a good approximation of the effect distance from the waterway has on grain movement.

My assessment of the economic communities' views concerning the methodology, procedures, and application of the derived weighted "average" "N" value utilized in the demand equation is not as clear cut. I do believe most will agree that the methodology utilized was appropriate to estimate the "N" value and capture the effect distance from the waterway has on grain movements. Some will say that defining an "N" value for all segmented locations along the waterway if possible would yield a better estimate of Q. The question is would the estimate of "N" change? Just how precise does the estimate need to be? The precision utilized is dictated by the sensitivity of the answer; data available, time required for analysis, and funding for analysis. The method to derive the weighted "average" "N" produces a better approximation of the effect distance from the waterway has on grain movements than arbitrarily selecting the midpoint between 1 and 2. Some of the uncertainty is handled by utilizing the expert panel to establish the appropriate range of "N" values and further by applying the weights to determine the "N" value. Bottom line, yes there will most likely be conflicting views on subject methodology, but the conflicts will focus more on what are the "N" values all along the waterway, different areas with their own particular "N" values, and request for more detail analysis to determine "N" values.

My personal professional opinion is that there is no mathematical "error", i.e., you can apply a, linear "N" value to a nonlinear equation. Second, I believe the real concern or issue is what is the so-called "correct" "N" value and how should it be derived? The utilization of a weighted average of "N" does have economic merit in that it was derived from actual available data that logically weights the grain distance from the waterway. I do not see a flaw in this approach. However, due to the sensitivity of the "N" value on the quantity of grain movements more in-depth analysis to estimate the "N" value and/or estimation and utilization of different "N" values along the waterway may be warranted. Yes, conflicting views will prevail in the economic community, that is the nature of making projections.

EXHIBIT 2

INLAND NAVIGATION SYSTEM PLANNING

Sensitivity of Waterway Tonnage to Barge Tariffs

Another serious problem is that there is little empirical basis for the Corps' estimate of how much of the grain will moved by barge, and how this will be affected by waterway congestion and the consequently higher shipping costs. The Corps' calculation is based on the ES SENCE model, which assumes an unusual functional form to forecast demand for barge transportation, as shown in Equation 4.I. The form) is not necessarily wrong, but because it is unusual, it is harder to compare it to more conventional formulations and to understand the implications of different values of its parameters.

Corps economists originally argued that "N" in equation (4.1) was likely to be equal to 2, based on elegant but simple reasoning about the spatial distribution of commodity prices near a waterway. The economists hypothesized that agricultural products are loaded at a point an the waterway and that the point is surrounded by farmland producing a constant yield per acre. Each farmer has a choice between shipping the crop to export from the waterway port and selling it for local uses. If the costs of transporting the product to the port are proportional to the distance between the farm and the part and all farmers have the same alternatives, then the area shipping to the port will be a circle centered on the port. The size of the circle will expand or contract as barge rates at the shipping point fall or rise. Because the amount shipped on the waterway is proportional to the area of the circle, this implies that "N" is 2.

Although the reasoning is elegant, some of the assumptions used are not realistic.

If loading points are close, for example, then the drawing area (the trade area in which transportation costs to a given loading paint are lower than those to any other loading point) for each river port cannot be a circle, because the drawing areas will overlap-which implies a lower value of N. Similarly, the costs of transporting the grain to the loading point are not proportional to distance, because the loading-unloading charge is fixed. Finally, the supply of grain is not uniform across all farms, and the farmers face somewhat different local alternatives. Theoretical issues aside, the important issue is that the Corps made no effort to assure that its assumptions about "N" were consistent with historical data an shipper behavior. Studies based on actual shipper behavior suggest that, contrary to the *Essence* model, price responsiveness of freight demand varies greatly by commodity and by location (Small and Winston, 1999).

The *Essence* model implies that farmers that will choose to ship by barge lie within a circle centered on the loading port, As relative barge rates decline, the radius of the circle expands, since farmers further from the part can afford the shipping costs to the port, and vice versa. *Essence* also implies that ;farmers close to the part (well inside the radius of the circle) are insensitive to price, since it is cheaper far them to ship by barge. Similarly, farms far away from a port (well outside the radius) are insensitive to price since they will almost never ship by barge. However, farmers that fad that the cost of shipping by barge is almost identical to shipping by a different mode (or selling the corn for a purpose other than export) are extremely sensitive to small changes in price, such as that from 1 month to another.

EXHIBIT 3

STATEMENT ON BARGE DEMAND ELASTICITIES FOR GRAIN

ROBERT J. HAUSER, PROFESSOR AND HEAD DEPARTMENT OF AGRICULTURAL AND CONSUMER ECONOMICS UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

JULY 22,1999

This statement concerns the estimate for the barge-rate elasticity of demand for grain shipments on the Upper Mississippi and Illinois Rivers used by the Corps of Engineers in its evaluation of various navigation-related projects. My understanding is that the most recent estimate of elasticity used by the Corps is approximately three. (Demand elasticities referred to in this statement will be in absolute (positive) terms.)

Since farm products account for the majority of the traffic on the Upper Mississippi and Illinois Rivers, assessments of navigation benefits and costs rely heavily on the underlying barge demand elasticities for corn and soybean shipments. In analyses conducted by the Corps, if the estimated demand elasticity is too high, wa-

terway navigation benefits will be understated; if too low, the resulting benefits will be overstated. Thus it is important that (1) the general level of the elasticity be considered carefully, (2) differences in elasticities between river segments be considered, (3) a reasonable range of potential elasticities be considered, and (4) the sensitivity of the project-evaluation results to changes in the elasticity be measured. ,I will.address points 1 through 3, based on a study conducted during the 1980's by Hawser, Beaulieu, and Baumel (HBB).[1]

[1] Hauser, Robert.J., Jeffrey Beaulieu, and C. Phillip Baumel. "Impacts of Waterway User Fees on Grain Transportation and Implied Barge Rate Elasticities," Logistics and Transportation Review, 21(1985), pp 37–55. Funded by U.S. Dept. of Transportation, Contract DTRS–57–80-C–00133.

HBB measured impacts of alternative waterway user fees. The 1980 transportation rate structure for rail, barge and truck was used to estimate user-fee impacts given forecasts of 1985 supply/demand conditions for grain. The HBB grain-flow projections were found with an optimization model containing over 11,000 alternatives for shipments of corn, soybeans, and wheat in the U.S., expressed in over 3,000 equations. A base line solution (in terms of grain flows and attendant transportation costs) was found under the 1980 rate structure. The impacts of user fees were then assessed by measuring changes in grain flows and costs caused by imposing user fees (i.e., changing barge rates.) An important output of the analysis are estimates of own-price elasticities for grain barge shipments since the change in barge rate causes a measurable change in barge shipments, enabling the calculation of elasticity estimates. Resulting estimates are presented in Table 1.

Table 1. Estimated Barge Demand Elasticities for Grains (HBB)1

Barge Demand Elasticity

	Fuel Tax	Segment Tax
Upper Mississippi River	2.09	2.10
Illinois River	1.07	0.92
All River Segments	I.62	1.48$

As indicated in Table 1, the barge demand elasticities for grain (corn, soybeans and wheat) found by HBB for the Illinois River, the Upper Mississippi River, and the entire system are well below the demand elasticity of 3.0 currently implied by the Corps shipment demand function for grains. Moreover, the degree of difference depends on the river segment. Because of its location relative to other rivers and to production, the Illinois River's elasticity is approximately half that for the Upper Mississippi River. Consequently, the HBB analysis suggests that using a single transportation demand elasticity for all waterways is not appropriate.

HBB note that their analysis is a "snapshot" of demand characteristics that change from year to year, if not from day to day. In general, the barge rates used in the HBB analysis are higher than those which have existed since the study was conducted, implying that, under a stationary and linear demand, elasticities have fallen since the early 1980's and that the HBB estimates are probably biased upwards, indicating further that the Corps estimate is relatively high.

Given the HBB analysis, the Corps' elasticity estimate should be considered, at best, an upper bound for analysis. Lower bounds could reasonably be defined well below one. Given this type of range, an important question becomes: how sensitive are the Corps' findings to changes in. elasticity estimates from, say, 0.5 to 3.0? Consideration of this question by river segment is critical to providing a sound assessment of the benefits and costs associated with new projects on the inland waterway system.

Your consideration of this statement is appreciated.

EXHIBIT 4

Mudd, James V MVR
From: Manguno, Richard J MVN
'sent: Friday, June 11, 1999 8:52 AM
To: Mudd, James V MVR; Loss, Gary L MVR; Tipple, David A MVR; Thompson, Bradley E MVR; Carr, John P MVR; Barr, Kenneth A MVR; Marmorstein, Jeffrey G MVS; Astrack, Richard F MVS; Stuart, Richard E MVD
'subject: Model Results/BCRs

The attached file summarizes the evaluations completed to date. Several points must be noted. 1) These evaluations do not include system environmental costs. 2)

The list of investment measures is not necessarily a complete list. 3) We have not yet addressed the optimal timing of these measures. 4) If any of the Without Project rehab costs avoided are scheduled during the navigation season there is an additional benefit category to consider Navigation Impacts Avoided. 5) Investment measures that include lock extensions reflect slightly adjusted service times compared to the times most recently used (approximately 1–4 minutes slower for locks 20–25).

We expect to complete the evaluations for the all the measures identified on the attachment by early next week.

RICH

EXHIBIT 5

ER 1105–2–100 28 Dec 90 6–68. Evaluation Procedure: Step 7—Determine Future Cost of Alternative Modes.

a. Future cost per unit of each commodity will normally be the same as current cost. As stated in paragraph 6–60a(5), the without-project condition normally assumes that the alternative modes have sufficient capacity to move traffic at current rates unless there is specific evidence to the contrary.

This step combined with step 6 provides a time series of demand schedules specific to a particular commodity origin-destination pattern. Address the projection of any change in future prices as indicated below.

b. A future rate is a prevailing rate as defined in step 5.

It reflects exclusively a shift in rates because of projected changes in the volume of shipments on a given mode or a shift from one mode to another (e.g., from rail to pipeline). To support such a shift, show that the increase in volume is likely to lead to a change in rate; do not assume, for example, that an increase in volume of traffic of a commodity from one area to another will automatically ensure a more favorable high-volume rate.

6–69. Evaluation Procedure: Step 8—Determine Future Cost of Waterway Use. Two separate analyses make up this step. First, analyze the possibility of changes in the costs of the waterway mode for future years for individual origin destination commodity combinations. Second, analyze the relationship between waterway traffic volume and system delay. Do this second analysis in the context of the total volume of traffic on the waterway segments being studied for with and without project conditions. This analysis will generate data on the relationship between total traffic volume. and delay patterns as functions of the mix of traffic on the waterway; it may be undertaken iteratively with step 9 to produce a "best estimate."

6–70. Evaluation Procedure: Step 9—Determine Waterway Use, With and Without Project. At this point the analyst will have a list of commodities that potentially might use the waterway segment under study, the tonnages associated with each commodity, and the costs of using alternate modes and the waterway, including system delay functions with and without the project over time.' Use this information to determine waterway use over time with and without the project based upon:

a. A comparison of costs for movements by the waterway and by the alternative mode, as modified by paragraph 6–69b.

b. Any changes in the cost functions and demand schedules comparing (1) the current and future without project conditions and (2) the current and future with project condition.

Conceptually, this step should include all factors that might influence a demand schedule; e.g., impact of uncertainty in the use of the waterway; ownership of barges and special equipment; level of service; inventory and production processes; and the like. As a practical matter, the actual use of a waterway without a cost savings or nonuse of a waterway with a cost savings depends on the knowledgeable judgment of navigation economists and industry experts.

Senator BOND. General Flowers, you have come far in your distinguished career. But in the time ahead, I advise that you measure your job performance. It will be determined by many important things, but mandatory endorsement of the Washington Post is not something you should count on.

[Laughter.]

Senator INHOFE. For clarifications purposes, Senator Bond, let me just state that I had talked to General Flowers about all these things that have appeared in various publications. I think that we

all agreed that a hearing is necessary to give him the opportunity to respond, and to respond on the record. It was certainly not in the form of attack on him or the Corps.

Senator BOND. Oh, no, I wanted to make sure, because I have some colleagues that I wish were here today, and I may send them autographed copies of my statement, to share with them.

Senator INHOFE. We will certainly do that. You mentioned the big picture. People forget that my hometown of Tulsa, Oklahoma is navigable. We are on that thing. It does not stop in Missouri. It comes on to Oklahoma.

Senator BOND. We are happy to have you here, coming by.

Senator INHOFE. We have concerns with Montgomery Point Lock and Dam, for example. If we had not attended that, there would be no way to predict the future of navigability into Oklahoma, so we are very much interested.

In fact, I would further say, to make sure it gets on the record, that it was my father-in-law, who worked with Bob Curr and Senator McClellan, that started this whole thing that came all the way there into Oklahoma. So this is deeply in our family.

Senator Baucus, would you like to have an opening statement?

Senator BAUCUS. At a later moment; not at this moment, thank you.

Senator INHOFE. This is your last chance.

[Laughter.]

Senator INHOFE. No, any time you want.

Senator BAUCUS. I will find another chance.

Senator INHOFE. General Flowers, it is nice to have you here. Normally, we have opening statements confined to 5 minutes; but you are the only witness here. Take as long as you want, but try to keep it within 15 minutes at the most. Your entire statement will be placed in the record.

STATEMENT OF LT. GEN. ROBERT B. FLOWERS, CHIEF OF ENGINEERS, U.S. ARMY CORPS OF ENGINEERS

General FLOWERS. Thank you, Sir, I appreciate the opportunity to be here. I have prepared a statement that we have furnished, and I would like to ask that it be made part of the record.

Senator INHOFE. Without objection.

General FLOWERS. In my remarks this morning, I intend to speak out in defense of the U.S. Army Corps of Engineers, with its 35,000 dedicated military and civilian public servants.

They are deeply concerned about what they read in the newspapers, and the reason is that they do not recognize their Army Corps of Engineers in the words that they read; and sir, neither do I.

The Army Corps of Engineers is charged in the press as a rogue agency, out of control, too cozy with Congress; and living by its own rules.

Those allegations are absolutely false. The Army Corps of Engineers has been publicly labeled that it cannot be trusted to do an objective study. The facts do not bear that out. It is simply not true.

We have been painted as being insensitive to the environment, when the fact is that 20 percent of the our civil works program is dedicated to the environment. This percentage is growing.

The language in the President's budget speaks to serious questions that have been raised about the quality, objectivity, and credibility of Corps reports on economic and environmental feasibility of proposed water projects. We welcome the opportunity to address these questions and to take action to address any and all findings of merit.

In the case of Upper Mississippi and Illinois Navigation Study, we are responsible to forecast economic activity 50 years into the future. It is very, very difficult to try to model this far ahead. I am not convinced that anyone has the tools to do this. I take very seriously both the results of the of the Army Inspector General's report on the Upper Mississippi and the report of National Academy of Sciences.

Having said that, the public needs to be better informed about the circumstances surrounding this study. I am making substantive changes to the procedures used for the study. I must ensure the integrity of our study process. There were no findings of fraud or waste. Good and decent Americans are involved on all sides of this issue.

The study, as indicated on this chart, when interrupted by whistle blower allegations, was far from complete and had yet to undergo several serious reviews.

Senator BAUCUS. General, do we have a copy of that somewhere?

General FLOWERS. Senator, we will furnish you a copy.

Senator BAUCUS. Thank you.

General FLOWERS. We were still in the study phase when whistle blower allegations were made. The National Academy of Sciences found that the model for economic analysis was flawed. In fact, the Academy's report said that the shortcomings were so serious, that the model should not have been used. Dr. Sweeney, the lead core economist on the study, developed this model.

It was this emerging realization that caused much of the tension between the parties involved in the allegations. Despite the enormous complexity, the goal of our study process is to produce the best economic and scientific analysis available for the management of our Nation's water resources.

Let me tell you the situation I found when I took over as Chief last October. I found a fundamentally sound organization, whose people possess an amazing breath and depth of professional and technical capability, and who continue to persevere in providing sound solutions to the Nation's water resources problems, despite being surrounded by controversy.

Over the past year, we have been maligned in the press. Congressional committees, our own Army Inspector General, and the National Academy of Sciences have investigated us. We have had our credibility assailed and integrity questioned. Morale is suffering as a result of these circumstances.

For over 200 years, the Congress and the American people have put their faith and confidence in the ability of our agency to respond and to solve some of our most complex National problems.

Today, I assure you, the Army Corps of Engineers is an agency of integrity, with people of high character, who return real value to the Nation. The Corps has sound, systematic processes, that consistently provide decisionmakers, the Congress, the Administration and the American people, with solid recommendations based on sound engineering, scientific fact, and objectivity.

Our processes are not just Corps processes; they are Federal processes that are used throughout the Government in the water resources arena. We work in an open atmosphere and collaborate with many stakeholders. We have been and remain willing to incorporate improvements to get better answers. Our intent is to achieve a synergy between economic objectives and environmental values.

Toward this end, in April of last year, we improved our planning guidance, and this has clarified our ability to develop projects for environmental restoration. I pledge that we will continue to improve this process.

Let me now address more specifically some of the questions that have been raised by two investigations of our study of the Upper Mississippi River and the Illinois Waterway.

I believe many of the problems occurred for one simple reason. People were trying to do the right thing, their duty. I think that is an important point to remember, as we look at three of the more important findings and recommendations.

The National Academy identified the economic model that we were using in the study as a problem. We agree. Within the Corps, we saw that this model was not working and needed change. The internal processes within Corps were in place, and the Crops leadership intervened.

That intervention, however, has been characterized as an attempt to manipulate the outcome of the study. I do not believe it was. The Academy's report now confirms that the model was flawed.

The Academy also found that despite the nearly $25 million that we spent on environmental studies, we must do more to integrate this information into the project decisionmaking process. We accept that judgment. I have already talked about the changes that we have made in our process to incorporate environmental values in our projects.

In partnership with the States and other Federal agencies, we have made great strides in understanding the ecology of the Upper Mississippi, and in restoring its environmental resources; but we can and will do more. We also pledge to more thoroughly examine nonstructural alternatives.

I am also taking the following additional actions. We will go forward with this complex study, after assessing the findings in the Inspector General's report and the National Academy of Sciences' report, and refocusing and restructuring the team. I am also establishing a Washington-level principles group, composed of senior people from other key Federal agencies.

The Corps will continue to lead the study that this group will provide national level balance and guidance on important economic and environmental issues. The principles group met for the first time yesterday.

We are also convening a similar group at the regional level, composed of our own Corps professionals, those from other agencies, the States, and non-governmental organizations such as industry and environmental groups.

Finally, given the regional and controversial nature of the study, I am placing the study team under the direct supervision of the Commander of the Mississippi Valley Division, a general officer.

Let me get back to the findings. One that I want to address specifically is that the Corps provided inappropriate information to the barge industry. The facts do not bare this out.

Public involvement began early in the study. There have been 34 public meetings, with over 2,400 attendees and 2,500 comments. Mailings went out to almost 10,000 individuals, agencies, and stakeholders, and there is still more to come.

It is important to remember that the users, and the barge industry in particular, will be paying for half of the construction of any possible solutions; and the improvements, or lack thereof, that will ultimately have a great impact on their cost of doing business. It is incumbent upon us to provide them access to the study and to consider their input. We also provided access to environmental groups and other stakeholders throughout the process. We welcome and we use the input we receive from all interest groups and individuals. The Corps takes the findings of the two reports very seriously. We clearly understand our responsibility for providing you with the best environmentally sustainable alternatives, and we will do so.

Let me move to the broader issue. During the review of the Upper Mississippi study, sweeping generalizations unfairly characterized the entire Corps study process. Two facts are important here. First, the conclusions reached were based on one study in one division. It is one of the largest and most complex studies we have ever undertaken; but it is still only one study. We have done thousands of important studies over the years.

Second, a 1999 National Academy of Sciences' report found our study process to be fundamentally sound. One of my major objectives is to guarantee you that you can continue to have confidence in my organization and our products.

It is critical that we continue to provide valuable services for the American people. Therefore, I am proposing as soon as possible the establishment of an independent review panel for large, complex, or controversial studies.

We are still working on the details of this initiative. It will be a mixed group of Corps senior leaders and outside independent experts. They will provide me with a separate assessment, before I forward my report to the Office of the Assistant Secretary.

This proposal would be an interim step while we await results from the WRDA 2000 mandated National Academy of Sciences review.

Additionally, I am reinstituting the Chief's Environmental Advisory Board next month. In the past, this group of experts helped move Corps thinking and processes to achieve a more environmentally sustainable philosophy. They will again play a key role, and I look forward to hearing from them.

Before concluding, I want to briefly return to the charges that have been leveled at the Corps. Are we a "rogue agency," outside effective executive branch control, and "too cozy with Congress"? We are absolutely not.

We are a military organization, under the civilian leadership of the Assistant Secretary of the Army for Civil Works, and the military supervision of the Chief of Staff of the Army.

When I came on board last year, I co-signed a letter with the Assistant Secretary, that reiterated this relationship and our individual roles and responsibilities. I would submit that the entire Corps program is subject to a higher level of executive branch and congressional oversight than any other form of Federal activity.

Corps projects are separately authorized, and the bill is passed by Congress and signed into law by the President. Every project is reviewed annually by both the Administration and the Congress as part of the Appropriations process, before it can progress. Each is also subjected to a benefit cost analysis that is unique among Federal agencies.

The second charge is that the Corps cannot be trusted to do an objective study and has a bias for construction. The facts tell a different story.

This is what we know is true. We know that of every 100 reconnaissance studies undertaken, only 16 result in actual construction, and five of six are weeded out. This is a pretty tough wicket to get through.

We examined 15 cases where we have projected usage on the inland waterway system. The overwhelming majority shows actual traffic was close to or exceeded the projections. Only in four cases was traffic significantly below projections. Keep in mind, we are attempting to predict conditions well into the future.

Another charge is that our projects benefit a few well connected beneficiaries, such as large agricultural interests, large companies, and foreign ship owners. The facts do not support the charge.

In all of our major mission areas, the benefits that the Corps program provides are widespread. For example, 98 percent of the Nation's international trade comes through Corps-maintained channels at the Nation's ports. This provides jobs for 13 million Americans.

Since 1959, Corps projects have prevented nearly $500 billion in flood damages across the country, returning nearly $6 in benefits for every $1 invested.

The Corps hosts 380 million visitors a year at recreation sites, providing boating, swimming, and fishing. We produced 24 percent of the Nation's hydropower. This power has a very high demand today.

Your investment in the U.S. Army Corps of Engineers produces a 26 percent annual rate of return, and put $30 billion in tax revenues and savings in the Treasury.

Finally, we are accused of continuing insensitivity to the environment. This is absolutely unfounded. Again, our environmental program now constitutes 20 percent of our overall civil works program, and is growing.

Projects with environmental benefits as the principal output now compromise the largest number of study new starts; more than navigation and flood control.

Over the many years that the Corps had been working in our country, society's needs and values have changed, and we have, too. We have fully integrated environmental values into every phase of our program. We routinely solve problems in ways that also benefit the environment.

My view, from 5 months on the job, is that Corps continues to be an organization with the highest integrity and remains a critical part of solving our country's problems, today and in the future. It is an organization that has changed in the past and is willing to again, provided that the change will result in improvement.

We do not work alone. You in the Congress, the Administration, interest groups, and citizens, all are important to solutions.

As our critics have chided us in the past, I would ask that they work with us in the future, for the well being of our citizens and the environment in which we live.

Mr. Chairman, that concludes my remarks. I am prepared to respond to your questions.

Senator INHOFE. That was an excellent statement, General Flowers.

We have been joined by two Senators. I would like to give Senator Baucus and Senator Graham an opportunity for an opening statement, if they choose to do so.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you, Mr. Chairman. I will be very brief.

General I appreciate your statement and presence here, and your ongoing efforts to improve not only the relationship with the Corps, but the operations of the Corps, basically for the American people. I appreciate that very much.

When we get to the time to ask questions, I would like to explore with you a little about the Upper Mississippi, and its relation to our State, and the master manual, and how all that is put together.

As you well know, we are a State where it does not rain. The precipitation west of about the 100th meridian is about 14 or 15 inches, and that is about it.

In western Montana and eastern Montana water is everything. To Oklahoma, it might be oil and gas, and water is probably important, too; but in Montana, it is primarily water. We do not have a lot oil and gas. It is extremely critical, with the levels of pools and so forth.

Second, I want to explore a little bit the communication between local Corps officials, and Omaha and the rest of the Corps.

People in Montana have great relationships with local management there. It is wonderful. There is a lot of trust. However, there is some feeling that when you go further up the chain, the communication is not very good. It is not what it could and should be.

Beyond that, I have a couple of questions about the President's proposal to cut the Corps budget, and cut it considerably, and what

impact that might have on your operations. I will get to that later. Thank you.

[The prepared statement of Senator Baucus follows:]

STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Thank you Mr. Chairman. I would like to thank General Flowers for testifying here today. I look forward to hearing your testimony today. There has been a lot of focus on Corps management activities in recent years. There has also been a great deal of criticism leveled at the Corps. Some of this criticism has amounted to serious accusations of misconduct by senior officials.

To the Corps' credit, it has made some effort to respond to these criticisms about its management practices and its alleged bias toward large construction projects. I hope to learn more fully from General Flowers how his agency plans to institute reforms. I am encouraged by General Flowers' testimony, that he would like to make the changes necessary to ensure the continued integrity of the Civil Works planning process.

I also look forward to discussing with General Flowers some of the Corps activities that are very important to my State.

Actions taken by the Army Corps of Engineers can have an enormous impact in Montana. For example, the Missouri flows into Fort Peck Reservoir in Montana. Every year, throughout the year, we sit and watch water flow out of our State for a multitude of downstream uses. Many of those uses are important to other States, and I appreciate that. However, that water is vital to recreation in our State, to our farmers and ranchers and to our economy.

Our local communities around Fort Peck have a good relationship with the local Corps officers. I think that's great. It's a model of cooperation that should be encouraged in the Corps because, too often, decisions are made in Omaha or in Washington DC that just don't work for Montana. I am interested in discussing with General Flowers how to improve the lines of communication between States like Montana and the Omaha District.

I understand that the President proposes to reduce the Corps' budget considerably. I realize that this could pose some problems for the Corps as far as instituting reforms or prioritizing projects is concerned. I would like to hear General Flowers' thoughts on this issue.

Again, I would like to thank General Flowers for being here and I look forward to discussing with him ways to make the Army Corps of Engineers a more effective, efficient and responsive government agency.

Senator INHOFE. Senator Graham?

OPENING STATEMENT OF HON. BOB GRAHAM, U.S. SENATOR FROM THE STATE OF FLORIDA

Senator GRAHAM. Thank you very much, Mr. Chairman, and thank you for calling this hearing.

I have had the privilege of working closely with the Corps of Engineers on many important and successful projects over the years. This committee, in the last several years, has paid a lot of attention to the American Everglades.

In my opinion, this is an outstanding example of the new modern Corps of Engineers, in its commitment to professionalism and the quality of its plan for environmental restoration of this important Nation treasure.

I appreciate the comments that have been made by General Flowers. I believe that he represents the spirit of the new Corps, and will be a leader who will help to take the culture that I think that is illustrated in the Everglades on a nationwide basis.

I would, however, like to bring to the committee's attention a specific Corps project, which I think raises some of the concerns that have lead to this hearing, and that is the project of dredging in the Apalachicola River.

This river, which is one of the largest in the Eastern United States in terms of annual water flow, has for a century and half been a major transportation artery in the south, with its two extensions the Chattahoochie and the Flint River. It has been a significant transportation corridor.

Approximately, a half century ago, Congress directed the Corps of Engineers to enhance the ability of the Apalachicola to serve as a transportation system by requiring that it maintain a channel nine feet deep and 100 feet wide, sufficient to float barges on the Apalachicola. This project has been under the jurisdiction of the Mobile Office of Corps of Engineers.

I believe the time has come for this project to be reexamined in terms of modern realities. With other Members of the Congress, 18 months ago, a request was made of the Corps to examine the Apalachicola. I would like to ask that a letter and accompanying materials be submitted for the record, Mr. Chairman.

Senator INHOFE. Without objection.

[The referenced document follows:]

OFFICE OF THE ASSISTANT SECRETARY FOR CIVIL WORKS
Pentagon, Washington DC 20370–0108

Honorable BOB GRAHAM,
U.S. Senate,
Washington, DC. 20510–0903.

DEAR SENATOR GRAHAM: I am writing to you regarding the Apalachicola-Chattahoochee-Flint (ACF) navigation project, Alabama, Florida, and Georgia. Specifically; I am responding to your letters of July 19 and 28, and November 9, 1999, wherein you asked me to provide additional information regarding the ACF navigation project.

Over the past 12 months we have discussed the ACF on numerous occasions and our respective staff have exchanged information. I apologize for the delay in sending you a final written reply. However, this office has been working diligently with the Army Corps of Engineers to compile, evaluate, and discuss the volumes of material on file regarding the ACF. Last month, 1 was provided a comprehensive briefing on the ACF and related matters during a visit to the Corps South Atlantic Division in Atlanta, Georgia: Enclosure 1 is a short 3=page summary of the extensive information we have compiled in an ACF reference notebook, a copy of which is provided at enclosure 2. Enclosure 3 contains additional information and clarifications in response to your specific questions regarding shipping costs, maintenance casts, flow requirements and ACF Compact negotiations, alternative dredged material management plans, and water quality certification from the Florida Department of Environmental Protection.

Based upon our review and conversations with the Corps, I believe that maintaining navigation on the ACF is not economically justified as environmentally defensible. With an economic return that has been estimated at less than 40 cents far each dollar spent, it is difficult to continue to invest nearly $3 million each year on this project in light of the Corps overall backlog for operation and maintenance: Further, the deauthorization of navigation would provide the Carps greater flexibility to address important environmental issues along the river.

Again, I apologize for the delay in responding to your letters. As always, I look forward to working with you, other Members of Congress, the Corps, and interested parties to discuss the future of navigation on the ACF and the potential for further exploring how to meet environmental restoration and protection, and recreation challenges, especially in the Florida panhandle area. Please do not hesitate to contact me if you have any questions.

JOSEPH W. WESTPHAL, *Assistant Secretary of the Army (Civil Works)*

APALACHICOLA-CHATTAHOOCHEE-FLINT NAVIGATION PROJECT (ACF)

MAJOR CONCLUSIONS

- A draft analysis for the Comprehensive Study of the ACT/ACF River Basins—NED benefits from transportation savings are about $2.7 million/year, while O&M casts are about $7 million/year, for a BCR of $0.4.
- Past, current, and potential future environmental impacts, and related impacts on recreational uses are significant enough to warrant thinking about the sustainability of commercial navigation on the ACF system. It is anticipated that the benefits of restoring and protecting environmental resources and functions would far outweigh economic benefits associated with dredging and disposal practices and future requirements.
- The authorization for the ACF does not establish priorities for authorized purposes (flood damage reduction, navigation, hydropower, recreation, fish and wildlife, water quality). Thus, the Corps, in partnership with the three States, has tried valiantly to balance or maximize operations for all purposes.
- Dredging/disposal, navigation windows, hydropower infrastructure operations, recreation, water flows/allocations; fish and wildlife should be considered concurrently
- The Army has a tremendous opportunity to assume a leadership role under the auspices of the existing ACF project, the ongoing ACT-ACF Basinwide Comprehensive Study, and in accordance with the principles of cooperation outlined in an interagency Memorandum of Understanding executed on May 5, 1999.

ENVIRONMENTAL INFORMATION

- Apalachicala River is an Outstanding Florida Water, and Florida's largest river
- Dredging/disposal practices, and bed degradation have adversely affected riverine and flood plain habitat, the riverbed, and water quality along 50 miles of river
- USFWS concerned about potential impacts to federally listed fish (1) and mussels

FUTURE ISSUES

- Expensive structural options for increasing channel reliability would have serious environmental effects
- FDEP 5-year water quality certification has rigorous conditions to protect water quality (e.g., prohibits mechanical redistribution and with bank disposal; extensive mitigation requirements may be biologically unachievable and cost prohibitive)
- No approved disposal areas are available for Spring 2000 dredging

RECREATION CONSIDERATIONS

- ACF Lakes in GA have combined annual economic impacts of over $300 million
- "Navigation Window" releases strand recreation facilities, create aesthetic and water quality problems, and affect adversely aquatic habitat and species
- Significant recreation related benefits are foregone

ACF ACTION FRAMEWORK STRATEGY:

- Federal/State agencies, local governments, interested parties must collaborate
- OASA(CW) should work with the ACF Compact Commission through the ACF Compact Commission (Mr. Lindsay Thomas)

The Comprehensive Study could be refocused to:

- Update NEPA
- Revise Regulation, Dredged Material, and Navigation Management Plans
- More extensively involve water agencies and stakeholders
- Address ESA issues
- Explore opportunities for environmental restoration and projection
- Consider a basinwide ecosystem management approach
- Evaluate hydropower equipment and operational needs
- Consider fish passage structures at dams
- Consider making environmental restoration and protection a primary purpose
- Explore partnerships with organizations like NFWF and TNC
- Consideration an ACF-specific program like UMRS-EMP or MMREP
- Address long-term monitoring (biological, physical, chemical, hydrological)
- Reevaluate the status of two Section 1135 Projects w/NWFINMD as sponsor

- Estimate habitat loss by quantity/type to guide restoration/protection goals
- Consider WES & TNC studies and modeling on alternative operational schemes

DEAUTHORIZATION OF THE COMMERCIAL NAVIGATION PURPOSE.

The economic benefits associated with recreation and environmental restoration and protection clearly outweigh the benefits of commercial navigation. A smaller navigation channel could be achieved, either as an interim or permanent measure, by not dredging as much or by restricting the navigation season. However, it makes sense to consider deauthorization of the commercial navigation purpose because:

(1) Historically, the Corps has not been able to maintain the channel at authorized depths more than about 56 percent of the time. Poor economic performance (traffic) has resulted, along with the need to implement extraordinary O&M measures that are expensive and result in adverse environmental impacts.

(2) Since about 1990, it has cost the Federal Government about $30,000/barge to dredge the channel for the 100–145/barges per year that use the ACF, some of which only travel a few miles, and traffic has declined about 10 percent annually.

(3) The Corps. would avoid causing significant environmental impacts as a result of dredging and use of navigation windows, and thereby avoid the costs to comply with the stringent mitigation requirements under the new FDEP permit.

(4) The BCR for commercial navigation on the ACF is estimated, unofficially; at about 0.4, which, if verified, violates Principles and Guidelines for water resources projects.

(5) There are no approved disposal areas available for use in the spring of 2000 and beyond, and because based upon information provided by-the Corps, State, and the USFWS, it will be difficult and expensive find alternative disposal areas or implement structural measures to reduce dredging requirements (presuming these measures are environmentally acceptable, which they are not).

(6) Current O&M practices and the 1976 E1S are very susceptible to legal action, and an acceptable cumulative impact analysis has never been done.

(7) The Corps currently pays for 100 percent of the 0&M for a project which, by law, is supposed to be cast shared (sponsors responsible for LERD). Lack of willingness to meet local sponsorship says something about affordability and acceptability.

(8) Water allocation is a complex and controversial issue currently being addressed by the three States. Taking commercial navigation off the table for water allocation purposes would increase the flexibility of the Federal Government and the States when dealing with water demand and availability issues.

Senator GRAHAM. If I could just read one paragraph of the letter from Joseph W. Westphal, Assistant Secretary of the Army for Civil Works, dated August 9, 2000.

"Based upon our review and conversations with the Corps, I believe that maintaining navigation on the Apalachicola, Chattahoochie, Flint is not economically justified or environmental defensible.

With an economic return that has been estimated at less than 40 cents for each dollar spent, it is difficult to continue to invest nearly $3 million each year on the project, in light of the Corps overall backlog for operations and maintenance.

Further, the de-authorization navigation would provide the Corps greater flexibility to address important environmental issues along the river."

I believe that summary statement poses a challenge not only for the Apalachicola, but for the Corps. How do we go back and review projects, in this case, that have been in operation for more than 50 years, in terms of their current economics and environmental consequences?

If I could I would like to just give a depiction of the economics of this project. The Congressional Budget Office has done a cost analysis of 26 Corps navigation projects, based on the cost per ton mile.

You can see that the range is from a minuscule cost to a cost of over 15 cents per ton mile. The Apalachicola is the second most ex-

pensive of the 26 projects, which were analyzed with a cost of 14 cents per ton mile of traffic. What are we getting for this very expensive project?

This is what is required along the banks of this magnificent river in order to keep this nine foot, 100 foot wide channel operational, so that we spend 14 cents per ton mile of barge traffic, and have a recovery rate of less than 40 cents per dollar spent.

It is necessary to pile the sand which comes out of the river along the banks of the river, and now some 50 miles of valuable habitat has been destroyed. We are now, with General Flowers' leadership, beginning a process of environmental restoration of some of this, which will have significant additional cost.

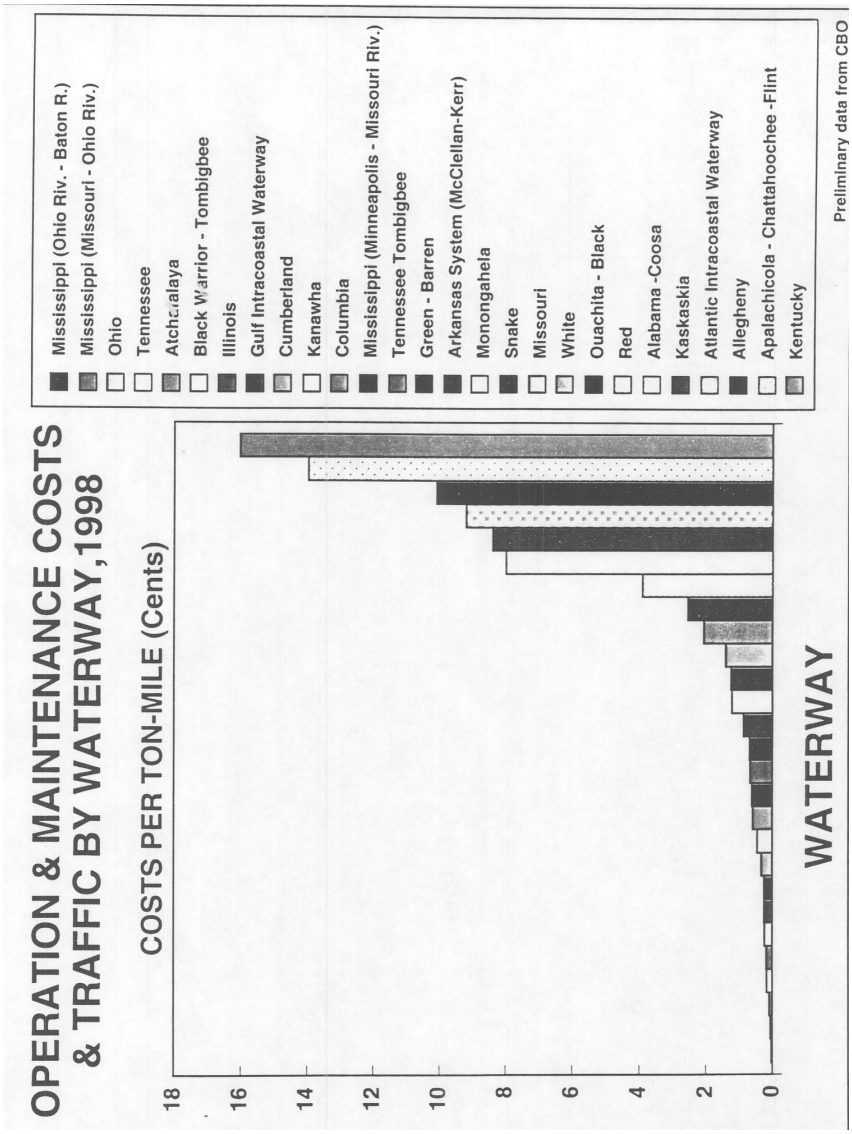
Maybe some of you saw the movie "Yulee's Gold," which was about the production of what we consider to be the best honey in the world, Tupelo honey. The area where that motion picture was made is just in back of that sand pile. That is where the Tupelo honey comes from, an industry which is now threatened by the destruction of the habitat along the Apalachicola.

Mr. Chairman, I bring this example to your attention as a case study of what I think is the challenge to the modern Corps and to the Congress, and that is a process of looking at these projects; not just accepting tomorrow what we did yesterday, because it is the easy thing to do; but to challenge whether these projects can stand the test of economics and environmental consequences today.

My opinion is that the Apalachicola River Project clearly cannot. I hope that this committee will soon give its attention to the recommendation of the Corps, which is that be de-authorized for the navigation purposes.

Thank you, Mr. Chairman.

[The information referred to follows:]



Senator INHOFE. Thank you, Senator Graham.

Senator Voinovich, did you have an opening statement that you want to share?

OPENING STATEMENT OF HON. GEORGE V. VOINOVICH, U.S. SENATOR FROM THE STATE OF OHIO

Senator VOINOVICH. I am going to take a couple of excerpts from it. I will not get into the whole thing. I apologize that I was not here to hear your testimony, and to the members of the committee.

You and I have had a chance to talk in my office. I have something that we have all heard: fool me once, shame on you; fool me twice, shame on me.

I must say that although we have had a very good discussion, I think that what I perceived, not so much from you but from your predecessors, was a lot of this business about Dr. Sweeney, and about the methodology you used for doing your feasibility studies, and the criticisms were exaggerated.

The National Research Council said that it was flawed. I was told that now that we pulled this guy off the job because he was not doing it the right way, and we have a better way of doing it. Then an objective group came in and said no, that was not the case, so that needs to be taken care of.

I think that the Corps needs to ensure that its process of planning and recommending projects is open, objective, and inclusive, and each project evaluation meets the highest standards of professionalism and quality.

Further, we must be able to continue to rely on the Corps to recommend to Congress for authorization and funding only projects that make maximum net contributions to economic development and environmental quality, and that is not easy.

You have pressure from the Administration and you have pressure from members of this body for you to do some things that maybe you do not want to do. I am telling you to stand up and do what you think is right based on the facts, regardless of what the circumstances are.

In addition to that and in addition to restoring Congress' and the general public's confidence in the Corps, the Corps faces other challenges. Key among these challenges is the relationship between the Chief of Engineers and the Assistant Secretary of the Army and Civil Works.

Last year, that relationship was public and acrimonious about who is in charge and who was co-opted into the other and so on. I know that you have clarified that, I guess, with the memorandum that was signed by the Chief of Engineers and the Assistant Secretary of the Army on November 28, 2000.

I just want you to know that this Senator is going to be watching to ensure the Chief and the new Assistant Secretary, whoever he or she may be, follows through on the agreements laid out in that memorandum.

If it is not, we are going to the another look at some of the legislation that Senator Daschle was trying to get through the Congress last time to clarify that relationship.

The other thing is that we have a backlog of projects. You have a backlog in terms of your maintenance and operations budgets. I think that it is incumbent on you to stand up and talk about that.

We cut the money available for these projects in half, and increased your responsibilities dramatically during the last 8 years. Something has got to give.

I think that it is your job to stand up for the Corps and to the Secretary, right along the line, and just call them as it is; and when you come to Congress, lay it out. You cannot make a silk purse out of a sow's ear. I think that it is really important that you do that.

As I just pointed out, you have a problem. The President's blueprint budget proffers a strategy for addressing some of the backlog and for giving a high priority to projects and programs in the Corps principal mission areas. Overall, the Corps civil works budget is being reduced by 14 percent in fiscal year 2002. That is ridiculous. You cannot do that. We need more money. I believe that we need to address higher levels of both funding for operation, maintenance, and construction functions.

That is about it. But I just want you to know that I am no longer Chairman of this committee. I spent a lot of time on the Corps last time. Mr. Chairman, because I spent as much time as I did on this, I am going to stay on this, and work with the Chairman. I am not letting go of this. Do you hear me?

I have got my teeth into this thing, and I will not let it go. I am going to watch it carefully and make sure that it gets done.

I know from talking to you, that you are sincere about what you are doing. Your job is to restore the respect for the U.S. Army Corps of Engineers, with the Congress, with Administration, and more importantly with the people of this country, and I want to work with you. Thank you.

[The prepared statement of Senator Voinovich follows:]

STATEMENT OF HON. GEORGE V. VOINOVOICH, U.S. SENATOR FROM THE STATE OF OHIO

Thank you, Mr. Chairman. Welcome, General Flowers.

In the short time I have been in the Senate, I have taken an active interest in the civil works mission of the Army Corps of Engineers. As the former Chairman of this subcommittee, I have worked on both Water Resources Development Act bills that were considered in the 106th Congress. I am proud to have been the sponsor of WRDA 2000, which Congress passed last November and was signed into law in December.

The year 2000 was a difficult one for the Corps. A series of articles in the Washington Post headlined increasing criticism about the objectivity of the Corps' project evaluation process of significant water development projects across the country, including the Upper Mississippi River Illinois Waterway navigation project.

Last December, both the findings of the Special Counsel and the report of the Army Inspector General were released, substantiating earlier allegations that Corps officials exerted improper influence and manipulated a cost-benefit analysis in order to justify lock extensions on the Upper Mississippi River Illinois Waterway.

These findings raise doubts about the integrity of the Corps's project evaluation and development processes. Quite frankly, there are many in Congress who have lost faith in the Corps.

Candidly, I am upset that the Corps patently dismissed as "exaggerations" the allegations made public by whistleblower Dr. Donald Sweeny who said that senior Corps officials manipulated the Upper Mississippi study to produce results favoring large scale construction. These "exaggerations" that the Corps dismissed were later substantiated by the Army's own Inspector General. In addition, the Corps' economic analysis that was part of the Upper Mississippi study was verified to be "flawed" by the independent National Academy of Sciences' National Research Council.

However, I believe the Corps plays a vital role in navigation and storm-damage mitigation throughout the United States and should be given the opportunity to redeem itself.

The Corps needs to ensure that its process of planning and recommending projects is open, objective, and inclusive and that each project evaluation meets the highest standards of professionalism and quality. Further, we must be able to continue to rely on the Corps to recommend to Congress for authorization and funding only projects that make maximum net contributions to economic development and environmental quality.

To that end, I supported a provision in WRDA 2000 that directs the National Academy of Sciences to conduct a study of independent peer review of Corps projects and a study of Corps methods of conducting economic and environmental analysis

or projects. In fact, the National Research Council recently recommended that Congress direct the Corps to have its feasibility study of the Upper Mississippi River project reviewed by an outside interdisciplinary group of experts.

I believe the Secretary of the Army took the appropriate action in directing the Chief of Engineers to review the Inspector General's report and the recently released National Research Council's evaluation report on the Upper Mississippi Illinois River feasibility study to determine what changes should be undertaken in the Corps' conduct of its studies. I look forward to hearing from General Flowers this morning about the status and preliminary findings of this review process.

In addition to restoring Congress' and the general public's confidence in the Corps, the Corps faces other major challenges. Key among these challenges is the relationship between the Chief of Engineers and the Assistant Secretary of the Army for Civil Works. Last year there was a very public and acrimonious argument about the respective roles of the Chief and the Assistant Secretary in the supervision of the Corps civil works program.

These roles were to have been clarified in the memorandum that was signed by the Chief of Engineers and the Secretary of the Army for Civil Works on November 28, 2000, and I would appreciate hearing General Flowers' comments on how this memorandum will improve and strengthen their working relationship. Congress will be watching to ensure that the Chief and the new Assistant Secretary, whomever he or she may be, follow through on the agreements laid out in the memorandum. This Senator stands ready to "take another look" at the implementation of this memorandum, and, if need be, make recommendations that additional management reforms be made.

The backlog for construction and operation and maintenance projects is another important and daunting challenge the Corps faces. As my colleagues may well know, there is currently a backlog of $38 billion in active water resources projects awaiting Federal funding and a backlog of $450 million in critical maintenance. We need to develop a strategy to address the backlog. Whether it comes from Congress or the Corps or some other outside source, whatever strategy must consider management of the backlog to assure that it only includes needed projects that are economically justified, environmentally acceptable, and supported by willing and financially capable non-Federal sponsors.

In constant dollar terms, our Federal investment in water resources development is less than one-half of the levels spent in the 1960's. At the same time, we are asking the Corps to do more particularly in the area of environmental restoration.

Although President Bush's "Blueprint Budget" proffers a strategy for addressing some of the backlog, and for giving a high priority to projects and programs in the Corps' principal mission areas, the overall Corps civil works budget is being reduced by 14 percent in fiscal year 2002. I believe we need to address higher levels of funding for both operation and maintenance and construction functions. However given the Administration's approach, I am concerned that the Corps will not be able to adequately meet its current responsibilities. I would be interested to hear if today's witness could possibly shed some light on how the Corps can address its backlog while simultaneously absorbing such a reduction.

Again, I look forward to hearing from General Flowers on all of the challenges facing the Corps and what management reforms are necessary to restore confidence and integrity in the Corps' ability to meet these needs.

Although I am no longer Chairman of the Transportation and Infrastructure Subcommittee, I intend to be quite an active member. I am not going to let up on my call for reforms at the Corps, nor will I let this issue "fall by the wayside." I will ask the Chairman for another hearing later this year to make sure that the Corps is doing what they say they are going to do.

Thank you, Mr. Chairman.

Senator INHOFE. Well, the Chair appreciates your enthusiastic involvement in this committee. Thank you very much, Senator Voinovich.

We are going to go ahead now to adhere to the early bird rule. We will ask questions in accordance with the time that each Senator arrived. We would like to confine these to 5 minutes. We will keep going, just as long as everyone gets a chance to ask questions.

General Flowers, first just for clarification, did you say that the economic model developed by the whistle blower was flawed, and would you like to elaborate on that?

General FLOWERS. Sir, I did not say that. The National Academy of Sciences said that. I said we agreed with the assessment.

Senator INHOFE. Then last year, the Corps announced a series of listening sessions. What did you learn from your listening sessions? Tell us what those are.

General FLOWERS. Sir, we did 12 regional and two national listening sessions, where we invited interest groups and others to come in and talk to us.

We heard quite a bit. We set it down in a document so that we could show everybody what we heard them say. This is available. We have also published a summary on our website. We intend to incorporate the comments that we have received, as we move forward.

Senator INHOFE. Last week, the Society of Civil Engineers issued a report card on America's infrastructure. It was not a very good grade, in my opinion. It was a "D+." Do you have any comments as to why this grade was so low?

General FLOWERS. Sir, this is a copy of that report card, pulled down off the Internet.

As Senator Voinovich pointed out, we have really under-invested in our infrastructure, in waterways alone. In last year 30 years, our population has grown about 40 percent. Our GNP has gone from $2.5 trillion to $7.5 trillion dollars.

In that same time, our investment in our water infrastructure has declined 70 percent. I have got half of my locks in the navigation system that are over 50 years old. So those are the things that are contributing to that very low grade in water resources. The other thing I would point out is that we have an over $400 million backlog in critical maintenance to perform on that infrastructure.

Senator INHOFE. General Flowers, a lot of statements were made during the opening statements. Is there anything that you would like do to respond to any of the parts of the statements that were made?

General FLOWERS. As Senator Graham pointed out, challenges also present opportunities to the Corps. On the rivers, we are very willing to re-examine among all uses; particularly, on the waterways were we have relatively low use.

Where the opportunity presents itself, we can develop a great synergy between what we do and the environment. I think the restoration work that is going on and will go on is a very big key to that. My pledge is to lend my shoulder to help that process along.

Senator Baucus talked about the Missouri and the Missouri River Master Manual. The Corps is involved in tough controversial issues very, very often, and the Missouri is a classic one; a debate between upstream and downstream uses.

What we have to do is go forward, using the best engineering and science available, to make a recommendation to the Administration, through the Administration, to all of you. You have got my pledge to do that. We are working that piece very hard. It is not easy.

Senator INHOFE. Senator Bond?

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

Thank you, General, for your willingness to rely on sound science. That is something that is long overdue in the area. I hope,

after your very forceful statement today, that this hearing will get the same kind of coverage in the media that the attacks received. I will be waiting with great interest, but not with great optimism. I trust that I may be wrong and that they will cover your statements. I will send thank you notes to anybody who does.

[Laughter.]

Senator BOND. You mentioned the sensitivity to the environment. It was the St. Louis district modifications in the structures on the river that really lead us to an understanding of how innovative Corps approaches can enhance the environmental restoration, conservation, and preservation of endangered species. The re-engineering of controlling structures such as wing dikes to create bars and islands and back channels have great promise.

That is why I join with my good friend from Montana, with whom I do not always see eye to eye on Missouri River issues, to enact the Missouri/Middle Mississippi Habitat program.

This, to me, is something that we are very interested in. How is the funding for that? Are you proceeding with that program; is that under-funded? Is it making progress?

General FLOWERS. Sir, we are proceeding with the program. I would never classify anything as over-funded.

As pointed out, I am very proud of the innovations that have been made, particularly in the environmental area by our districts. St. Louis is a great example. I think it again points out the willingness of the agency to change and adapt to the needs of the Nation.

So as environmental concerns grow, our mission set in that area grows. We develop the expertise and tap the expertise that exists in academia and the private community to help further that. I think that this is a great example.

Senator BOND. We were talking about environmental benefits. I keep going back to the point that is extremely important to us, particularly in St. Louis, because there is a real controversy over whether St. Louis ought to be raised to a serious non-attainment air quality issue.

Right now, we have barges carrying our great agricultural products, going through St. Louis. One medium tow of barges carries the same amount of the commodities or amount of product as 870 trucks.

I think that anybody who is concerned about the quality of the air will recognize that one tow boat generates a lot of less pollution than 870 trucks. Given the importance of air quality issues in St. Louis, do you calculate clean air benefits when you evaluate the benefits that barge traffic provides?

General FLOWERS. The short answer to you question is, yes, sir. We have to take a look, as we evaluate the concerns for that factor. I need to speak directly to the Upper Mississippi, and how complex that study is, just to give you all a feel for what we are involved with.

The Upper Mississippi River handles about 48 percent of the ton miles on our inland waterways; 37 locks and dams on the Upper Mississippi River and Illinois Waterway. It is a very environmentally sensitive area.

As we work the economics piece and the environmental piece of the Upper Mississippi study, what we are dealing with is an area

that we have not dealt with before in the Corps of Engineers. That is getting into the area of macro economics and a very holistic approach of how you incorporate environmental values, when you look at alternatives and make recommendations. That is a big piece of it, sir.

We are also looking at international trade, You mentioned the growing competition from South America. We look at water policy and agricultural policy. That is why we need the other Federal agencies to come into this study with us, so that we can make use of their expertise.

Senator BOND. I am glad you do. I will have more questions. I want to sneak in one before the light turns red. I will leave a few for you to answer for the record.

When water transportation is at capacity, or we do not have water transportation, do you have any evidence that the rates charged to agricultural shippers, for example, other shippers, are raised by railroads?

General FLOWERS. Sir, I do not have that with me. I will take that one for the record.

Senator BOND. Do you have the TVA study perhaps, that said something about that?

General FLOWERS. There probably is one. I do not have it at my fingertips. I will take that one for the record, if I might.

Senator BOND. There maybe something in your records.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Bond.

I believe that we have selected a date of April 26 to have the hearing of the Upper Mississippi River.

Senator Baucus?

Senator BAUCUS. Thank you, Mr Chairman.

General Flowers, as we go into this difficult season of low snow pack in the West, and as you mentioned, one of the most vexing issues has been in the Missouri River, given all the pulls, tugs, and demands.

One of the concerns that I am running up against, is the Corps' apparent either lack of communication or insufficient communications with public power agencies. I am talking about WAPA right now, because I have got the water and power problems, that we all are facing in this country.

Could you tell me what degree to which the Corps is working with WAPA and communicating with WAPA, because they are going to have real power needs, as this year progresses.

General FLOWERS. Sir, the Division Engineer in our Northwest Division, Brigadier General Carl Strock, and his staff are activity engaged working with WAPA and all of the other agencies in the region. We have an acute power crisis, not only in California, but also in the northwest and in your area of the country.

We are working very hard to do what we can do to help that situation; spilling more water when we can for power generation in the northwest to improve the power situation, keeping in mind the responsibilities that we have to the fish and wildlife and the environment, and doing our best to inform everyone and work with everyone as we go through this. It troubles me to hear that we may have

some communications problems, but sir, we will redouble our efforts.

Senator BAUCUS. If you can look at that and get back to me about that, too, on what you are doing, I would appreciate that very much.

General FLOWERS. Sir, I will do that.

Senator BAUCUS. Second, this is a general problem that occurs in my State and in a lot of States, because we are not a large State, and do not have large firms. It is the difficultly that small contracting firms have been getting contracts with he Corps.

There is a general bias, and I found this over and over again, for the Federal Government, whether it is DOD or whether it is Energy or what not, to go to the big contractors. They know them, they know the personnel, and they are good friends, all those kinds of things.

There is an assumption that a smaller contractor out in the inner-lands just does inferior work. That is an assumption that because it is not big or not well known, that it must be inferior.

I am here to tell you that almost the opposite is true. I can give you countless of examples of small firms that do better work, subcontracting work, than other firms that are better known. I find this problem in Montana, as well.

I would like you to do a little assessment also of the degree to which the Corps is not getting contracts to smaller firms in my part of the country. I find this problem constantly; again, not only with the Corps, but with a lot of agencies.

General FLOWERS. Yes, sir, the Corps leads the Federal Government right now in its small business contracting program. Small business is good for our country. We work very hard to ensure that a number of the contracts that we let, are let to small and disadvantaged businesses.

Senator BAUCUS. If you could get back to me on that, too, with respect to Montana, I would very much appreciate that.

General FLOWERS. Yes, sir.

Senator BAUCUS. I thank you.

Third, I worked hard on the WRDA bill on the last authorization, for $5 million for three watershed cleanups in Montana. One is in Yellowstone Park, the other is Soda Butte Creek, and the other is McLaren Tayleens. We just do not see the money. We do not see that happening.

In some respects, maybe it is the lack of appropriations, but I think there is more to it than that. I can get more details to you, and I will.

But there are several sites, Corps priority sites, that for some reason are just not getting funded. Again, I will give you the information, but I would appreciate it if you could get back to me on those issues.

General FLOWERS. Yes, sir, I will do that.

Senator BAUCUS. I have another question, and this gets to the basic question that we have all on all these tradeoffs. Right now, the flows are discharged at about 500 cubic feet at Fort Pack. During the winter months, it was 10,000 a second. I guess the plans are to increase those flows in June.

I know that you have been up there. You have been to Fort Peck, and you know just how extremely important recreation is to that part of that State. In fact, it is everything. It is the walleye tournament of the world. Those folks up there live for that lake.

There is already one boat ramp that is exposed high and dry. If the flows are increased to help maybe somebody downstream or what not, those folks are going to be hurting, because about the only thing that they have is the lake.

I would like you to specifically, and again, this is another area to get back to me, on what the Corps' plans are with respect to the pool levels there, and when, and why.

If I might, Mr. Chairman, all this comes down to something else, and I think it is pretty fundamental. Ignorance breeds fear. If people do not know the reasons for a decision, they get fearful.

When there is not transparency, people conjure up all kinds of reasons why that decision was made for some nefarious reason. It is difficult for the Corps, because you are, in one sense a military agency, and in another sense, you are kind of a civilian agency; that is, you are doing civilian work.

My honest opinion is that the institution and the culture of the Corps is too military, because it does civilian work. Every civilian agency, and I do not care if it is EPA or BLM or whatever, is under a lot more focus and a lot more public scrutiny, and those agencies are forced to give a lot more information as to why they reach the decisions they are reaching.

So I am encouraging you, when you go through your reform, to open up, and tell us how you got those conclusions and why; whether is the master manual, and why it is what it is, in much more detail, and much more honestly.

There is a tendency to kind of clam up. Well, we are the Corps. We know what is right. We are doing this right. How dare they challenge us?

Again, ignorance breeds fear. What you say may be true, why people do not believe it as much as they should. They do not believe it as much as they should, in my judgment, because there is just not much openness as there should be, in term of public hearings, data, and all kinds of things.

So I urge you to just go through a whole mind set, culture change, top, down, bottom, up, and give more reasons, and detailed reasons, of why you are reaching those conclusions that you do reach. Then I think that a lot of people will have a little more trust in the conclusions that are reached.

Senator INHOFE. Thank you, Senator Baucus.

Senator Graham?

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

I would like to go back to the issue that I raised in my opening statement; and that is a process for evaluation of exiting Corps projects.

I understand that currently a project which is authorized, but has not received funds for a period of time, and I believe that is 7 years, is automatically surfaced. In the last Water Resource Develop Act several of those were de-authorized.

My question is, should there not be some analogous process for projects that have been funded, so that they have to periodically be

subject to evaluation, as to their economic and environmental and other relevant considerations, as they are functioning today; as opposed to when they may have been authorized several decades ago?

General FLOWERS. Yes, sir, I agree. I think that there should be a process to re-examine and take into consideration all of the uses and make a recommendation.

Senator GRAHAM. Could the Corps be of assistance to this committee and the Congress in suggesting what such a process should look like, and what should be the standards for surfacing ongoing projects, due to their economics or environmental consequences?

General FLOWERS. Yes, sir, we will take that on.

Senator GRAHAM. One issue that a project like the Apalachicola has raised to me is when a project becomes so out of the norm in its economics, should there be some point at which the taxpayers can say, we have gone beyond the line of reasonableness in subsidization?

If you take the figures for the Apalachicola and divide them by the number of barges which used it in recent years, the cost per barge is in the range of $20,000 to $30,000. That is a very significant public subsidization, to one form of transportation.

I accept the fact that all forms of transportation, including river transportation, do perform a public good, and up to a point should be free.

For instance, in the area of surface transportation, we have recognized the fact that there are some components of that, such as bridges and tunnels, which are unusually expensive, where you to have to put a quarter or half dollar in the box every time you use it, as well as the general public subsidy that goes toward those tunnels or bridges.

Is there a point in river traffic where there should be a requirement of a fee, or some other form of direct payment toward the cost of operation and maintenance of the project, in order to keep the total public subsidization within some limits of reasonability?

General FLOWERS. Sir, I will take on what the trigger should be, and I will make a recommendation to all of you on when a project should be re-reviewed.

The issue of charging fees for use of the Nation's waterways is probably beyond my realm to comment on. I have done a lot of combat engineering. I know when not to walk into a mine field.

So, sir, I would say that I think that we have to examine the economic viability of projects that have been appropriated. We owe you some answers on what ought to trigger that look, and how we ought to proceed.

Senator GRAHAM. Thank you, General, and I would like to conclude on a totally different topic.

That is, Mr. Chairman, with five of our colleagues last weekend, I visited Columbia, and specifically the two principal training bases, Mirandia and Traces Suskeenous. I had the opportunity to meet an outstanding young captain in the Corps of Engineers who, under about as adverse circumstances that you can imagine, is performing an outstanding service to the country. The success of our war on drugs in Columbia will owe a special debt that young man, Captain Al Perez.

I want to say to General Flowers, if he is typical of the young officers who are coming up in the Corps, I have great confidence in the future of this agency.

General FLOWERS. Thank you, sir.

I would just like to offer a partial answer to something Senator Baucus brought up earlier in the questioning of maybe why the the Office of Civil Works is in the Corps of Engineers.

This gives us the capability that no other country in the world has. Captain Perez is an officer who has worked in the Office of Civil Works, and we are able to transfer that expertise for the good of the country. I think it is something that, before we can consider before putting the Corps somewhere else, we should keep this in mind

Senator INHOFE. Thank you, Senator Graham.

Senator Voinovich?

Senator VOINOVICH. I think that Senator Graham's suggestion about looking at the priority on projects is a good one.

We did try in the last WRDA bill to put some language in that would give you the authority to evaluate objectively projects that ought to be dropped from the list. Unfortunately, I do not think that we were as successful as possible, because several members were reluctant to have projects dropped.

It seems to me that in order to really get a handle on what your real costs are, you really have to do an evaluation on the reality of the projects that really need to be done, and some of those that are on there, that ought to be taken off the list.

I would be very grateful to you if you would come back with some language for this committee that you think would really give you the authority to come back with some recommendations that would eliminate some of those projects, so we can get a real handle on how much is out there.

I have asked a GAO for a study on infrastructure need, and I do not know whether we shared that with you or not. I am going to ask my staff to send it over to you. If you have got any other ideas on how we might add to it, so that when that study comes out that it will really capture your particular areas are involved with, I would welcome that.

General FLOWERS. Thank you, sir.

Senator VOINOVICH. In your testimony, you state that you are evaluating a Corps review process for feasibility studies, to determine whether improvements including independent review are needed.

I would like to know what is status of that review, and have you made any preliminary findings? In particular, do you believe that independent review is necessary; and do you think that there is a role in this whole process for the Assistant Secretary of Army for Civil Works?

General FLOWERS. Yes, sir, up until 1993, we had an organization known as the Board of Engineers for Rivers and Harbors. It was an internal Corps Board, made up of our division engineers. Every project that met a certain criteria had to appear before that board.

They had to pass muster, justify their economic and environmental conclusions, before the Chief signed the Chief's report. So

what you had was a pure form of peer review, where one division engineer did not want their programs embarrassed, so they would really prepare themselves and make sure that things were done correctly, before it went before the board.

With the advent of cost sharing, there was a feeling that the Board of Rivers and Harbors was a redundant review of projects, and it was more expensive and took more time. Therefore, it was done away with by legislation in 1992.

My read, sir, is in order to assure that we are leaving no stone unturned, is that we probably should establish a review. As I mentioned in my remarks this morning, sir, I think it should be made up of a mix of Corps officers and outside experts, not to add additional time onto a study, who would be involved with it, as the study progresses

So as we go through our study process, gathering data, before we publish an initial report, it would have some sort of a look, as its going on, not to add time. Then when the final report is finished and it is ready for the Chief of Engineers to sign, this board could look at it again, and make any additional recommendations to the Chief.

The integrity of the Chief's report is one of the things that the Secretary and I discussed and verified in the joint memo that we signed last November to assure its integrity.

The Chief would sign the Chief's report, and send to the Assistance Secretary of the Army for Civil Works. The Secretary could then put comments on the Chief's report, if he or she would wish to do that, and forward the report.

I think that is the proper way to proceed, sir. So I am in favor of reestablishing something like the Board of Engineers for Rivers and Harbors, without adding the additional time, because I do realize that adding time and expense onto an already very lengthy process, is not something desirable.

Senator VOINOVICH. Do you need legislation for that?

General FLOWERS. Sir, we will get back to you on that. I need to go through that with the new Administration's Assistant Secretary of Civil Works, when he or she is appointed. I owe them the right to have an opportunity to review this before I provide it to you, sir.

Senator VOINOVICH. I have got one more question. Is that OK?

Senator INHOFE. Go ahead.

Senator VOINOVICH. The National Academy of Sciences' National Research Council made several recommendations, and you stated in your testimony that a draft Upper Mississippi River Feasibility Study is scheduled to be ready for public review in September of this year.

How will the Corps apply the Council's recommendations, as it revises that Upper Mississippi River Feasibility Study? Do you think that it is important the Corps follow these recommendations to ensure the credibility of the study?

General FLOWERS. Sir, we are going to use the results of both IG's report and the National Academy of Sciences report. The NRC is an arm of the National Academy of Science. We will use that report as we move forward.

What we are doing now is rescoping and relooking at the Upper Mississippi Study, using the results of the National Academy of Sciences' review. We intend to restart the study in May.

It may cause us to redo the schedule for the draft report, but we are looking toward trying to complete the study, if it is at all possible, by July 2002. The reason that date is critical is because of the WRDA 2002 bill that we would like to shoot for.

We are working with the interagency group now. We are rescoping the study, and we intend to make use of everything that we have done to this point.

We are spending $25 million to do environmental studies. We have learned a lot on how we incorporate that as we move forward. One of the recommendations made by the Academy, sir, was to, of course, get rid of the economic model that we were using, which was trying to forecast based on what had happened before, to forecast 50 years into the future.

What they recommended is that we go to a range of scenarios or develop a range of scenarios of what might be; a broad range of scenarios, and do an analysis of those scenarios, using a much more holistic approach, environmental values, the economics that we have used in the past, and then come back to the Congress with a recommendation based on the range of scenarios.

This sounds to me to be the best way to approach a very, very tough thing to do, and that is predicting what is going to happen in 50 years into the future.

Senator VOINOVICH. That is part of the recommendation. So you thought some of them were really good?

General FLOWERS. Yes, sir, and we do intend to incorporate them.

Senator VOINOVICH. Thank you.

Senator INHOFE. Thank you, Senator Voinovich.

General Flowers, I am not going to use another round. I do want to compliment you, first of all, on the progress at Montgomery Point Lock and Dam; it is critical to us, and also for the way you were able to respond to the Clinton/Sherman problem that we had in Oklahoma. I appreciate that very much.

There will be some other questions that I will ask for the record.

Senator Voinovich, would you like to have another round of questions?

Senator VOINOVICH. All I would like to do is ask the Chairman for permission to insert all of my opening statement.

Senator INHOFE. Certainly, without objection, so ordered.

[The prepared statement of Senator Voinovich follows:]

Senator VOINOVICH. And any other questions that I have, I would like to have them answered.

Senator INHOFE. That is fine.

Senator VOINOVICH. General, again, you have a tough job, and I know you are excited about it. We look forward to working with you.

Senator INHOFE. Thank you very much. This will conclude our hearing.

General FLOWERS. Thank you, sir.

[Whereupon, at 10:45 a.m., the committee was adjourned, to reconvene at the call of the Chair.]

[Additional statements, submitted for the record, follow:]

STATEMENT OF HON. BOB SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Good morning. I would like to thank Lt. General Flowers for appearing here today.

At a hearing last year prior to General Flowers' confirmation, I noted that legitimate policy issues had been raised on topics like the integrity of the Corps' economic analyses and the future role of the Corps. I told General Flowers, however, that I believed he should be given the chance to settle into his new duties for a time before being asked to decide whether or not any management reforms are necessary.

The purpose of today's hearing is to find out what, if any, changes General Flowers thinks should be made. Some believe that the Corps is a rogue agency, out of control. The integrity of the Corps' analyses has been disputed. Others have alleged that the Corps is a victim of inappropriate political pressures, with various federal agencies meddling in the Corps' professional judgements.

I have reviewed the Investigator General's report that was released last December, and the National Research Council report released last February. Their findings were troubling. I look forward to hearing General Flowers recommendations for Corps reforms now that he has been on the job for several months and has had the opportunity to study these reports.

STATEMENT OF LIEUTENANT GENERAL ROBERT B. FLOWERS, COMMANDER, U.S. ARMY CORPS OF ENGINEERS

Thank you Mr. Chairman, I am Lieutenant General Robert B. Flowers, Commander of the U.S. Army Corps of Engineers and Chief of Engineers. I am pleased to appear before you today to discuss the service of the Army Corps of Engineers to this Nation.

Introduction

The state of the Army Corps of Engineers is sound. We are prepared for the challenge of public service. Since 1775 the Army Corps of Engineers has honorably served the Army and the Nation. During the 20th Century the Army Corps of Engineers experienced both resounding success and dramatic controversy. Today, at the dawn of the 21st Century, we are called to respond to the scrutiny of the public we serve. I welcome this challenge.

The Civil Works Program

The Army Corps of Engineers traces its origins to the construction of fortifications at Bunker Hill in 1775. For more than 225 years, the Corps has responded to the needs of the Army and the Nation.

Throughout this period, the mission of the Corps has evolved from "Builder" to encompass "Developer/Manager" and "Protector" of water resources. What began as a military engineering mission for nation building in the 18th century expanded into a major peacetime mission in the 19th century. The Corps helped a young nation map the frontier and expand westward by surveying roads and canals. The Corps promoted economic development through a vast water resources infrastructure, initiated development of the first national parks, and tied an inland navigation system together to move commerce across States and keep ports and harbors open, a role critical for national defense. In the 20th century, Congress provided the Corps with additional water resources development and management authorities, including flood control, hydropower, water supply, and recreation. More recently shore protection, disaster relief, and environmental protection and restoration authorities were added. As society's needs and values have changed, the Civil Works program has reflected changing national priorities for good water management. The Corps abilities to facilitate, advise, develop, operate, manage, and evaluate on a broad range of water resource issues furnish a robust capability set for the Nation's benefit.

Mr. Chairman, within your oversight, the Corps Civil Works Program is primarily responsible for the development, management, protection, restoration and enhancement of our nation's water and related land resources for commercial navigation, flood damage reduction, and the environment. The program provides stewardship of America's water resources infrastructure and associated natural resources, and also provides emergency services for disaster relief. It is my job, in concert with the Assistant Secretary of the Army (Civil Works), to provide advice to the executive branch and Congress on these matters. The goal of our study process is to produce the best economic and scientific analysis available.

Water Resources Planning and the National Interest

We are proud of our disciplined water resources planning and our planning professionals who face the daunting challenges of solving real problems, balancing competing interests and forging consensus around solutions. They serve the public well and very often in the midst of controversy and intense scrutiny. Their difficulties make the discipline of the process of paramount importance. Today, we continue to apply the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies supplemented by Corps guidance that strives for inclusion of all interests in the management and investment in our water resources. When applied diligently, the Principles and Guidelines force all B the Corps and its stakeholders B to recognize the tradeoffs and balance competing interests.

Our vision of planning is to meet national needs within the framework of current law and policy. Our planners have operated responsibly over the last two decades as priorities and concerns have shifted. The Water Resources Development Act of 1986 emphasized the National expectation that project partners be more involved in the formulation and financing of solutions to water resources problems. Nearly everyone believed that we could develop better projects more efficiently and effectively by recognizing that projects must both meet national needs and work viably at the local level. We responded with vigor and enthusiasm. The attached map illustrates where cost shared feasibility studies have been conducted with non-Federal partners since 1986.

Four years ago, the Army commissioned a National Academy of Sciences study to determine whether Corps planning should be further streamlined. That study concluded that the process was about right in terms of length and resources. During the last decade, interagency policy discussions increasingly have emphasized broader scale studies of entire watersheds with interagency collaboration and comprehensive, systemic solutions. An unintended effect of cost sharing has been the narrowing of focus of studies, as cost sharing partners are reluctant to finance studies that are broader than their immediate concern. As a result, our planners are often caught between the forces seeking comprehensive planning at one end of the spectrum and those who voice concerns for addressing needs on an expedited basis and early screening of alternatives that have little chance of being implemented. We are pledged to this service.

The Upper Mississippi and Illinois Navigation Study

Turning now to the Upper Mississippi and Illinois Navigation Study. This is a feasibility study of lock capacity and reliability. The study area extends from St. Louis to Minneapolis-St. Paul on the Mississippi River and from the mouth to Chicago on the Illinois River, a total of 1202 river miles encompassing 37 existing locks and dams. This reach, 10 percent of the inland waterway system, provides the origin or destination of 48 percent of the ton-miles of the total system. This study was started in Fiscal Year 1993 to address limited lock capacity and reliability. Limited lock capacity leads to commercial tow delays, while reduced reliability of aging locks contributes to outages and higher maintenance costs. Both delays and outages can add millions of dollars to the costs of transporting grain and other commodities carried on the system. These costs in turn reduce the real incomes of farmers, other producers and consumers. While the Upper Mississippi River system is a vital transportation corridor it is also a nationally significant environmental resource. It contains a system of Federal and State wildlife refuges and parks that provide habitat for migrating waterfowl and support fish and wildlife resources. Navigation development has had an adverse impact on these resources which must be carefully addressed and balanced in any study of improvements. This is a truly comprehensive study of an entire navigation system. The estimated study cost is currently approximately $60 million. Our current schedule provides for release of a draft report for public review in September of this year. In July 2002, I expect to make my final report to the Secretary of the Army.

The Upper Mississippi and Illinois Study is very complex, involving engineering, economic and environmental analyses of impacts and consequences of a wide variety of possible future conditions on these rivers. A sound investment plan for the navigation system must be based on reasonable projections of future volumes, types and destinations of commodities that will move on the waterway. Therefore, a key component of the study is a 50-year forecast of demand for water borne transportation on the Mississippi and Illinois system including the response of barge operators and shippers to congestion. The commodity movements on this system are largely agricultural. Volumes and destinations of these products are driven by world market conditions and therefore, fluctuate with world economic conditions. Another key

component is forecasting the schedules for major rehabilitation activities. In view of these facts, projections are subject to significant uncertainty.

As part of the Study a group of Corps team members made economic projections and built an economic model to provide a basis for study conclusions. This proved to be a very difficult task. As you might expect, there were disagreements between the many stakeholders, as well as team members, over the model and its projections. These disagreements ultimately led the Department of the Army to request a review of the navigation study analyses by the National Academy of Sciences' National Research Council. The Council released its final report on February 28, 2001. The Council's recommendations focused on four areas: economics; water resources planning; environment; and engineering. Concerning our economic analysis, the Council found that the Corps made a major improvement in our modeling by adopting a model that considers alternative modes of transportation and destinations for goods shipped on the inland waterway. However, the Council found that improvements are needed in the application of the model to make the analysis more consistent with the underlying economic theory regarding the equilibrium of supply, demand, and the movement of commodities. Due to these modeling problems and flawed assumptions and data, the Council recommended that our forecasts of barge traffic and waterway congestion should not be used in the feasibility study. The Council also recommended that we obtain more data for use in the model and that we more fully explore inexpensive, nonstructural alternatives, such as traffic management.

Concerning inland waterway and water resources planning, the National Research Council recommended that we: (1) conduct a more comprehensive assessment of the impacts of navigation options on the environment; (2) clarify the use of environmental studies in the decision process; (3) obtain a review of the final feasibility report by an independent group of interdisciplinary experts; and (4) examine environmental improvements. Concerning our environmental analyses, the Council recommended as follows: (1) we should research the cumulative environmental impacts of the existing navigation system and both recent and proposed improvements (including the resultant increased towboat usage); (2) Congress should improve and enhance existing ecosystem research efforts with more emphasis on measures to address cumulative impacts, and broadened to include studies of the impacts of barge traffic on river ecology; and (3) we should conduct studies and make our mitigation strategy consistent with adaptive management principles. The Council found that our project rehabilitation and maintenance analyses were reasonable, but recommended that we reassess the contingencies that we assign to our construction cost estimates.

What We Are Doing

First and foremost I take the issues surrounding the Army Corps of Engineers and the Upper Mississippi and Illinois Study seriously. I must ensure the integrity of the Corps of Engineers and its study process. In this regard there are several actions underway:

While the National Academy of Sciences has completed a general review of the Corps studies process and found it to be a sound process, I am evaluating our review process for feasibility studies to determine whether improvements, including its recommendation for independent review, are needed.

I fully support the National Academy of Science study directed by the Congress in the Water Resources Development Act of 2000 of the practicality and efficiency of independent peer review of feasibility studies and methods for project analysis.

I am restructuring the management of the Upper Mississippi and Illinois Navigation Study.

I am placing renewed emphasis on my Environmental Advisory Board to insure that I receive independent environmental advice.

The Assistant Secretary of the Army for Civil Works and I, on November 28, 2000, submitted a joint memorandum to the Secretary of the Army on Civil Works Management and Communication Clarifications. In this memorandum, Dr. Westphal and I agreed upon the responsibilities of both parties and committed to sharing information, communicating effectively, and cooperating fully on all Civil Works matters. The Secretary of the Army provided copies of this memorandum to the Chairman and Ranking Member of this committee in his final update regarding enhancement of the management procedures of the Civil Works program.

I am rewriting the vision statement of the U.S. Army Corps of Engineers to focus on service to the Army and the Nation.

I have conducted extensive outreach sessions with a broad variety of interests, including meeting with a substantial number of Members of the House and Senate.

Other Observations

There are many interested parties and many points of view in the Upper Mississippi and Illinois study area. The Corps team members have worked diligently to give all an equal opportunity to be heard.

At any one time we have many feasibility studies underway. The attached map illustrates where cost shared feasibility studies have been or are being conducted with non-Federal partners since 1986. In any study, our challenge is to balance competing values and interests, develop alternative solutions that solve recognized problems and establish a broad consensus for the best solution. I'm proud of our record on the many studies depicted on this map. We are especially proud that many of these studies are resulting in projects that go beyond simply avoiding or mitigating environmental impacts and make positive contributions to restoring the Nation's environmental resources. We strongly believe our leadership, engineering and water resources skills and disciplined planning are central to solving real problems and serving the American people. We've served the Nation well and will continue to do so.

Conclusion

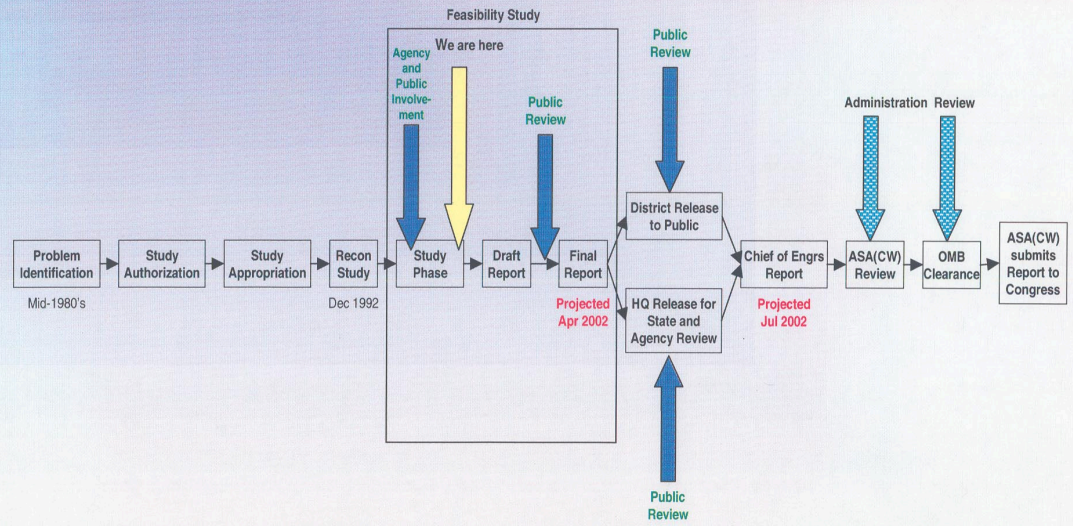
Throughout my career I have been privileged to work with the outstanding men and women who make up the Army Corps of Engineers. They fostered in me a desire to be a consensus builder, someone who does not necessarily compromise but who seeks alternatives which uniquely combine individuals' input into a solution which is genuinely better than the sum of the parts. I view our current situation as an opportunity. This is an opportunity for us to see ourselves anew and rededicate ourselves to our principles.

I take the issues surrounding the Army Corps of Engineers seriously, and I am making the changes necessary to insure the continued integrity of the Civil Works planning process, so that the Corps of Engineers can continue to fulfill its role in addressing the many water resource needs of this great country. Mr. Chairman, this completes my statement. I am prepared to answer your questions as well as those of other members of the committee.

U.S. Army Corps of Engineers

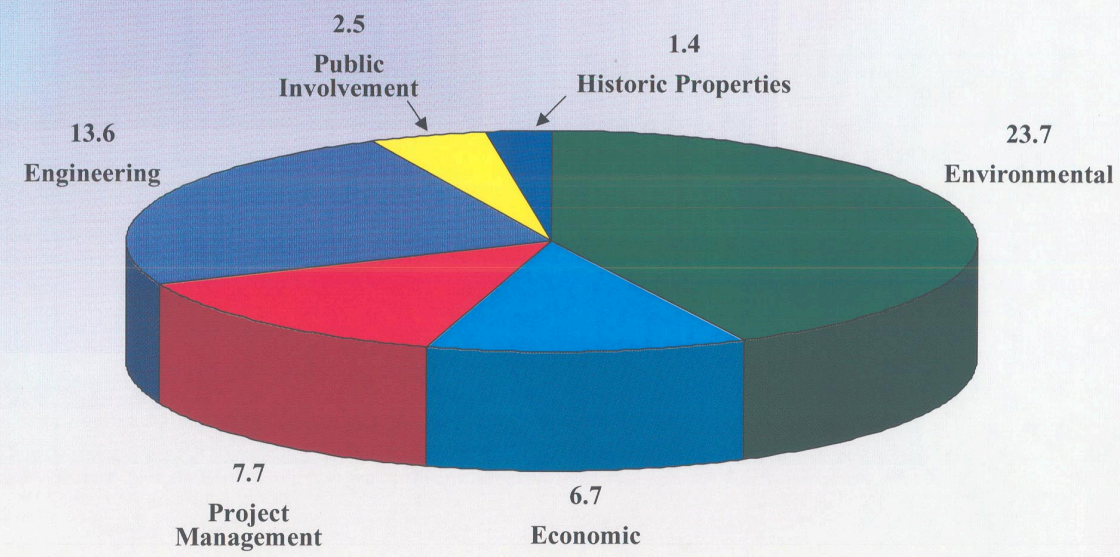
Civil Works Project Development Process

(Upper Mississippi Navigation Study)



U.S. Army Corps of Engineers

Upper Mississippi River-Illinois Waterway System Navigation Study Feasibility Study Costs ($Millions)

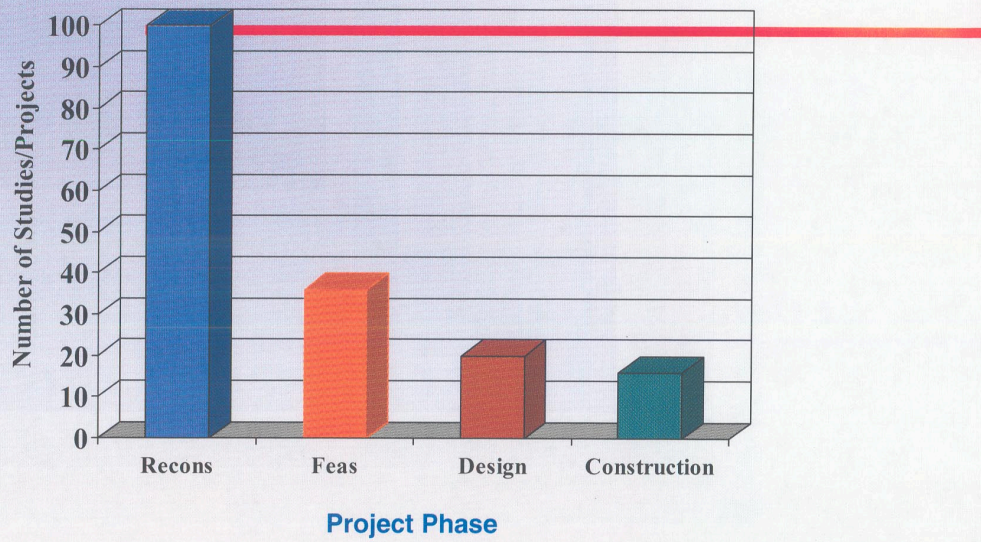


U.S. Army Corps of Engineers

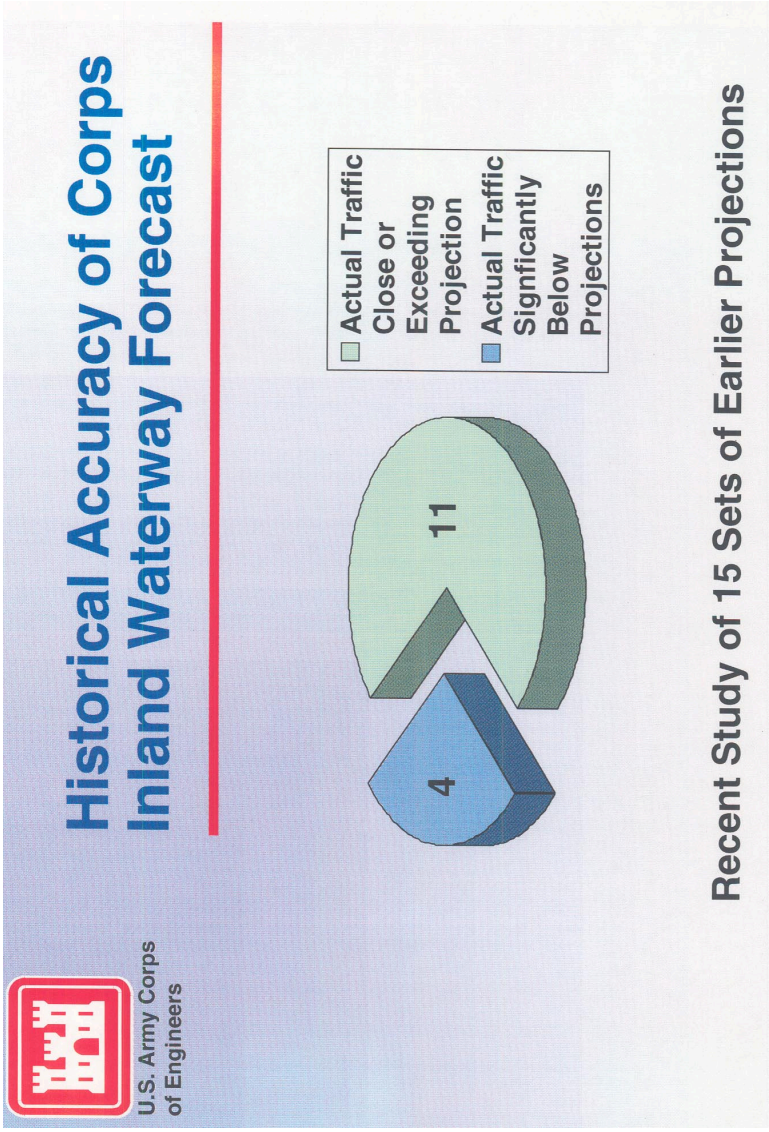
CIVIL WORKS

Project Evolution

(Beginning w/100 Recons)



Data Early 90's



RESPONSES BY LT. GEN. ROBERT FLOWERS TO ADDITIONAL QUESTIONS FROM SENATOR SMITH

Question 1. In your written testimony, you state that the "goal of our study process is to produce the best economics and scientific analysis available." You also indicate that you are reevaluating the review process for feasibility studies to determine if any improvements are necessary.

In their report on the Upper Miss Feasibility Study, the National Academy of Sciences recommended that the Principles and Guidelines, which were written in 1983, be updated to reflect changes in social values, as well as advances in analytical techniques and technologies.

With that said, do you think it is necessary to revise the Principles and Guidelines, which have not been updated to reflect policy changes, such as the inclusion of environmental restoration as a Federal purpose?

Response. We believe that the existing Principles and Guidelines provide enough flexibility to fairly evaluate environmental values and to incorporate these considerations into the Corps planning process. Indeed, the Corps has already expanded and revised its methods for evaluating environmental values during the formulation of its projects. Further, the Corps has numerous initiatives underway which are looking at better defining and evaluating environmental benefits and incorporating environmental sustainability into Corps projects. We believe these efforts are not constrained by the existing Principles and Guidelines.

In addition, there are the two National Academy of Sciences studies directed by Congress in WRDA 2000 that need to be completed as well as the Corps own internal review. When these efforts are complete, I will work closely with Congress to address any legislative changes that are determined necessary.

Question 2. Your written testimony reads that "the state of the Corps is sound." How do you reconcile this with both the IG's report and the National Academy of Sciences' report, both of which conclude that there are serious flaws in the processes of the Corps?

Response. I believe the state of the Corps is sound. Both reports focussed on a single, very complex study that has yet to complete the normal planning analysis and review process. They also assessed a draft document that had not yet been subjected to the initial public review step in the planning process. In 1999, the National Academy of Sciences completed a comprehensive review of the Corps of Engineers planning process, and determined that the complete process and its procedures were just about right.

The scope and efforts involved in accomplishing this study recognized its complexities and the potential conflicting demands from the numerous constituencies involved. Some of the negative findings concerned new methodologies and models that were developed specifically to enhance the analysis of the very complex issues associated with the potential project, specifically the economic and environmental models, that had not been fully reviewed within the Corps internal processes. And some of the findings were based on the need for additional environmental data, even though nearly $25 million has been spent on development of such data. We are not going to use those models for completion of the study but will utilize the valid data and information collected, and develop additional data where needed to provide decisionmakers a series of assessments that reflect the uncertainties associated with this project and its alternative solutions.

The existing soundness of the Corps provides the basis for us to move forward with this study as well as the hundreds of other studies and projects that are currently underway.

Question 3. Do you intend to incorporate recommendations made by the NRC on the Upper Mississippi feasibility study as you prepare the draft for public review?

Response. We are following the NRC recommendations concerning the models and assumptions used by not utilizing those models and developing a set of alternatives scenarios and options with risk and uncertainty analyses of each that will allow decisionmakers to examine the full range of options and impacts. In addition I have formed a national Level principals group to provide me advice and guidance as we move forward on this study. The Corps planning process has an extensive review element within it as well as multiple opportunities for public and impacted interests to review alternatives and recommendations and provide input.

I would not hesitate to utilize independent peer review of complex studies such as the Upper Mississippi River and Illinois Waterway study. I am recommending the establishment of an independent review panel for large, complex or controversial studies. We are still working on the details of this initiative, but it will be a mixed group of Corps senior leaders and outside independent experts to provide me a separate assessment before I forward my report to the Assistant Secretary. This proposal would be an interim step while we await results from the WRDA 2000 mandated NAS review.

Question 4. I applaud the resolution that you and Dr. Westphal came to, culminating in the memorandum you and he signed in November of last year. Do you anticipate that this agreement will carry over once the new Assistant Secretary of Army for Civil Works is confirmed?

Response. Yes I do. The purpose of the memorandum was to establish clarity of the responsibilities of both the Chief of Engineers, and the ASA(CW), and to improve communications on all Civil Works matters. I signed that memorandum with

Dr. Westphal in November of last year, with every intention of carrying it out, not: only with him, but also with his successor.

RESPONSES BY LT. GEN. ROBERT FLOWERS TO ADDITIONAL QUESTIONS FROM SENATOR INHOFE

HOPPER DREDGING

Question. Recently, I asked MG Hans Van Winkle to "let me know what can be done with, and without, legislation this year to advance" the cause of further reliance on the private sector in the provisions of hopper dredging services. Could you please check on this matter and get back to me as soon as possible?

Response. We are currently seeking opportunities for increasing the workload of the existing fleet of industry hopper dredges. We have considered placing an additional Corps hopper dredge, the MCFARLAND, in ready reserve and evaluate the ability of the industry to perform the work normally scheduled for this dredge. However, we are concerned that the *McFarland* may not be able to sustain its ability to rapidly respond to unforeseen time-sensitive or emergency work due to the condition of its operating machinery and engines. The hopper dredge was launched in 1967, and is in need of rehabilitation and modernization. We are concerned that peak workload demands may require all available hopper dredge capability, including the *McFarland*, and without the needed modernization, the ability to ensure that our deep-draft ports are maintained may not be possible. We have proposed that, subsequent to the launching of the industry hopper dredge *Liberty Island*, currently under construction, the *McFarland* would undergo rehabilitation and modernization, and placed in ready reserve.

To ensure the needs of our ports and waterways are met under any dredging scenario, we must be able to evaluate the capability of the industry dredges to respond during unforeseen peak workload events. Withdrawal of existing capability, realized by the current Corps hopper dredges, prior to consistent demonstration of the industry capability to respond could be detrimental to our nation's ports and waterways.

ENVIRONMENTAL MITIGATION

Question 1. In your written testimony you state that the Corps is proud of projects that "go beyond simply avoiding or mitigating environmental impact and make positive contributions to restoring the Nation's environmental resources." Yet at a May 16, 2000 Subcommittee hearing on the Corps Mission, we heard testimony that in some cases the Corps has failed to mitigate for the environmental impacts of levees and dams, or mitigation has not produced expected benefits. As an example the witness cited, the Vicksburg District of the Corps backlog of more than 30,000 acres of promised mitigation which h<?s not been completed. This witness further stated that mitigation for Corps projects often replaces a fraction of the habitat destroyed. Is this an accurate description of the Corps mitigation program and if not please give example of successful Corps mitigation programs.

Response. You have asked several questions and let me take them one at a time. First we must be careful not to judge yesterday's projects by today's values, There are Corps projects, particularly those authorized and built before the Fish and Wildlife Coordination Act of 1958, where mitigation was inadequate when judged against today's environmental values and standards. In some specific cases Congress has authorized modifications to these old completed project: to add mitigation measures and has also provided some limited general authority for mitigation at existing projects. Second let me clearly state the current law and policy concerning mitigation of adverse impacts. The Corps, in consultation with Federal and State fish and wildlife resource agencies strives to fully mitigate for the impacts of projects on significant resources through avoidance, minimization, and last compensatory mitigation. The level of mitigation deemed to be appropriate, practicable and economically acceptable may not always lead to "full" mitigation. Mitigation measures are implemented prior to or concurrent with project construction: Application of this current policy would never lead to a circumstance where only a fraction of the habitat destroyed was replaced. Third on the subject of the mitigation backlog, there had been an authorized mitigation backlog. Reasons were varied but primarily related to delays in land acquisition. However, we have made great progress and the backlog has been largely eliminated. Finally you asked for a mitigation success story. Let me give you one. We are currently constructing the Houston Ship Channel Deepening Project. The project includes over 100 acres of: artificial oyster reefs in Galveston Bay to mitigate for adverse environmental impacts but, over and above the mitigation requirements, includes the provision to use the material. dredged from

the channel to recreate over 4000 acres of valuable tidal marsh. These are the kind of projects we strive for that: go beyond simply compensating for environmental impacts but make positive contributions to environmental quality.

Question 2. In your testimony before the Appropriations Committee, Subcommittee on Energy and Water on February 27, 2001, you stated that the Corps "challenge is to balance competing values and interests, develop alternative solutions that solve the recognized problems and establish a broad consensus for the best solution." What exactly do you mean by establishing a broad consensus and how do you reconcile reaching a consensus while still being an honest broker of waterway development decisions?

Response. The broad consensus we strive to achieve must be in context of the laws and policies that govern the Nation's water resources development program. In other words consensus cannot be achieved by giving every interests exactly what they want regardless of cost or benefits. Solutions must have National Economic Development benefits that exceed costs or ecosystem restoration benefits that exceed costs and the Federal interest is usually defined by the plan which maximizes net contributions to National Economic Development and National Environmental Restoration. Consensus in this context involves tradeoffs and reaching synergy between economic and environmental considerations.

PROJECT EVALUATION

Question 1. Since becoming subcommittee chairman, I have heard from both friends and critics of the Corps that often times flood control and navigation projects have failed to produce predicted benefits. When asked to explain, a common thread has been the fear that the Corps has a tendency to build projects to serve the needs of a handful of special interests, and frequently treats local cost-sharing partners—rather than the American people—as their clients. How does the Corps balance the needs of cost-sharing partners with the need to evaluate projects based on the national interest?

Response. I believe that it can be clearly demonstrated that Corps flood control and navigation projects have widespread benefits. About 98 percent of the Nation's trade comes through Corps maintained channels at the Nation's ports and harbors. Currently 20 percent of our Gross Domestic Product and nearly 20 percent of U.S. employment depend on this trade. Corps flood and shore protection projects prevent, on average, $22 billion annually in flood damages. These projects provide flood damage reduction to small towns, big cities, family farms, businesses, and industries all around the Nation. Let me talk about the needs of our cost-sharing partners versus the needs of the Nation. First let's remind ourselves who our cost sharing partners are. These partners are State and local governments and agencies or State and local governments that represent the people of the United States. Second the Principles and Guidelines require that our projects be justified based on National Economic Development benefits. Benefit; that accrue not to a particular State or region at the expense of another State of region but benefits that make a net contribution to the National economy.

Question 2. In your estimation, what is the proper role for industry? Should they be considered "full partners," and what implications does this have for the final outcome?

Response. The navigation industry has an important role in any inland navigation study. It is important to remember that the users pay for half of the construction of possible solutions and that improvements on the inland navigation system have a great impact on their cost of doing business.

Their input is very important and must be carefully considered. Having said that, any water resources study has a broad range of affected interests—economic, environmental, social justice, concerned taxpayers, and many others. We give all these interests the opportunity to provide their input into the study process. The final outcome of any study involves evaluating this input in the context of good science and engineering and applying the laws and policies that govern the Nation's water resources program. The outcome is never dictated by any interest group.

PROGRAM GROWTH

Question. Much attention has been given to the "Grow the Program" initiative which I believe was a response to a challenge given to Senior Corps Leadership; but has become the "smoking gun" so to speak for those who are most critical of how the Corps evaluates projects. What is the "Grow the Program" initiative and, is it a priority of the Corps?

Response. In my role as Chief of Engineers, it is incumbent upon me to advise the Administration, the Congress and the American people of the state of water re-

sources infrastructure in this country. We in the Corps failed to discharge this responsibility fully over the recent past. Over the most recent year or so the Corps has attempted to speak more vigorously about the condition of the nation's infrastructure. For example, the value of the water resources infrastructure entrusted to the Corps for operation and maintenance peaked at $150 billion in 1981. Since then we have allowed the value of these assets to decline by 20 percent. Today we have a backlog of critical maintenance that exceeds $400 million. And, it is not just the Corps assets that have a maintenance deficit. Just last month, the American Society of Civil Engineers released their report card on America's infrastructure. Navigable Waterways infrastructure received a D+. When we pointed out this failure to meet the nation's infrastructure needs and asked the Corps Divisions and Districts to do some thinking about how we could better respond to the needs, our critics called it a secret program to grow the Corps. I assure you I have no designs to grow the Corps.

COST BENEFIT ANALYSIS

Question. Critics of the Corps believe that many Corps projects continue to be economically suspect, environmentally unacceptable, and serve primarily private interests. They attribute this to the Corps' outdated methodology for predicting the benefits and costs of proposed projects>. Would you care to comment on this and what is the Corps doing to ensure that your method of calculating cost/benefits accurately reflects the benefits to the Nation as a whole.

Response. We continue to refine our benefit evaluation methodologies to keep up with advances in economic evaluation and environmental science. We have placed particular emphasis in our research program in looking at ways to measure and value environmental outputs. We have refined our planning processes to achieve better synergy between economic and environmental values. For example in April of last year we improved our planning guidance to clarify our ability to develop projects for environmental restoration.

POLITICAL CONSIDERATIONS

Question. What role, if any, do political considerations play in your decisionmaking process?

Response. Political considerations have no role in my decisionmaking process. The decisionmaking process for my recommendations is spelled out in the "Economic and Environmental Principles for Water and Related Land Resources Implementation Studies." Under these principles I evaluate and surface the plan with the greatest net economic benefit consistent with protecting the nation's environment. There can be overriding concerns such as health, safety, economies of scale, or equity which might cause me to recommend some other alternative but, by and large, the NED plan is recommended. Political considerations do not enter into the decisionmaking. Final exceptions and changes to such recommendations can be made only by the elected and appointed officials above me.

CIVILIAN AND MILITARY LEADERSHIP

Question. What role does the civilian leadership (Assistant Secretary of the Army for Civil Works) have in Corps decisionmaking and how does that differ from the role of the military leadership?

Response. The Assistant Secretary of the Army for Civil Works (ASA(CW)) supervises the civil works functions of the Department of the Army and I as Chief of Engineers report directly to the ASA(CW) on all civil works functions. The ASA(CW) establishes the Army position on any policy, programmatic, legislative, budgetary or major organizational change involving or affecting the Army's civil works functions. The Corps provides necessary support for the ASA(CW) to arrive at such positions.

INLAND WATERWAY SYSTEM

Question. The inland waterway system has been described as "fragmented national network of channelized rivers and deepened ports, cobbled together by logrolling and deal cutting by individual lawmakers, instead of comprehensive planning by Federal officials." Is that a fair description and if not, why not? (9/110/00, Michael Grunwald "An Agency of Unchecked Clout; Water Projects Roll Post Economic, Environmental Concerns", Washington Post)

Response. It is true that the components of the inland waterway system have been incrementally authorized and funded by Congress for development, with different segments constructed at intervals over the past century and half. But just as the rail, highway and even telephone networks were built in pieces, once con-

nected they evolved into national systems. With the obvious exceptions of the Atlantic Intracoastal Waterway and the Columbia-Snake System, which due to geography are physically separate and unique, other inland waterways have, over time, developed into a truly national system of commerce. Today America has an integrated national system of inland and intracoastal waterways linking the industrial corridors of the Ohio Valley and the breadbasket of the Upper Midwest to deep draft ports on the Gulf Coast, and thus to the world market. Because of the low cost of inland waterway transportation, U.S. agriculture exports are more competitive. This is why more than 65 percent of U.S. grain exports move on the inland waterways—and why other nations are spending billions of dollars to improve their own inland navigation systems.

The McClellan-Kerr Arkansas River Navigation System is an example of a recently improved waterway now integrated into the national network.

It was opened for inland waterway commerce in 1970. By 1975, traffic had grown to over 5 million tons. Today about 11 million tons of commodities a year ply the waterway, including coal, grain, petroleum products, chemicals, iron, steel and more. Billions of dollars have been invested in counties along the waterway and more than 50,000 jobs have been created" The waterway is highly integrated into the national system: More than 2.2 million tons in commerce is shipped or received at Tulsa, Port of Catoosa, at the head of navigation, 445 miles upriver from the confluence with the Mississippi. Tulsa is now competitive in world markets, and ships nearly half a million tons of wheat for export through deepwater ports on the Lower Mississippi River. In all, Oklahoma now trades with 17 other States via the inland waterways, including such distant States as Pennsylvania, West Virginia, Ohio, Illinois, Wisconsin and Minnesota.

Oklahoma farmers, manufacturers and consumers save an estimated $75 million annually in lower transportation costs by using the inland waterway system.

Inland waterways may be constructed for a variety of purposes, including navigation, hydropower, flood protection; water supply and recreation. The Corps of Engineers planning process assesses and ensures that a new waterway will be integrated into the national system through the calculation of National. Economic Development (NED) benefits. The aggregate NED benefits of all project purposes must exceed the project cost in order to justify authorization and construction. So while individual inland waterways were authorized and constructed in segments over time, each nevertheless demonstrated economic benefits that are national in scope. Navigation clearly integrates these waterways into a national system. In fact, today nearly 98 percent of the ton-miles of inland waterway traffic on the tributaries originates or terminates on another waterway. America's inland waterways have evolved into a single, unified network that is a vital component of the nation's Marine Transportation System.

RESPONSES BY LT. GEN. ROBERT FLOWERS TO ADDITIONAL QUESTIONS FROM SENATOR BAUCUS

COORDINATION WITH WESTERN AREA POWER ADMINISTRATION REGARDING MASTER MANUAL UPDATE

Question. As I'm sure you know, the Corps is in the process of revising its Missouri River master manual. It is likely that any revision of the master manual will change the way water is released from Missouri River mainstem dams, including Fort Peck in Montana.

These dams generate affordable electricity sold through the Western Area Power Administration to customers throughout eastern Montana and our region.

Given the dependence of these residents on Federal power, it is important for the Corps to evaluate fully the impact that proposed changes in dam operations will have on public power.

I understand that steps are being taken to do this. However, will you make sure the officials involved to open the lines of communication with WAPA and concerned residents, so that this issue is fully explored?

Response. By letter of 14 March 2001 the Regional Director of the Upper Great Plains Region of the Western Area Power Administration (WAPA) requested that WAPA be formally designated as a cooperating agency under the provisions of the National Environmental Policy Act for the Missouri River Master Manual Review and Update Process. Concurrent with the request from WAPA, in correspondence of 16 March 2001 five upstream Senators (including Senator Baucus) requested that the Corps more fully evaluate impacts of alternative flow management plans to WAPA firm power users. Also concurrently, the Midwest Electrical Consumers Asso-

ciation requested that the Corps review it's earlier hydropower analyses in light of deregulation. Last week the NWD Commander granted formal cooperating agency status to the WAPA. NWD and WAPA staffs have agreed that an expanded hydropower analyses will be conducted including:

- Rate Impacts for representative WAPA firm power customers;
- Regional power supply risk analysis; and
- Review of existing hydropower National Economic Development NED) analysis

Review of existing thermal generation economic analysis.

MONTANA RESTORATION PROJECTS

Question. General Flowers, last year I worked very hard to secure authorization through section 502 of the Water Resources and Development bill for $5 million for the Corps to clean up three Montana watersheds, including Soda Butte Creek near Yellowstone National Park. The McLaren Tailings, which sit at the head of Soda Butte Creek, have been and continue to be an ongoing source of pollution in that watershed.

The tailings sit behind an impoundment near the Creek and are vulnerable to flooding or other catastrophic events. The forest service has begun the process of cleaning up historic mine waste in the larger area around this site. However, the McLaren tailings have not been included in the larger cleanup operation, which is why I pursued a different avenue by securing a funding authorization for the Corps for this project.

I understand that, although authorized, this funding has not been appropriated specifically for this project. I would like to know how you stand on working with me to ensure that the spirit of the WRDA bill is carried out and that these mine tailings, which sit so close to one of our national treasures, are cleaned up.

I look forward to hearing your thoughts on this issue, including any creative suggestions you may have. This site is a top priority for me.

Response. As you stated, there were no funds appropriated for Sec. 502; however, the Consolidated Appropriations Act of 2001 provided appropriations for Sec. 560 of WRDA 1999. Sec. 560 was entitled "Abandoned and Inactive Non-coal Mine Restoration Program" and allows for planning and design activities to address problems associated with abandoned mines. We have been working with the Montana Department of Environmental Quality (DEQ) concerning sites in Montana and they have indicated that they are willing to cost share with us to address problems caused by mining in the State. Soda Butte Creek is among the potential sites being considered for studies.

Our intention is to show that the Corps can work effectively with our State and Federal partners to execute this type of program in an efficient and timely fashion. This will allow the stakeholders to gain confidence that we can execute as promised and then work through the appropriate congressional channels to provide us with the restoration authority that was intended in Sec 560.

PROPOSED RELEASES FROM FT. PECK RESERVOIR

Question. As you may be aware General Flowers, the Corps has proposed to institute a spring rise, or artificial spring flooding, from the Fort Peck reservoir. I supported the Corps' decision on this issue.

However, due to low water levels, it is my understanding that the Corps does not plan to test the effects of a spring rise this year.

Still, many residents along the Missouri, including the Assiniboine and Sioux tribes, are concerned about the damage a spring rise could cause.

They would like to see the Corps do some studies about the impacts on downstream users, such as possible damage to irrigation pumps and water treatment facilities.

They would like to see plans in place for mitigation activities and funding for repair or replacement of damaged equipment and eroded banks.

There has been some talk that the Corps may release some funds for site assessment work on the Missouri. Could look into this situation for me and report back to me on what the Corps has done, or plans to do, about this issue? Would you support efforts to study and mitigate the effects of a spring rise on Montana residents?

Response. The Omaha District is currently in the process of developing a Memorandum of Agreement (MOA) between the Corps and possibly a Conservation District (CD). This MOA would fund a portion, approximately $10,000; of the cost of the irrigation pumps site assessment work. This site assessment plan was developed from efforts of local interest groups and is anticipated to be accomplished by CD employees. The State Natural Resources Conservation Department, several CDs, local U.S. Natural Resources Conservation Service, and Corp of Engineers are sharing

conceptual plans for the assessment and fully support it. The Corps will meet with these groups in Montana the week of 30 April 2001 to work on the final details of the site assessment work.

Regarding the effects of a spring rise on Montana residents, the Corps will assess each situation, on a case-by-case basis.

POWER TRANSMISSION FROM FT. PECK

Question. Fort Peck sits on an East-West energy tie. I understand that the transmission system out there could possibly be upgraded to push some more power into the West. This could be very important for the West, where we are experiencing an energy shortage in many places. I would appreciate your assistance in this matter. Could you look into this and get back to me?

Response. This is a question that may be better answered by Western Area Power Administration. The Corps of Engineers and the Western Area Power Administration are reviewing the feasibility of reconfiguring the Fort Peck switchyard to allow Units 4 and 5 to generate on the western interconnection. This would allow 80 MW of electricity to be generated on the West system if needed.

The Fort Peck Power Plants serve load on both the western and eastern power grids. Units 1, 2, and 3 can generate to either the East or West grid. Unit's 4 & 5 have their only connection to a 230kV Line serving the East Grid.

The primary power line to move energy west is the Richardson-Coulee line. This 161kw line runs through Havre to Great Falls. Because of the total length of the line there are stability limits to the amount of energy that can be transmitted.

The first portion of the Richardson-Coulee line is operated by Western Area Power Administration and runs 28 miles from the Fort Peck switchyard to Montana Powers Richardson Coulee substation. Western has rebuilt this line allowing it to be operated at 230kV and eliminating the stability limit. To realize this Montana Power must agree to upgrade their equipment.

MISSOURI RIVER SYSTEM FISH AND WILDLIFE IMPACTS

Question. I am interested in the Corps' scientific data on how the current management of the Missouri river is affecting fish and wildlife.

Could you look into this and provide me with any information you have on this issue?

Response. A significant amount of data exists concerning the impacts of the current operation of the Missouri River Mainstem Dam and Reservoir System and Bank Stabilization and Navigation Project on fish and wildlife resources. There are several technical appendices to the Missouri River Master Manual Review and Update Environmental Impact statement that we would be glad to provide to Senator Baucus. Additionally, in conjunction with the recently completed Section 7 Endangered Species Act (ESA) consultation with the US Fish and Wildlife on current operations, a tremendous amount of scientific data relative to the listed birds and fish was amassed. That information is also available. The NWD and US Environmental Protection agency are currently funding a study of the Missouri River by the National Academy of Sciences, Water Science and Technology Board (WSTB). The Board has been specifically tasked to identify gaps in the biological science regarding the Missouri River. They were also requested to develop adaptive management strategies for the Missouri River, which would allow for changes in river management as better scientific information becomes available. The WSTB Report is due in September 2001.

LAND TRANSFER, MCCONE COUNTY, MONTANA

Question. How is the land transfer proceeding with regards to section 22 land in McCone County, Montana? (Section 22 contains a T-Rex skeleton).

Response. A meeting was held in Fort Peck, Montana, on April 4, 2001, with representatives from the Corps of Engineers and State, Regional, and National offices of the Department of Agriculture to discuss the status of the Section 22 land in McCone County, Montana. The Department of Agriculture is securing, from an adjacent property owner, a permanent easement to guarantee access to the land proposed for transfer.

Once easement is secured, USDA will transfer land to the Corps of Engineers. It was indicated the transfer of lands could be completed within 6 months. However, the Omaha district must still do a Real Estate Design Memorandum on the project in order to get authority from HQ for "acquisition by transfer". This action will take anywhere from 2 weeks to 2 months to accomplish. The Walton family no longer has a legitimate Claim to the land.

RESPONSES BY LT. GEN. ROBERT FLOWERS TO ADDITIONAL QUESTIONS FROM SENATOR BOND

UPPER MISSISSIPPI RIVER AND ILLINOIS RIVER NAVIGATION STUDY

Question 1. Is the objective of the Upper Mississippi River and Illinois River Navigation study to forecast economic activity 50 years into the future?

Response. The objective of the Upper Mississippi River and Illinois River Navigation study is to address the problem of waterway congestion and to identify the most appropriate solution. We use a 50-year period of analysis to compare the economic costs and benefits of the various alternatives. As prescribed by Principles and Guidelines for all Federal water resource studies, we use forecasts of future economic activity to characterize the most likely conditions that are expected to exist in the future with and without the various alternative plans in place. The estimated impacts of the alternatives under these expected future conditions provide the basis far formulating, evaluating and comparing the alternatives.

Question 2. What is the freight traffic history on the mainstem Mississippi River in 5-year increments over the last 50 years? It is my understanding that freight traffic has increased from 59.3 million short tons in 1949 to 512.3 million short tons in 1999. Is that correct?

Response. Freight traffic on the Mississippi River mainstem, Minneapolis, Minnesota, to Mouth of Passes, has increased from 59.3 million short tons in 1949 to 512.3 million short tons in 1999. These figures represent all traffic, both domestic and foreign.

Mississippi River, Minneapolis, Minnesota, To Mouth of Passes (Consolidated Report)

Freight Traffic (thousands of short tons)

Year	Tons
1949	59,323
1954	82,353
1959	120,278
1964	164,654
1969	229,480
1974	302,590
1979	430,171
1984	397,346
1989	462,736
1994	496,823
1999	512,348

Question 3. When were locks 20–25 constructed and for what functional life expectancy?

Response. These projects were constructed between 1933 and 1940. It is difficult to accurately estimate the life expectancy of the structures. Based on experience, we expect that the longer projects remain in service, the greater will be the expenditures required for maintenance and rehabilitation to reliably extend their service lives. The preliminary findings of the Navigation Study indicate that these lock and dam structures could operate effectively and efficiently for an additional 50 years if they are rehabilitated in conjunction with the construction of lock extensions.

Question 4. What are the principal commodities moved by water on the upper Mississippi and Illinois waterways?

Response. Collectively, farm products (corn, soybeans, wheat, and prepared animal feed) represent the largest commodity group totaling almost 50 percent of all traffic on the upper Mississippi and approximately 40 percent of all traffic on the Illinois Waterway. On the upper Mississippi, other commodity groups, in order of significance, are coal and coke, petroleum products, construction materials, iron and steel, industrial chemicals, and fertilizers. On the Illinois Waterway, other commodity groups, in order of significance, are petroleum products, iron and steel, construction materials, industrial chemicals, coal and coke, and petroleum products.

Question 5. Roughly how many trucks does it take to haul the equivalent amount of grain as a medium-sized 15-barge tow?

Response. One 15-barge tow carries approximately 22,500 tons or 787,500 bushels of grain. This is equivalent to 2.25 100-car unit trains or 870 large semi-trucks.

Question 6. What is the relative fuel efficiency per unit hauled by water, rail and truck?

Response. Generally, barge transportation is more fuel-efficient than rail and truck. Information from the Institute for Water Resources indicates that, on average, a gallon of fuel allows one ton of cargo to be shipped 59 miles by truck, 202 miles by rail, and 514 miles by barge.

In the upper Mississippi River regions involved in this study, the efficiency advantage enjoyed by barges is probably somewhat less than the average, because gains in fuel efficiency for waterborne commerce have been limited in part due to the congestion and lock size constraints. It is currently estimated that 11 percent of the fuel consumed on the Upper Mississippi River is used during lock delays and processing.

Question 7. What are the relative clean air values of water, rail and truck-born transportation?

Response. Historical data indicates that barge transportation produces fewer emissions due to its fuel-efficiency advantage.

Question 8. Under current law, would the Federal Government pay the entire cost of construction necessary to increase lock capacity?

Response. The Inland Waterways Trust Fund was; established by the Inland Waterways Revenue Act of 1978, Public Law 95–502, as modified by Section 1405, Water Resources Development Act of 1986, Public Law 99–662, for cost sharing for rehabilitations of the existing system, and construction of new projects. Revenue for the Trust Fund comes from a fuel tax imposed on the purchase of marine fuel by barge operators, and is administered by the Federal Government as part of the fiscal year appropriations process. Section 102 of the Water Resources Development Act of 1986 established a 50 percent cost share for inland waterway construction to be provided by the Inland Waterways Trust Fund. Projects resulting from the Navigation Study would be cost shared 50 percent from the Inland Waterways Trust Fund and 50 percent from the General Fund of the Treasury.

Question 9. I know the locks are old and need maintenance. If we do not extend locks, rehabilitation of the existing locks will be necessary. Is there an estimation of the Federal cost to rehabilitate the existing locks absent new construction, extensions or other structural expansion?

Response. Preliminary study findings indicate that the locks should be rehabilitated on an approximately 25-to–30-year cycle. For each lock site, rehabilitation was estimated to cost approximately $25–30 million per cycle. For example, Lock 22 is estimated to need rehabilitation in 2015 and 2045 at a cost of $25–30 million for each rehabilitation cycle. This issue will be reviewed and refined further as the study proceeds.

Question 10. During the hearing I raised the issue about the value of water transportation in terms of being an insurance policy against higher-than-necessary railroad rates due to the competition water transport provides. Does the Mississippi Valley Division, for example, have any data or can they site any examples whereby rail rates fluctuate when navigation is unavailable due to maintenance, weather, or season?

Response. Specific data is not available. However, anecdotal and empirical evidence suggests that the economic: impacts of upper Mississippi River navigation extend beyond those groups who directly provide or purchase barge transportation. The continued availability of water transportation appears to have a significant impact on the pricing behavior of other surface modes—at least when these modes are reasonably close to the river. In particular there is a large body of economic literature, which suggests that available barge transportation effectively constrains railroad pricing. Intuitively, the existence of competition produces lower shipping rates that benefit the consumer. There is no available data that correlates fluctuations of rail rates with closure of the navigation system.

Question 11. There has been some discussion about environmental impacts of lock extensions. It is my understanding that most habitat modification affected by the navigation infrastructure has been a result of the dams and their operation, not the locks. If locks are extended from 600 feet to 1,200 feet, will that expansion, in and of itself, require a modification of the dams or their operation or will the dam; and operation remain essentially the same?

Response. Your understanding that most habitat modification affected by the existing navigation infrastructure has been a result of the dams and their operation is correct. The dams and their operations will remain essentially the same with the proposed improvements. There will be no modification of the dams or their operations as a result of the proposed improvements.

Question 12. Is the purpose of the study to discern the environmental impacts resulting from the existing system and/or is it to distinguish marginal environmental impacts resulting from an alternative system?

Response. To comply with the National Environmental Policy Act, the navigation study will assess the environmental impacts of various alternative plans by comparing the conditions that are expected to exist in the future with and without the respective improvement plans. An Environmental Impact Statement will be prepared which will give appropriate consideration to past and present conditions but will primarily focus on the effects of alternative plans to relieve lock congestion as compared to the no-action alternative.

Question 13. Was there empirical data used by the study team to support the selection of N=1.5 or N=2?

Response. No empirical data was gathered during the feasibility study to support the selection of N=1.5 or 2.0 for grain. These specific values were based on theory and subjective assessment including input from Corps economists, Corps contractors, navigation users and shippers, and academic researchers. The review by the National Research Council found that empirical data collection is recommended to better support "N" values for grain.

Question 14. It was reported (River Transport 3/5/01) that, "Sweeney, rather than refine the model further or wait for the completion of the technical review, inexplicably presented the results of these preliminary runs at a public meeting in early February 1998, before he had even briefed the Corps leadership." Were preliminary model results released prior to technical review without briefing Corps leadership?

Response. Preliminary results were presented at the Modeling Integration and Simulation Team meeting held on 3–4 February 1998, prior to final technical approval and briefing of Corps leadership. The Modeling Integration and Simulation Team is a working group for environmental analysis consisting of the Corps and Fish and Wildlife Service. Non-governmental organizations also attended this meeting. To maximize public and agency input, study team members regularly share work-in-progress with the understanding that such information is preliminary or merely illustrative of ongoing modeling efforts. At the 1998 meeting, the preliminary nature of the model was put in this context so that all parties would clearly understand that the analysis would be subject to continued refinement and agency technical and policy review. Apparently some participants misinterpreted these results as final study findings, which was unfortunate since the model was still a work-in-progress.

Question 15. Who developed the model that the National Academy of Science's National Research Council suggested should be abandoned?

Response. The *Essence* model was developed by Dr. Sweeney. The National Research Council review committee recommended the *Essence* model be revised to correct flawed assumptions and data.

Question 16. Did the NAS suggest the appropriate "N value?"

Response. The National Academy of Science did not suggest an appropriate "N value" for grain; however, they did suggest that data collection was required to provide an empirical rather than a theoretical basis for selection of demand elasticity values for grain.

Question 17. Will the Corps endeavor to indicate in its final report estimates on the cost of being wrong? Asked in another way, while you can estimate the cost of construction, which would roughly approximate the cost of needless modernization, can you and will you estimate the cost that failing to modernize may impose if capacity is insufficient, transportation costs are higher, and markets are lost?

Response. The costs associated with not modernizing the system would be reflected by the failure to realize transportation savings associated with each proposed alternative. For example, the No-action alternative will result in some future cost to the Nation. Alternatives are evaluated against the No-action plan. The transportation savings from the alternative are the benefits of that alternative. If the No-action alternative is selected, the cost of being wrong are the foregone transportation savings or benefits associated with each alternative.

When the future is uncertain and a project involves significant complexity, there is difficulty in deciding what is the best course of action. In order to derive the best course of action, the Corps of Engineers has established a Federal Principals Task Force that will coordinate the development of consistent policies, strategies, plans, programs, and priorities for future economic development of the region and the Nation in terms of Agricultural and Trade. The Task Force will provide input into establishing parameters for additional assessment of risk and uncertainty.

Question 18. Has the Corps pursued any formal or informal analysis of water infrastructure initiatives undertaken by foreign competitors and, if so, what are the summary findings?

Response. The Upper Mississippi River and Illinois Waterway Navigation Study does not contain an explicit analysis of water infrastructure initiatives being undertaken by foreign countries. The revised forecasts of demand for United States grain exports were made with knowledge of foreign initiatives.

RESPONSES BY LT. GEN. ROBERT FLOWERS TO ADDITIONAL QUESTIONS FROM SENATOR BOXER

CORPS OF ENGINEERS REFORM

Question 1. Of the many recommendations in the various reports and studies critical of Corps projections and methodologies and disregard for the environment, which are you most willing to implement?

Response. While I do not agree with the general characterizations of the Corps processes, methodologies and leadership expressed in some of the reports, I take specific allegations and recommendations seriously. The generalizations are based not on a review of the Corps overall processes, procedures and methodologies, but on a draft report on a very complex and controversial potential project that had not been through the initial formal review called for in our process. In 1999, the National Academy of Sciences completed a formal review of our overall process and determined it to be just about right.

As recommended, we are not going to use the economics and environmental models that were found to be flawed. We will develop a series of options with analyses of the uncertainties in each to reflect the suggestions raised in the National Research Council report. We will also collect additional data and undertake analyses determined necessary for leadership to make informed decisions. I have formed a national level principals group with representation from other affected and interested Federal agencies to provide me advice and insight on issues rind recommendations. There have been many and will be more opportunities for public and interest groups to review, comment and provide input as we move forward with this study.

Question 2. Which do you intend to reject, and why?

Response. I reject any generalizations about the Corps processes, methodologies and biases. We have ongoing programs to enhance and improve our processes and procedures, particularly in the evaluation and formulation of environmental projects. Over 20 percent of the current Civil Works funding is dedicated to environmental programs, and there are more new studies for environmental restoration projects than for navigation and flood control projects. However, I do not reject any specific recommendations that will ensure that this study moves forward to a final decision in a timely manner.

I would not support any changes to the Principles and Guidelines at this time. I believe they have proven to be flexible and allow changes in our specific procedures that reflect society's priorities. In addition, Congress has directed and we are pursuing two studies with the National' Academy of Sciences ("Independent Peer Review of Projects" and "Review of Methods for Project Analysis") that need to be completed before any changes are proposed. In addition, we are working with the Office of the Assistant Secretary of Army for Civil Works to develop implementation guidance for WRDA 2000 provisions concerning "Enhance Public Participation" in the planning process and "Monitoring" of selected projects to verify economic and environmental results of projects. Any changes without the results of these efforts would be premature.

Question 3. In your prepared statement, the end of the last Paragraph under the "Water Resources Planning and the National Interest" heading discusses the competing forces that pressure the Corps on the one hand to conduct thorough planning and, on the other, to expedite projects. The last two sentences read "As a result, our planners are often caught between the forces seeking comprehensive planning at one end of the spectrum and those who voice concerns for addressing needs on an expedited basis and early screening of alternatives that have little chance of being implemented. We are pledged to this service." Please clarify what you mean by the last sentence-you are committing to what service?

Response. My pledge is to address National, regional and local needs in the study process in a comprehensive basin or watershed manner t:o the extent possible. This focus can be difficult when viewed from the non-Federal sponsor's perspective. They are required to provide one-half of the costs and outside interests, who are not paying any of the costs, are demanding that issues broader than their specific needs

be addressed. One way we tried to address this problem was a proposal for WRDA 2000 to enhance our ability to do comprehensive watershed planning by increasing the authorized funding and providing for a higher Federal share of such studies.

BUTTONWILLOW/SAFETY-KLEEN

Question. I understand that the Corps of Engineers has not made any progress since last October on removing FUSRAP waste from the unlicensed Safety-Kleen facility at Buttonwillow, California, and that no further studies are being conducted. I am deeply disappointed by this continued inaction, and that waste continues to sit in an unlicensed California dump when other licensed facilities in other States express willingness to accept it. Will you commit to working with me to remove that waste from my State?

Response. I am aware of your concerns regarding our use of the Safety-Kleen facility at Buttonwillow, California, for the disposal of FUSRAP materials. The Buttonwillow facility is permitted by California to accept radioactive materials with low specific activity, including radioactive materials of the kind that the Corps shipped to Safety-Kleen: The Army Audit Agency (AAA) has investigated Corps use of the Safety-Kleen facility in California and has determined that "the Corps and its supporting contractors took appropriate actions . . . to fully protect human health, safety and the environment." This finding is consistent with the' conclusions of an earlier study by California Environmental Protection Agency and the California Health and Human Services Agency. As stated in an August 25, 1999 letter to California State Assemblyman Dean Floret, both agencies agreed that "there is no known safety or health risk to the community." AAA also determined that "Removal of the waste from Buttonwillow may result in unnecessary risks to workers from potential construction accidents and risks to the facility's protective liners. More importantly, any removal action would have no effect on the overall waste contamination levels at the facility because it also stores wastes with similar levels of radioactivity that aren't related to the Corps' disposal."

The Corps has already taken steps to improve its communications with the regulators of disposal facilities it utilizes by requesting written concurrence that disposal of the specifics FUSRAP materials is consistent with the facility's license or permit prior to shipment of those materials. I will be happy to work with you to further improve communications between the Corps and the States where possible FUSRAP material disposal. sites are located.

DEER CREEK DEBRIS BASIN

Question. Independent review of the Corps' work is of critical importance to the local residents living below the Deer Creek Debris Basin and the Deer Creek levee. The Corps has studied and recommended the removal of the Deer Creek levee. The Corps says removal of the levee will not decrease the community's flood protection, The community funded their own study which raised substantial questions about the Corps analysis of the debris basin's integrity and the wisdom of removing the levee. I believe that independent review in this case would ensure that mistakes are not made that endanger the health and safety of the people or that lead to flood damage. Will you work with me by committing to subjecting the Corps' study in this case to an independent review?

Response. First, let me clarify that the Corps of Engineers has not recommended the removal of the Deer Creek Levee, which is also called the Deer Creek Reception Levee. We have informed local residents that we do not have jurisdiction over that levee, and that it is a local decision to remove or retain the levee. If the levee is removed however, a storm drainage system meeting city and county requirements would be put into place to intercept flood runoff formerly handled by the levee. We have conducted a reanalysis of the Federal project features—the Deer Creek Debris Basin, and Channel, and concluded that these project features still provide a high degree of protection. At the request of the Assistant Secretary of the Army for Civil Works, the Corps obtained an independent technical review in August 2000 by an well qualified engineering firm specializing in flood and sedimentation problems. The result of this review was concurrence with the Corps' technical evaluation of the Deer Creek Project that it affords protection equal to or greater that the FEMA Base Flood (one-percent annual. chance of occurrence). Currently the Corps is actively participating in a follow up engineering review of the project with the State of California, Federal Emergency Management Agency, city of Rancho Cucamonga, San Bernardino County Flood Control District, and concerned local citizens. We believe these technical review efforts fully address the flood control concern: that led to your request for an "independent review".

DEER CREEK BASIN

Question. What procedures are appropriate when the public and its elected representatives raise questions about the efficacy of a project previously completed by the Corps of Engineers, such as what occurred with regard to the Deer Creek Debris Basin in San Bernardino, California? Under what circumstances is it appropriate to have these matters reviewed by an independent party such as the National Academy of Sciences, and has the Corps considered creating an Ombudsman program such as what occurs in other Federal agencies to deal with the publics questions and concerns?

Response. For completed projects, the Corps has a process by which projects are reviewed for changed conditions under the Review of Completed projects authority. In such a procedure a study is initiated either through the Operations and Maintenance or General Investigations account to review the situation and report recommendations. If a feasible Federal interest is found in pursuing solution through such a cursory review, a detailed study is then pursued. The Corps has a very detailed review procedure that applies to its planning program with multiple levels of review by its field offices, the Headquarters, Administration and Congress. Sponsors participate throughout the process as well as the States and other Federal agencies. While we are not considering an Ombudsman program as you mentions=d, we are looking into some form of Independent Review as suggested in the Water Resources Development Act of 2000 through a contract with the National Academy of Sciences.

SNAKE RIVER DAMS

Question 1. Do you plan to complete studies regarding the engineering necessities, economic mitigation, and energy replacement possibilities for the potential removal of the four lower Snake River dams? If so, when will those studies be completed and are you planning to have those studies peer reviewed?

Response. The 2000 NMFS Biological Opinion (BiOp) does not require dam breaching to avoid jeopardy. However, it indicates that breaching should be kept as a future option, and establishes a schedule and triggers for determining whether to pursue this option. The BiOp recognizes that breaching is a major action requiring NEPA compliance and congressional authorizations. In addition, the BiOp lays out an expedited schedule to allow for the quick implementation of breaching or other more aggressive actions if necessary. It does not require advanced engineering analysis to meet this objective. The Corps is still. in the process of completing the Final Feasibility Report and Environmental Impact Statement (FR/EIS), which will make recommendations for future actions on the lower Snake River dams and reservoirs. The FR/EIS will assess the engineering and construction requirements to determine if it is implementable or technically feasible, but it will not address the advanced engineering required to actually implement breaching. No recommendation on advanced engineering requirements for breaching will be made until the FR/EIS is completed.

We have assessed economic costs and benefits associated with d<?m breaching. In addition, we have conceptually identified possible compensation options for some users that would be negatively impacted. This information was incorporated into the Draft FR/EIS released in December 1999. The economic impacts are being refined for the Final FR/EIS, which is due out later this year. Compensation plans for economic impacts are not typically included in the evaluation of water resource projects. We have no plans to evaluate compensation plans; however, a more detailed investigation into this issue could be done.

The Draft FR/EIS did evaluate the possible replacement for hydropower foregone associated with dam breaching. It identified that this energy could be replaced primarily by developing six 250 MW gas-fired turbine power plants. Further analysis has indicated that it is also possible to replace this foregone energy through conservation and other alternative energy sources (i.e. wind, solar, etc.), but at a higher cost than gas-fired turbines. This will be documented in the Final FR/EIS.

Question 2. As I understand it, the Federal agencies have put forth a draft river operations plan which violates the spill and flow requirements of the Federal salmon recovery plan that was recently released in December. Can you explain why your agency can support non-compliance with the Federal salmon recovery plan only 3 months after its release?

Response. The Biological Opinions issued in December 2000 on the operation of the Federal Columbia River Power System contemplated that there could be potential power emergencies and low runoff years. The west coast is experiencing a critical power situation and the latest forecast for the Columbia-River basin runoff is second lowest on record. With these difficult conditions, the Corps is working with

National Marine Fisheries Service, the US Fish and Wildlife Service, the Bonneville Power Administration, the Bureau of Reclamation, and the States and tribes of the Pacific Northwest on a weekly basis to determine river operations that provides for survival of listed salmon as well as assures delivery of energy to the people of the Northwest.

Question 3. A recent court decision makes it clear that the Corps must comply with Federal law under the Clean Water Act and that the four lower Snake River dams are currently violating the Clean Water Act. When and how is your agency preparing to come into compliance with the Act's requirements?

Response. The recent court decision on the Clean Water Act and the four lower Snake River dams ordered the Corps to issue a new decision replacing the 1998 Record of Consultation and Summary of Decision on the operation of the Federal Columbia River Power System to address compliance with its obligations under the CWA. The Corps is currently completing that document and will be submitting it to the Court by May 17, 2001.

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