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S. HRG. 105–789

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 1999

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED FIFTH CONGRESS

SECOND SESSION

ON

H.R. 4060/S. 2138

AN ACT MAKING APPROPRIATIONS FOR ENERGY AND WATER DEVELOPMENT FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1999, AND FOR OTHER PURPOSES

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

Printed for the use of the Committee on Appropriations

U.S. GOVERNMENT PRINTING OFFICE

46–096 cc WASHINGTON : 1998

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402
ISBN 0–16–057924–4

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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 1999

TUESDAY, MARCH 3, 1998

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

The subcommittee met at 9:39 a.m., in room SD–116, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Gorton, Stevens, and Reid.

DEPARTMENT OF ENERGY

ATOMIC ENERGY DEFENSE ACTIVITIES

STATEMENT OF DR. VICTOR H. REIS, ASSISTANT SECRETARY FOR DEFENSE PROGRAMS

OPENING STATEMENT OF PETE V. DOMENICI

Senator DOMENICI. Good morning, everyone. The hearing will come to order. I am hopeful, Dr. Reis, that the hearing will not run too long. We have seen your statement and we have a number of questions. I understand Senator Reid has a statement and a number of questions as well. I may ask that you answer some of the questions in writing.

We meet this morning in open session to review the Department of Energy's fiscal year 1999 budget request for the Atomic Energy Defense Activities, especially that part of the DOE requests related to Stockpile Stewardship and Management Program.

We are pleased to welcome as our primary witness Dr. Vic Reis, Assistant Secretary of Energy for Defense Programs, and others from the Department of Energy who have accompanied him this morning.

Today, we want you to provide an overview of the justification for the President's $4.5 billion budget request for Stockpile Stewardship and Management Program for 1999. I hope we can focus on the key elements of stockpile stewardship and management, the accelerated strategic computing initiative [ASCI], subcritical experiments, tritium production, among other things. We would like for you to explain the importance of these programs to the national security activities that are planned for the remainder of 1998 and 1999.

Now, if Senator Reid has any comments, I would ask him to make them and then we will turn it over to you, Dr. Reis.

STATEMENT OF SENATOR REID

Senator REID. Mr. Chairman, I appreciate very much your holding this hearing. This is an extremely important, principal activity of the Department of Energy, the Defense Programs, and to the stewardship of our nuclear weapons stockpile. I have appreciated your leadership in this regard during the time that I have been able to serve on this subcommittee as ranking member.

I am concerned that stockpile stewardship be efficient and well coordinated, requiring a long-term strategy as well as resources to fill its mission. The Department's understanding of the implications of the Comprehensive Test Ban Treaty to the safety and reliability of our nuclear arsenal is also critical.

PREPARED STATEMENT

Mr. Chairman, I would like my full statement to be made part of the record so that we can get down to the real reason that we are here.

Senator DOMENICI. Senator Reid, your statement will be made a part of the record.

[The statement follows:]

PREPARED STATEMENT OF SENATOR HARRY REID

Mr. Chairman, I am glad that we are holding this hearing to examine how past appropriations are used within Defense Programs in the Department of Energy, as well as current requests.

Of course, the principal activity of Defense Programs is the Stewardship of our nuclear weapon stockpile, of which I have been an unequivocal supporter.

That is why I am particularly concerned that stockpile stewardship be efficient and well-coordinated requiring a long-term strategy, as well as resources, to fulfill its mission.

The Department's understanding of the ramifications of the Comprehensive Test Ban Treaty to the safety and reliability of our nuclear arsenal is also critical.

In the near future I think it would be appropriate to have further hearings by this committee regarding the relationship between the stockpile stewardship and the treaty's ratification.

Recent discussions with our sole witness on the panel today, Dr. Reis, recently have given me some assurance in the Department's ability to maintain a stockpile that is safe and reliable.

Additionally, the Chairman and I recently toured the Nevada Test Site and the Kansas City Plant, which also reflected well-managed state of the art activity and increased my confidence in the Defense Program infrastructure.

Essential to the Stockpile Stewardship and Management Activity is the support of the facilities, construction, computer modeling and necessary experimental measures.

Senator DOMENICI. Let me state for the record it was a pleasure being in the State of Nevada to visit the Nevada test site facilities. Unless you have a chance to go down there and see them, it is pretty difficult to understand the significance of that facility and the potential for underground testing. Even in an era of no underground nuclear testing there is a great deal of significance in terms of the kinds of subcritical tests and others that we have to make that will help us with the trustworthiness of our stockpile and I was very pleased to see them. I thank the Department for its extraordinary efforts to help us understand them.

And Senator Reid, thank you for accompanying me there in your State.

Senator REID. Mr. Chairman, Mother Nature did not treat us very well, though. We had one of the very rare opportunities when we had rain and even snow there, and so because of that, as you know, Dr. Reis, the dry lake there was not dry. There was a lot of water in it, so the chairman, even though I appreciate very much his being there, he was not able to see some of the things that he could normally see on a day that you can literally see forever.

And also, I acknowledge, Mr. Chairman, that I now am obligated to come to New Mexico to see Los Alamos, and the other great laboratory there.

I have been to Livermore, and each time that I go, as we did to Kansas City, the American public is so well-served by the work done in this very critical area that receives no acclaim, no notoriety, as I guess, it should not, but I was so impressed with the work in Kansas City at that plant that was so important to the security of this country. They did a great job.

STATEMENT OF VICTOR H. REIS

Senator DOMENICI. Dr. Reis.

Dr. REIS. Well, thank you, Mr. Chairman, for the opportunity to testify before you today on the Defense Program's Fiscal Year 1999 budget, a request of $4.5 billion, of which $4.3 billion is directly devoted to stockpile stewardship.

With your permission, I will just summarize my testimony.

Senator DOMENICI. We will make the whole statement a part of the record, Dr. Reis.

Dr. REIS. Thank you.

Mr. Chairman, the purpose of stockpile stewardship is to maintain the safety and reliability of the U.S. nuclear weapon deterrent under a Comprehensive Test Ban Treaty [CTBT]. While the program is hardly without risk, I believe we have a high probability of success. Why do I feel as I do?

First, let me reiterate that we start from a solid base. The current stockpile is well-tested and well-understood. The designers and engineers who built them are available and are active. Indeed, they are the ones who are creating the stockpile stewardship program. They are the ones who are working on the stockpile now and are helping to train their successors.

Second, you have laid out a plan for a Stockpile Stewardship Program, weapon by weapon, part by part, that projects the tasks required to maintain the stockpile over the next 10 years and beyond. We have concurrence on this program from the Department of Defense and the Joint Chiefs, and the administration has committed to fund this program in all of its parts.

Third, the President requires us to annually certify, to him directly, the safety, reliability, and performance of each weapon type. Just last February 12, he transmitted that certification to the Congress.

Fourth, we have a backup. Under Safeguard C, the President requires us to maintain the Nevada test site in a state of readiness, and the subcritical and other experiments conducted there help keep the people sharp and ready. The successful experiments bear evidence that the Nevada test site remains a "can-do" operation.

Fifth, under Safeguard B the President requires us to maintain the vitality of the nuclear weapons laboratories, Los Alamos, Lawrence Livermore, and Sandia National Laboratories.

Mr. Chairman, those labs are among the best in the world. In my opinion, they are the best in the world, and they are better now than they were 4 years ago because of the enthusiasm and vigor with which they are attacking the stockpile stewardship effort.

History tells us that great labs need great missions, and stewardship, like the Manhattan and Apollo projects, is just such a mission. Our DOE labs will get even better, because they are attracting the kinds of people who are drawn to solve tough problems of national importance.

Sixth, and this is most important, we are doing stewardship now, and doing it successfully. It has been 5 years since our last underground nuclear test, and the last weapon was produced in 1989. We have completed our second annual certification and are working on the third. We have modified the B–61 bomb and see it enter the stockpile to replace the aged B–53 bomb. We have begun construction of new experimental tools, national ignition facility [NIF], dual axis radiographic hydrotest facility [DARHT], Atlas, and our computation program has developed the world's fastest supercomputer, by a factor of three. We have solved problems that in the past would have required nuclear testing by using stewardship tools. We have done literally hundreds of experiments on existing facilities. The Omega and Nova Lasers, Pegasus and Z-Pulse Power devices, PHERMEX, and FXR hydrotest facilities, the Los Alamos Neutron Science Center [LANSCE] accelerator, that increases our understanding of nuclear weapons.

SUBCRITICAL TESTS

The subcritical tests have brought new insights to old problems and are preparing the way for the resumption of plutonium pit production. Throughout, we are using the new computational tools to predict and analyze experiments and connect with archival underground test data.

We have safely dismantled over 9,000 nuclear weapons since the end of the cold war. We have developed new production processes that are much more efficient and environmentally sensitive and have produced numerous parts, on time, while continuing to downsize the complex.

This is a system that works, and not just at the labs, but also at the plants, Oak Ridge Y–12, Pantex, Kansas City, and Savannah River, as well as the Nevada test site.

PREPARED STATEMENT

Mr. Chairman, when President Clinton visited the Los Alamos National Laboratory last month, he stated, "I don't think we can get the treaty ratified unless we can convince the Senate that the stewardship program works." I believe the stockpile stewardship program, if supported appropriately, can meet its goal of a safe and reliable stockpile indefinitely without nuclear testing.

Your committee has shown the leadership in the Congress in providing that support, and I enthusiastically look forward to working

with you. I know of no national security issue that is more important.

Thank you, and I will be glad to answer any of your questions now.

[The statement follows:]

PREPARED STATEMENT OF DR. VICTOR H. REIS

Thank you, Mr. Chairman, for the opportunity to testify before you on Defense Programs' fiscal year 1999 budget request of $4.5 billion of which $4.3 billion is directly devoted to the Stockpile Stewardship Program (SSP). Before I get into the details of the program, I'd like to review with you a sense of the size and complexity of our task and budget needs.

Stockpile stewardship is the means by which the Nation will maintain the safety and reliability of its nuclear weapon strategic deterrent under a Comprehensive Test Ban Treaty (CTBT). The President established specific safeguards that define the conditions under which the United States will enter into a CTBT. Four of them relate to Stockpile Stewardship. These conditions are:

(A) The conduct of a Science-based Stockpile Stewardship Program to insure a high level of confidence in the safety and reliability of nuclear weapons in the active stockpile, including the conduct of a broad range of effective and continuing experimental programs;

(B) The maintenance of modern nuclear laboratory facilities and programs in theoretical and exploratory nuclear technology which will attract, retain, and ensure the continued application of our human scientific resources to those programs on which continued progress in nuclear technology depends;

(C) The maintenance of a basic capability to resume nuclear test activities prohibited by the CTBT should the United States cease to be bound to adhere to this treaty; and (F) The understanding that if the President is informed by the Secretaries of Defense and Energy as advised by the Nuclear Weapons Council, the Directors of the nuclear weapons laboratories, and the Commander of U.S. Strategic Command that a high level of confidence in the safety and reliability of a nuclear weapon type which the two secretaries consider critical to our nuclear deterrent could no longer be certified, the President, in consultation with the Congress, would be prepared to withdraw from the CTBT under the supreme national interest clause in order to conduct whatever testing might be required.

Maintaining the nuclear weapon stockpile without testing, while simultaneously remaining prepared to return to testing and retaining the capability to return to production, and at the same time dismantling excess weapons and downsizing and modernizing the production complex, are difficult challenges, to say the least, but one which we are meeting now and are preparing to meet in the future.

The stockpile stewardship concept is simple. Each year representative samples of each type of weapon are returned from the active forces to the plants and labs, disassembled, examined, tested, and analyzed for defects, much as you would go for an annual physical or take your car into your local automobile mechanic. If any defects are found, their effect on performance, safety, and reliability is assessed, and if that effect is deemed significant, the defective part is remanufactured and replaced. Like the battery or spark plugs in your car, some parts—neutron generators and gas reservoirs will require replacement, and these are replaced at regular intervals.

While a modern nuclear weapon has about as many parts as a modern automobile, it is much more complicated. Many of the parts of a nuclear weapon are made from very special materials—plutonium, enriched uranium, tritium—which radioactively decay, changing both their own properties and the properties of other materials within the weapon.

Nuclear weapons are designed and manufactured to extraordinarily rigid standards, both to enable huge amounts of explosive energy to be packaged in relatively small containers, and to maintain phenomenal safety standards. A nuclear weapon, less than the size of a small desk, will have enough explosive power to completely destroy a modern city, and yet it must be able to survive the worst kind of accident you can think of with less than a one-in-a-million chance of exploding. This level of performance and safety must be maintained throughout the weapon's lifetime, even as it ages and changes.

While we can expect that aging will cause the defect rate to rise—just like it does in both humans and cars—we can't go out and buy a new warhead model—there is no new warhead production, and some of the old factories are out of business. Moreover, the weapons designers who have had experience with nuclear explosive

testing are also aging. In about ten years most of them will have retired. This means that about the same time all of the weapons reach the end of their original design life, we will no longer have anyone on the job with direct test experience. It is this time urgency that makes the Stockpile Stewardship program distinctive.

Despite these challenges, people from the weapons laboratories, the production plants, and the federal establishment involved in Stockpile Stewardship have testified, and will so testify, that we can do the Stockpile Stewardship job. We are confident that with continued support we can maintain the safety and reliability of the nuclear weapons in the stockpile indefinitely without underground testing and keep the risks to manageable levels.

In large measure this confidence is based upon the fact that stewardship has been working, is working now, and we have detailed plans on how it will work in the future. The last time a new nuclear weapon was produced was 1989. The last underground nuclear test was in September of 1992; yet we have successfully gone through two annual certifications, the latest of which was just submitted to the Congress by the President on February 12th.

What I'd like to do is describe to you some of the highlights of what we accomplished last year, and what we plan to accomplish in fiscal year 1999.

We examine about 100 weapons in detail through our surveillance program each year. The Enhanced Surveillance Program provides the predictive models and age focused diagnostics required to anticipate weapons refurbishment. Conducted at DOE's four production plants and three weapons laboratories, this program has identified an aging mechanism in high explosives, concluding the material is extremely stable. We have embarked on a novel strategy to rapidly age plutonium, which is expected to determine the lifetime of components made from this material. We have also identified how corrosion can limit the lifetimes of canned subassemblies. While not complete, these investigations indicate that the weapons are aging gracefully. We have developed new diagnostic tools including high resolution x-ray tomography, neutron imaging, and precision ultrasonics capable of non-destructively examining weapons components. We have also created precision instruments to gather more data from flight tests. All of these tools are being incorporated into the annual certification process.

We know we will have to remanufacture and replace aging parts. Savannah River, Pantex, Kansas City, and Oak Ridge provide critical components to this part of the mission. In fiscal year 1997 we completed the B–61 mod 11 upgrade. In addition, the plants manufactured 3,300 limited life components (LLC's) to support the needs of the stockpile. In fiscal year 1998 the plants plan to produce 3,900 LLC's and over 4,000 LLC's in fiscal year 1999. The Kansas City Plant has now been qualified for the production of tritium gas reservoirs for the W76 and W80 warheads, and will produce 576 in fiscal year 1999. Sandia National Labs has a new production facility for neutron generators and will produce some 400 in fiscal year 1999. Sandia is also developing new, extended life neutron generators, using many of the new tools and techniques of stockpile stewardship.

In addition to limited life components, DOE expects to take significant steps in establishing key manufacturing processes needed to support the stockpile. For example, Los Alamos National Laboratory (LANL) will demonstrate a pit production capability in fiscal year 1998, a capability the DOE has not had since the closure of the Rocky Flats Plant in 1989. By 2007 LANL will have the capability to manufacture approximately 20 pits per year. DOE also plans to resume Y–12 uranium processing operations, which were shut down in 1994 due to violations of administrative safety controls. Y–12 has already restarted operations in four out of five major mission areas. DOE is now preparing to conduct an operational readiness review for Enriched Uranium Operations (EUO). Casting, Rolling and Forming, and Machining operations are scheduled to resume next month.

To create the new parts we need a new and improved production complex, one that is appropriately sized for the task at hand. The Stockpile Management Restructuring Initiative (SMRI) is right sizing the production complex for the 21st century. The SMRI program will downsize the following operations: (1) the weapons assembly/disassembly and high explosives missions at Pantex; (2) nonnuclear components production at Kansas City; (3) weapons secondary and case fabrication at Oak Ridge Y–12; and (4) tritium operations at Savannah River. The process is already paying dividends today. As mentioned above, the Kansas City plant is now manufacturing tritium reservoirs, in a new state of the art production facility with improved processes. By the end of fiscal year 1998 we expect the Kansas City Plant to be producing seven different reservoir types.

The new production complex must also take advantage of modern manufacturing techniques. Our Advanced Manufacturing Design and Production Technologies Initiative (ADAPT) is intended to provide the manufacturing complex with advanced

capabilities for: designing, developing, and certifying components and systems; and producing, assembling, and delivering the components and systems products. ADAPT is radically changing how DOE supports the nuclear weapons stockpile by infusing new product and process technologies, and adopting state-of-the-art business and engineering practices. As an example, a secure communications and data network was established among the production plants and laboratories which is facilitating the rapid interchange of design and manufacturing information related to the W87 life extension program and will serve in the future as the backbone of a modern simulation product realization environment. The network is reducing the time needed to produce classified parts, in some instances up to 90 percent. The network will be expanded to all DP sites around the country in fiscal year 1998.

While we do not need additional supplies of enriched uranium and plutonium, there is one material which we know we must produce: tritium—a radioactive isotope of hydrogen that is required for every modern nuclear weapon.

Tritium decays fairly rapidly; approximately 5 percent is transformed to helium every year. Tritium was last produced in the U.S. in 1988. With the end of the Cold War and the reduction in the size of the stockpile, we have had large amounts of excess tritium. This excess has been used to make up for the decayed tritium in the current stockpile, but eventually this will run out. Current policy requires DOE to plan for a new tritium production source by 2005 to support a START I nuclear stockpile, the associated five-year reserve, and to maintain the ability to "hedge" to a START I level even when the START II Treaty enters into force. DOE is in the final year of analyzing a dual track strategy—using an existing commercial light water reactor or using a newly developed accelerator. A primary source for tritium production will be selected in 1998.

We foresee no technical difficulties associated with the production of tritium in a light water reactor. A key test was begun in October of 1997, at the TVA's Watts Bar 1 Nuclear Plant. The test involves the irradiation of 32 specially designed twelve-foot "target" rods in the plant's reactor core. These targets are designed to replace a standard component of reactor fuel assemblies. During the plant's normal 18-month operating cycle, the rods will produce and retain small amounts of tritium. The Watts Bar test completes, on a small scale, the demonstration of the entire commercial reactor tritium production cycle, from fabrication of components through completion of regulatory approvals.

On June 3, 1997, the Department issued a Request for Proposals (RFP) for the purchase of one or more commercial light water reactors or irradiation services. Proposals from TVA were received on September 15, 1997. The DOE expects to make a preliminary selection from the proposals later this spring.

The accelerator alternative made impressive gains in 1997. LANL has completed the construction of the first test items for the accelerator and others are being manufactured. The first of the accelerator components, an injector, is being tested and is exceeding performance specifications. Thousands of samples of materials, welds, and structures have been irradiated to confirm choices and projections of performance for materials for the "target-blanket," the part of the plant in which the tritium would actually be made. First results of these tests are currently being analyzed.

The fiscal year 1999 request includes $157 million to pursue the option to be selected in 1998. If the purchase of irradiation services from commercial light water reactors is selected, the budget request will be sufficient to meet current requirements. If the Department selects accelerator production of tritium as the primary option, the Department will need to delay the current target date for initiating new tritium production or request additional funding.

This leaves the assessment and certification process. How can we have confidence that the stockpile remains safe and reliable and meets its military requirements without underground testing?

First of all, we start from a solid position. The current stockpile has been well tested, is in very good shape and is well understood. We have an extensive data base on each of these weapons, and we have a cadre of experienced designers, engineers, scientists, and technicians that can, with confidence, certify the safety and reliability of the current stockpile.

Now, since we cannot do a complete test of a nuclear explosion, we conceptually divide the explosion sequence into each of its parts and test and analyze each of these separately, much as you would test the ignition system, the cooling system, and the brakes on your car. We then put all the data together into a computer calculation—a simulation—to see if the resulting performance is within its specification. Each part of the simulation must predict the results of each of the separate tests, and where they exist, be consistent with data from previous underground nuclear tests.

Some processes are relatively straight-forward to simulate. The first part of the nuclear explosion sequence is to send the right electrical signal to the right place at the right time. We can test this exactly by flight testing actual weapons with inert mockups of the nuclear components. In fiscal year 1997 we had 43 flight tests, in fiscal year 1998 we will have 46 flight tests and in fiscal year 1999 we plan to have some 39 flight tests.

We can do a good job of testing the first part of the nuclear explosion, the implosion of the plutonium pit, and we can measure a number of important features by taking x-ray pictures during critical parts of the experiment. We can then compare these pictures with calculations and with previous data from the more than 1,000 underground nuclear tests and 14,000 surveillance tests. During fiscal year 1997 we conducted some 38 hydrotests at the PHERMEX and FXR facilities at LANL and Lawrence Livermore National Laboratory (LLNL). We will do 60 hydrotests in fiscal year 1998 and plan to do some 50 hydrotests in fiscal year 1999. But current radiographic systems are not able to measure the effects of potential defects in an aged pit, so we are building a new X-ray machine—the Dual Axis Radiographic Hydrotest Facility (DARHT)—which will look at the shape and size of an imploding pit model from two different directions with greatly improved resolution.

After some initial delays, we are making satisfactory progress in completing the DARHT facility. The first radiographic machine will be installed in March 1998 and the first arm is expected to be completed by September. Experiments are tentatively scheduled to begin in the summer of 1999. Construction of the second arm is scheduled for completion by fiscal year 2002. We are also doing research in advanced hydrotest techniques facility that, if successful, could provide for detailed, high resolution, three dimensional "motion pictures" of the implosion process. Such technology could be used in an advanced hydrotest facility should existing tools prove insufficient to meet the mission of Stockpile Stewardship.

Beyond obtaining X-ray pictures of imploding pit models, we are conducting experiments to obtain an in depth understanding of conditions that occur during an explosion. For example, we are performing subcritical experiments at the Nevada Test Site. Last year we successfully conducted two such experiments. These experiments are helping us to: fill in gaps in empirical data on the high pressure behavior of plutonium; realistically benchmark data on the dynamic, nonnuclear behavior of components in today's stockpile; analyze the effects of remanufacturing techniques; understand the effects of aging materials; and address other technical issues. Three subcritical experiments are planned for this fiscal year and a fourth is planned in October. The fiscal year 1999 budget supports three to four additional subcritical experiments. Information from these tests are key to being able to certify the new pit production facility at LANL. I would add that these experiments contribute significantly to the maintenance of the critical infrastructure and skilled personnel at the Nevada Test Site. This is necessary if we are ever required to resume underground testing, consistent with Safeguard C of the CTBT.

Finally, the ability to study the behavior of matter and the transfer of energy and radiation under weapons conditions is essential to an improved understanding of the basic physics of nuclear weapons and more accurate predictions of their performance without underground nuclear testing. We expect to be able to generate conditions of temperature and pressure of nuclear explosions with lasers at the National Ignition Facility (NIF) at the LLNL. Experiments at the NIF will provide data essential to test the validity of computer based predictions and demonstrate how aged or changed materials in weapons could behave under these unique conditions. The NIF project, now under construction, is expected to be completed by the third quarter of fiscal year 2003. The first experiments on the NIF are scheduled to be conducted in fiscal year 2001 using the first eight lasers.

While NIF is under construction, the Department is continuing to carry out an aggressive inertial confinement fusion research program to support the stockpile. With the Omega laser at the University of Rochester and Nova laser at LLNL we plan to carry out almost 2000 shots at these two facilities in fiscal year 1998. In fiscal year 1999, we plan to shutdown the Nova and transfer the resources to the NIF project.

In 1997 the Z-pulse power facility at Sandia, demonstrated an extraordinary increase in performance which provides a greatly enhanced source of X-rays. In fiscal year 1998, the Z machine will perform about 200 shots in support of the stewardship program. The Z-pulse will provide valuable information to support stewardship, which we do not expect to obtain from a current pulsed power facility. A pulsed power facility at LANL—Pegasus—maintains an experimental schedule of about 20 shots per year.

These, and other experimental facilities that are on line or under construction are expected to give us a set of tools sufficient to investigate and understand anticipated

problems in the stockpile. We are investigating the feasibility of using a larger facility based on the Z-pinch concept should existing facilities prove insufficient to meet the mission of stockpile stewardship.

As mentioned previously experimental information is tied to the assessment process through computation, more precisely, numerical simulation. But we know that the level of computation needed to effectively simulate effects of aging or a remanufactured part is much, much greater than that currently available, so we have begun a computation development program—the Accelerated Strategic Computing Initiative (ASCI)—in parallel with the experimental program. ASCI is providing the software, computer platforms, weapons codes, and user environments to allow the national laboratories to run simulations for making critical decisions about the safety and reliability of the nuclear deterrent without nuclear testing. Even at this early stage of the program there has been a extraordinary increase in the speed of the ASCI computers, but more importantly the actual number of calculations on weapons issues has increased. For example, in 1992, the last year of underground testing the estimated number of weapons related calculations was 5 gigaops- years, or about 5 CRAY–YMP supercomputers running for a full year. In fiscal year 1997 due to ASCI that number was 500 gigaops-years, it will rise to 2,400 in fiscal year 1998, and in fiscal year 1999 we plan on executing 7,000 gigaops-years of weapons related code.

Our goal is to a have a system capable of operating at the 100 TeraOps level by 2004, and we are on schedule to meet that goal. In 1996 we began operation of the Intel 1.6 TeraOps machine at SNL. By fiscal year 1999 we will have two major supercomputers which will achieve 3.2 TeraOps, one at LANL and the other at the LLNL. We have begun work with IBM to build a ten TeraOps machine which is scheduled to be completed by the year 2000. The next two steps, the 30 TeraOps and the 100 TeraOps machines, will build on the experience of these latest machines and will be designed and developed after competitive bid contracts are awarded.

This unprecedented computational power is also being made available to the university community through ASCI's Academic Strategic Alliances Program (ASAP). The Department of Energy announced on July 31, 1997, initial awards to five major U.S. universities—Stanford University, California Institute of Technology, the University of Chicago, the University of Utah and the University of Illinois. These universities are each focusing on a national-scale application for which the coupling and integration of computer-based simulations from multiple disciplines offer unprecedented opportunities for major advances and discoveries in basic and applied science areas important to ASCI, the broader DOE Science Based Stockpile Stewardship program, and to the chosen application areas. These applications will be unclassified and highly relevant to nationally significant scientific, economic and/or social national priorities.

Thus computer simulations, experiments, and previous nuclear test data provide the complete tool box for the assessment process. Building this assessment "tool box" in time to train the new cadre of scientists and engineers is critical to the Stockpile Stewardship program.

One such application of the stewardship tool box is the dual revalidation program. It has been designed to both challenge the skills of the next generation of scientists and engineers and to provide baseline data for the current stockpile weapons program. The revalidations conducted by teams from the two design laboratories will be performed on each system in the stockpile. We are now half way through the revalidation of the W76, and a number of specific milestones have been completed. Three of six hydro tests were conducted and six of fifteen Arming, Fuzing and Firing systems were tested to the original production specifications. The major system tests for the W76 are scheduled in fiscal year 1998 and fiscal year 1999. Advanced planning for the next dual revalidation weapon will begin in fiscal year 1999.

During fiscal year 1997, 498 weapons were safely dismantled. The W–69 dismantlement program was successfully started on July 21, 1997, but was suspended in September after completing 42 weapons due to a safety concern over the detonator removal process. The remaining shortfall from the original performance goal of 556 is from enduring weapon programs that were scheduled for disassembly in support of stockpile management activities. We expect to dismantle approximately 1,000 nuclear weapons in fiscal year 1998 and 500 weapons in fiscal year 1999.

Defense Programs funds the DOE's nuclear emergency response program which consists primarily of engineers, scientists, and other technical personnel from the three weapons laboratories, production facilities, and other DOE management and operating contractors who support the nuclear weapons complex. This program ensures a viable technical response is in place for any type of radiological or nuclear accident or incident including radiological releases, U.S. nuclear weapons accidents,

or a malevolent event involving an improvised nuclear device or radiological dispersal device. A robust exercise schedule is planned to provide challenging scenarios for all radiological emergency response assets in order to verify the departmental readiness to meet our mandated responsibilities. These scenarios include overseas nuclear weapons accidents, field training exercises, multi-agency resolution of nuclear terrorism crises, response to transportation accidents and commercial nuclear reactor accidents.

Defense Programs has restructured its technology partnership program to focus on cost-shared collaborative R&D partnerships with industry which directly support Stockpile Stewardship program objectives in applied computing, advanced manufacturing, and information technology. Examples of partnerships developed in fiscal year 1997 and fiscal year 1998 include work with: a leading manufacturer of machining stations to eliminate operator exposure to highly toxic beryllium; software vendors to maximize the efficiency of the weapons manufacturing cycle including casting, machining, inspection, and final assembly; and an industrial leader in laser ultrasonics to improve wall thickness measurements for critical weapon components. We will continue similar efforts in fiscal year 1999 in support of Stockpile Stewardship.

Mr. Chairman, these are but a selection of the activities that are going on and are planned for the stockpile stewardship program. While the program is hardly without risk, I believe we have a high probability of success. Why do I feel as I do?

First, let me reiterate that we start from a solid base. The current stockpile is well tested and well understood. The designers and engineers who built them are available and are active. Indeed they are the ones who are creating the stockpile stewardship program. They are the ones who are working on the stockpile now, and are helping to train their successors.

Second, we have laid out a plan for the stockpile stewardship program—weapon by weapon, part by part, that projects the tasks required to maintain the stockpile over the next ten years, and beyond. We have concurrence on this program from the Department of Defense, and the Joint Chiefs, and the Administration has committed to fund this program and all its parts.

Third, the President requires us to annually certify, to him directly, the safety, reliability and performance of each weapon type.

Fourth, we have a back up. Under Safeguard C, the President requires us to maintain the Nevada Test Site in a state of readiness, and the subcritical and other experiments conducted there help keep the people sharp and ready. The successful experiments bear evidence that the Nevada Test Site remains a "can do" operation.

Fifth, under Safeguard B the President requires us to maintain the vitality of the nuclear weapons laboratories—Los Alamos, Lawrence Livermore and Sandia National Laboratories. Mr. Chairman, those labs are among the best in the world—in my opinion hey are the best in the world—and they are better now than they were four years ago because of the enthusiasm and vigor with which they are attacking the stockpile stewardship effort. History tells us that great labs need great missions, and stewardship, like the Manhattan and Apollo projects, is just such a mission. Our DOE labs will get even better because they are attracting the kinds of people who are drawn to solve tough problems of national importance.

Sixth, and this is most important, we are doing stewardship now, and doing it successfully. It has been five years since the last underground nuclear test. We have completed our second annual certification and are working on the third. We have modified the B61 bomb and seen it enter the stockpile to replace the aged B53 bomb. We have begun construction of new experimental tools—NIF, DARHT, Atlas—and our computation program has developed the world's fastest supercomputer—by a factor of three. And we have solved some problems that in the past would have likely required nuclear testing by using stewardship tools. We have done literally hundreds of experiments on existing facilities—Omega, Nova, and Z-pulse power that increase our understanding of nuclear weapons. We have safely dismantled over nine thousand nuclear weapons since the end of the Cold War, have produced numerous parts, on time, while continuing to downsize the complex. This is a system that works, and not just at the labs but also at the plants: Oak Ridge Y–12, Pantex, Kansas City, Savannah River, and the Nevada Test Site.

Mr. Chairman, when President Clinton visited the Los Alamos National Laboratory, he stated " I don't think we can get the treaty ratified unless we can convince the Senate that the Stewardship Program works". I believe the Stockpile Stewardship program, if supported appropriately, can meet its goal of a safe and reliable stockpile, indefinitely, without nuclear testing. Your committee has shown the leadership in the Congress in providing that support and I enthusiastically look forward to working with you. I know of no national security issue that is more important.

BIOGRAPHICAL SKETCH OF DR. VICTOR H. REIS

Dr. Victor H. Reis has served as the Assistant Secretary for Defense Programs in the U.S. Department of Energy since August 1993. In this position, Dr. Reis directs all aspects of the Department of Energy's Stockpile Stewardship and Management Program. These responsibilities include maintaining U.S. nuclear weapons in a safe, secure, reliable, and environmentally sound manner in the absence of nuclear testing; providing an assured supply of tritium gas for the nuclear stockpile; dismantling retired nuclear weapons to meet international arms control obligations; reducing the size of the nuclear weapons complex to one that is smaller and more cost efficient; and ensuring the continued science and technology base of the Nation's nuclear weapons program. Dr. Reis was nominated for his position by President Clinton in May 1993 and was confirmed by the U.S. Senate on August 6, 1993.

Prior to accepting his present position, Dr. Reis was the Director of Defense Research and Engineering at the Pentagon, a position he held since late 1991. As Director, Dr. Reis was the principal advisor in the Office of the Secretary of Defense for scientific and technical matters, basic and applied research, laboratories, and early development of defense weapons systems. While serving at the Department of Defense, Dr. Reis was also Chairman of the Nuclear Weapons Council and the Strategic Environmental Research and Development Program—a joint project of the Departments of Defense and Energy and the Environmental Protection Agency.

Prior to assuming the directorship of Defense Research and Engineering, Dr. Reis served as the Deputy Director and then Director of the Defense Advanced Research Projects Agency beginning in December 1989. Dr. Reis also has served as Special Assistant to the Director, Lincoln Laboratory, Massachusetts Institute of Technology; Senior Vice President for Strategic Planning, Science Applications International Corporation; Assistant Director for National Security and Space, Office of Science and Technology Policy, Executive Office of the President; and other positions in industry, academia, and Government.

Dr. Reis earned a Bachelor's Degree in Mechanical Engineering from the Rensselaer Polytechnic Institute; a Master's Degree in Mechanical Engineering from Yale University; and a Master's and Ph.D from Princeton University. He is the recipient of numerous awards, including the Department of Defense Distinguished Public Service Medal.

Dr. Reis was born in New York City on February 11, 1935; is married with four children; and resides with his wife, Marilyn, in Washington, DC.

FISCAL YEAR 1999 BUDGET REQUEST

Senator DOMENICI. I note the presence of the chairman of the full committee, Senator Stevens.

Senator Stevens, I appreciate your attending today and frankly I want to make sure that it is understood that when we needed an extra allocation for this program from the Defense Department in order to get on with stockpile stewardship, the chairman of the full committee was our leader and the one that has helped us. Without him we could not have achieved much of this important work. So there is a lot that goes into meeting these very difficult responsibilities, and I want to publicly thank him for his effort and help.

Senator Stevens, do you have any questions this morning?

Senator STEVENS. Thank you for your comments, Senator.

Dr. Reis, the $4.5 billion, will that be an annual amount now for the stewardship program?

Dr. REIS. Our plan is yes; that would be an annual amount.

Senator STEVENS. For 10 years, we will put $4.5 billion into the stewardship program.

Dr. REIS. Of course, we have only put a 5-year budget together, but our projection would be for 10 years, yes, sir.

Senator STEVENS. That is a substantial increase over the last 10 years in the nuclear program, is it not?

Dr. REIS. It is an increase. Of course, if you go back 10 years, back to 1987, it was considerably more back in those days when we

were still producing weapons and still testing underground. If my memory serves me correctly, it was about $5 or $6 billion a year, at those times. Of course, it has dropped off considerably since we stopped testing in 1992. It dropped down to about something just under $4 billion.

DEFENSE PROGRAMS WORK FORCE

Senator STEVENS. Have you given us the detail of the work force that is required for the stewardship program?

Dr. REIS. Yes; we have.

In December of 1996, we produced what is called a programmatic environmental impact statement for stockpile stewardship and management, where as part of that analysis we looked at the work force requirements.

Senator STEVENS. My last question. From your statement it appears we are going to maintain the full force that is necessary to resume testing, and at the same time we are going to have a new force that is dealing with the stewardship program, is that right?

Dr. REIS. That is correct.

Senator STEVENS. So the manpower really is substantially increased.

Dr. REIS. The manpower actually drops down over what we had. While we do not expect to have to resume testing, we are keeping the facilities available, and we are keeping the core capability available. If we had to go back and test, I am sure we would have to augment, to some degree, the work force there. The same is true with the production complex, Senator.

WEAPONS PRODUCTION COMPLEX

Senator STEVENS. Are you going to keep all the sites open that you mentioned?

Dr. REIS. All of the sites currently would be kept open. They would be downsized and modernized, but we would anticipate keeping every one of those sites open, yes, sir.

Senator STEVENS. Thank you very much.

DEFENSE PROGRAMS WORK FORCE

Senator DOMENICI. Mr. Chairman, might I mention that for instance, the Nevada test site, pursuant to the understanding between the Joint Chiefs and the President, when the Joint Chiefs agreed to the stewardship program, in lieu of testing, part of that was that the Nevada test site be maintained in a state of readiness. But I would state for the record, there are several thousand fewer employees at the Nevada test site today under the current readiness plan than when we were actively engaged in underground testing. I believe the number is around 9,000 fewer personnel.

Senator STEVENS. It appears that there is an increase in the stewardship program almost commensurate with that.

Senator DOMENICI. The stewardship program's increases are not much related to personnel as they are to new facilities and equipment, diagnostic equipment that is necessary to diagnose the aging of our weapons without testing.

Senator REID. Mr. Chairman, could I say one thing before Senator Stevens leaves?

Senator DOMENICI. Sure.

BIPARTISAN SUPPORT FOR STEWARDSHIP

Senator REID. You complimented him for making sure that we got a budget allocation that was appropriate. I think one of the untold stories of this Congress and the last 10 years has been partnership of Senator Stevens and Senator Inouye. I think the work that they have done for the security of this country has been bipartisan and has been some of the finest work that I have seen and it has received no notoriety. Also, I think it has just been remarkable, the work those two men have done.

Senator STEVENS. Thank you very much.

HISTORIC FUNDING FOR STEWARDSHIP

Senator DOMENICI. Let me just also state for the record to see if I am correct, in 1997 the stewardship program, which was just getting started, was essentially $4 billion, $3.918 billion.

In 1998, it went to $4.1 billion, so essentially we are saying that without the add-ons to make the stewardship program work, the 10-year projection would have been $40 billion. But the current agreement totals $45 billion.

Dr. REIS. That is correct.

Senator DOMENICI. Is that a fair assessment?

Dr. REIS. That is a fair assessment.

Senator DOMENICI. OK. Because $45 billion sounds—you know, when you take it without a basis, startup, start basis, it sounds like a lot more than $5 billion, $45 billion sounds like a lot more.

ASSESSMENT OF THE LABS

Dr. Reis, could you quickly do an assessment of the ability of the three weapons laboratories to manage the critical centerpiece programs and activities of stockpile stewardship initiatives such as the advanced strategic computer initiative, subcritical experiments, DAHRT, et cetera? Do you have any concerns with the labs' ability to execute the elements of the stockpile stewardship program?

Dr. REIS. I think the labs are frankly in among the best shape they have been in many years Senator. I think it is important to recognize that the labs really are responsive to challenges, and when you give them difficult challenges they get better, and your ability to solve those challenges get better.

I think if you have been to the laboratories recently you will compare it to say, several years ago, you will recognize the whole spirit of what is happening. The level of successful experiments that they have done over the past 2 years really gives me the confidence that those laboratories, if we maintain the course we are on, will clearly be able to do the job.

Senator REID. Mr. Chairman, I have got to go vote to get the ISTEA bill out. I will be back in 5 minutes.

Senator DOMENICI. If I am finished, I will leave it open.

Senator REID. Yes; because I have a few questions.

ACCELERATED STRATEGIC COMPUTING INITIATIVE [ASCI]

Senator DOMENICI. Sure. We are going to submit some other questions in writing, but let us talk a little bit about the accelerated strategic computing initiative [ASCI] program.

Dr. REIS. ASCI program.

Senator DOMENICI. That exists to some extent in each of the three major laboratories.

Dr. REIS. That is correct.

Senator DOMENICI. Could you tell us, are you experiencing any problems, delays in maintaining the schedules, and if there are some, what are you doing to correct this?

Dr. REIS. For the most part I think we are on schedule in each of the laboratories. I must point out, as you are aware, it is a very aggressive schedule for the ASCI program and all the parts that go with it. It is a very complex program. It involves not just the laboratories themselves, but the contractors, the computer companies that we are in partnership with, and overall we are on that curve.

We have had some concerns at the Los Alamos Laboratory with Silicon Graphics/Cray. We expect to be able to put them back on the curve shortly.

Senator DOMENICI. So you think that one, which is not quite up to the scheduling properly as the others, will be brought back?

Dr. REIS. Oh, we have a plan for getting back onto the curve.

Senator DOMENICI. I might state for the record that it is a little-known fact outside of the community of scientists that relate to the laboratories that the supercomputer that America went way out front of the world on was developed because the demand, the market demand for it was the nuclear weapons industry, Los Alamos in particular. Livermore needed much more computing, and they placed their requirements before the industry, and the industry responded to the demand to produce supercomputers.

I gather now, we are going through a subsequent phase, which is even more pronounced than that one, wherein ASCI is going to be the market driver for stronger and more powerful supercomputers, is that correct?

OPERATING REQUIREMENTS

Dr. REIS. That is correct. If I could just take a second and explain how we did that. We started off the ASCI program by projecting in about the year 2004, which is when we would anticipate that many of the designers would be reaching their retirement age, and said, what are the specifications, the type of calculations that you will need for stockpile stewardship?

And they came up with a number which we seemed quite remarkable at the time of something like 100 trillion operations per second (TeraOps), which was about, perhaps as much as 100,000 greater than people were actually working calculations at the time. But that is what we needed to do. The approach that we chose was not to go there in one step, and it was also clear that we could not wait for industry to provide that.

So, what we were able to do was put together a partnership with industry, with competitive procurements, that allowed us, step by

step to move up in that direction. The first major step was the option red machine at Sandia National Laboratories, which as you pointed out was about three times faster than any other supercomputer, and we are moving along that curve pretty much the way we had to find it.

What makes that, I think, interesting is that the components, all of the components, essentially, are being built out of commercial commodity components so that the computer companies, as they move along this train, will still be able to use those same supercomputers for other applications. I am sure many more uses than just, obviously, nuclear weapons, so this is really causing a significant boost to the U.S. computer industry as well.

ASCI FUNDING

Senator DOMENICI. Could you tell me, as I understand it, the ASCI program, including stockpile computing, has experienced funding increases of nearly $70 million for 1997 and 1998, and the request for 1999 is $517.8 million. What is the total cost of the effort expected to be, what is the basis for that estimate, and when do you expect the funding requirements to peak?

Dr. REIS. I would have to check on those numbers. The peak is coming up in a few years. That would be about $600 or $700 million a year for the total computing. That is not just the ASCI part but, of course, as you are aware we do a significant amount of computation, if you will, production computation.

I think the key to the ASCI is, of course, I may be moving ahead of your next question. I have not seen it.

Senator DOMENICI. I do not have one.

Dr. REIS. Then I certainly have not seen it—is, of course, that we not wait until the year 2004 and the 100 TeraOps. We are using it now, and will continue to use it.

As we move up that curve, we are learning a lot about the whole simulation area. We are learning about how to interpret and predict the experiments that we are doing right now. The concept of integrating a simulation with the experiments that we are doing, looking at the previous tests, we are learning things about the underground tests that we have not known before, is, I think quite extraordinary.

[The information follows:]

ACCELERATED STRATEGIC COMPUTING INITIATIVE

Current planning indicates that the cost of the Accelerated Strategic Computing Initiative, including Stockpile Computing activities, from fiscal year 1999 through fiscal year 2004 is projected to be about $4–$4.2 billion. This estimate is based on current projections of the cost of computer platforms being developed with industry partners, the cost of ongoing activities with the laboratories and academic partners on code development, modeling, tools and techniques, as well as creation of "supercorridors" and other facilities for high performance interfaces to the weapon designers. The peak funding is projected to be approximately $750 million in fiscal year 2003. However, we must acknowledge the possibility of unanticipated issues concerning the stockpile for which additional computational efforts that offer greater and more advanced technological responses would provide better value in terms of cost and effort.

ASCI CHIPS

Senator DOMENICI. Let me tell you what my flow charts here indicate. The 1999 funding will be $517 million, and by 2003 it will be $753 million.

Dr. REIS. Yes.

Senator DOMENICI. I assume that shortly after that——

Dr. REIS. I think it would stay at that level. Now, what would happen as one projects further beyond that, of course, is that you will start to drop off, because we would not anticipate beyond that level of building new machines.

The key to the way these machines would work is as the chips themselves get better, those improved chips go into the machines. They are the same types of chips that you would have on your PC, but as you know, they keep getting better. Those are the same chips that go into these machines. We sort of get the first crack at them, but nonetheless they are still advertised.

So, I would anticipate that the ASCI computers over time would continue to improve as the chips themselves continue to improve. Once we reach that level, then I would see those dollars dropping considerably, because we would no longer be in the computer development arena. We would just be using the computers.

MASSIVE PARALLEL CONSTRUCTION

Senator DOMENICI. Now, so we understand, this next market demand pool that will be placed on the industry through this program will be fulfilled principally by massive parallel computers, as compared with reinventing a total new mainframe computer.

Dr. REIS. That is right. Each of the computers will be built up by putting together, the type of commercial computers that companies will then go out and sell as part of servers or as part of simulation engines, for other applications.

ASCI ROLE IN THE STOCKPILE STEWARDSHIP MISSION

Senator DOMENICI. Now, could you tell us in layman's terms on what this enhanced computing capacity will do in the stockpile stewardship program that is so important to its maintenance as a trustworthy and safe nuclear deterrent?

Dr. REIS. I think the basic problem that one faces in stockpile stewardship is the aging of the nuclear weapons stockpile just like we are. I mean, you may be designed in two dimensions. You sort of age in three dimensions, little bumps and cracks and changes.

Senator DOMENICI. Just like us.

Dr. REIS. Just like us, wrinkles—you know, some of us lose our hair. I do not see anybody in this—looking at you, you all seem to be fully——

Senator DOMENICI. A little obesity here and there.

Dr. REIS. That is probably as far as we want to go on this discussion, Senator. [Laughter.]

Senator DOMENICI. We will have a closed session.

Dr. REIS. That is right. [Laughter.]

But what happens, of course, is that in a device like a nuclear weapon, in which so much energy is in such a small package, those little effects we understand now from looking at past tests, and so

forth, can make a big difference. We have to be able to calculate what those effects are.

They are in three dimensions, and we need to be able to put all the calculations on a machine, that is, the effect as one goes through the implosion process, the radiative transfer process, and the energy leaving the nuclear weapon.

Senator REID. Would the chairman yield just briefly?

Senator DOMENICI. I would be pleased to yield.

Senator REID. Dr. Reis, the thing I was so impressed with at the test site this last time is their explanations that the reason these supercomputers are so important is that the test results must be obtained in a millisecond. I do not know if I pronounced that right, but a lot less than a second.

Dr. REIS. Well, the events that occur during a nuclear explosion, which we are trying to simulate, all occur in a very, very short period of time.

Senator REID. Less than a second.

Dr. REIS. Much less than a second, and some effects are milliseconds, some effects are microseconds, and you have to be able to understand that. You also have to be able to show that to the designer, and then let the designer make changes. So it is not sufficient just to say, I can run this calculation for a very long period of time. He has got to be able to see what that effect is, basically try different things, and this requires a very, very significant increase in our ability to compute.

ABILITY TO BUILD SUPERCOMPUTERS

Senator REID. We know we can build the supercomputer.

Dr. REIS. We feel comfortable that we can do that. Again, we have put ourselves on a very aggressive curve.

I think the reason that we feel comfortable with that is we have very good support from the computing companies we are working with. We have also just completed a competition (path forward) for some of the switching components and so forth, for moving up to the 30 TeraOps regime.

We got very good responses from four of the major supercomputing companies—IBM, Silicon Graphics/Cray, DEC, and Sun Microsystems—all gave us very, very good proposals.

They are now feeling comfortable with that, and I would suggest that perhaps you bring in those people from the supercomputing companies. Ask them very directly what their views are. Either have a hearing or just maybe discuss with your staff—I am sure they would be delighted to come in and just discuss with you what their views are, because they are not just looking to us in doing this.

I mean, we have gotten on, if you will, we are pushing their curve from where they expect to be able to sell these devices. These are not special devices for us, they are made up of devices that they expect to sell as part of their normal business.

We are pushing them a little faster, but they will tell you that they expect to be building these things later. It is this problem of time urgency that we are dealing with, which is to get the system working before these designers retire, which has caused us to move at such an accelerated pace. That is why we call it accelerated—

an accelerated past where the normal computing business would take us.

STOCKPILE STEWARDSHIP

Senator DOMENICI. Now, just to summarize one more time, what we are saying and what the Joint Chiefs said when they agreed to this idea of no underground testing, was that we used to determine safety and reliability to a significant degree by having actual nuclear weapon tests. At one point they were above ground. We moved away from that and tested for a long time underground—we were doing underground testing for the same purpose.

Now, what was done when we decided to do no more underground testing, we came up with a science-based stewardship program that would attempt to make the weapons systems as safe and as reliable as we knew they were when we did actual underground nuclear testing, is that correct?

Dr. REIS. That is correct.

STOCKPILE STEWARDSHIP AND THE COMPREHENSIVE TEST BAN TREATY

Senator DOMENICI. And the big question which will be forthcoming on the floor of the Senate when the Comprehensive Test Ban Treaty is debated will be, are we as safe and as sure with no testing and this stockpile as we were before?

And if the answer is yes, then the question is, if the whole world is in that mode, can we be assured that there is no cheating going on in terms of testing?

That is going to be the framework of the issue on the CTBT treaty that the President has sent us. Is that essentially——

Dr. REIS. I think that is it. That says it very well.

Senator DOMENICI. Now, the question, then, for the Congress and for our subcommittee is, is that effort worth $500 million a year, more than we were spending before we had this science-based stockpile stewardship program in full effect, and that is essentially the difference between about a $4 billion budget that existed and a $4.5 billion, which it increased to, and maintain the nuclear weapon stockpile in a manner you and other experts have deemed the responsible way.

Dr. REIS. That is correct.

Senator DOMENICI. Now, let me ask, it is not just advanced computing that will be needed to determine the reliability and safety in a stockpile which is not going to have any new weapons added. There are other new diagnostic instruments, and I use that word, because I do not know what else to call them. These tools and facilities will diagnose the parts and the reliability of various components in an aging stockpile.

We are going to also add some equipment, one called the dual axis radiographic hydrotest facility [DARHT]. Could you tell us what it will do?

DARHT FACILITY

Dr. REIS. What DARHT does, it is an advanced hydro testing device, and I should say DARHT is an advanced one. We have been

doing this whole hydro testing business for many, many years. In fact, some of the early work at even the Manhattan project used this.

What we try to do is simulate the behavior of the actual primary explosive device. We do not use plutonium, but we use a simulant metal and we light off the high explosive, we see how the pit forms, and then we take an x ray, literally the same way you would do when you went to the doctor to look at your lungs except it is done in a very, very short period of time.

We see the cavity that this imploding pit has formed and we can watch—by various diagnostics, the time history of the way that implosion occurs.

But the key is, to let us look inside it, actually see what it looks like, and that is what the DARHT facility does for us. We will be able to look in more than one direction when we put in the second arm. It will have much improved resolution so we will be able to look at that x-ray picture much better, and we will also be looking from another direction as well. So we will be able to get a much better sort of stereoscopic look, the same way when you go to the doctor you take an x ray from different directions, and then the expert, if you will, looks and says is that working all right.

We have, as you are aware, a number of tests both from what we simulated in the past, and real underground tests so we have a good idea of what the imploding pit looks like at various critical times of its implosion.

What we will do with DARHT, then, is compare with these aged systems what changes, again exactly the way you would if you were going to the doctor. Let me look at a new x ray, compare that with the old x ray, and then we have to assess. That is where the simulation comes in. That is where the experts come in. Is that going to make any difference or not? Because we do not want to have to make any changes if we do not need to.

Senator DOMENICI. So for the record, DARHT means dual axis radiographic hydrodynamic test facility, which we will never repeat again. We will just call it DARHT.

Now, isn't it true that some of the information—the date that will be forthcoming from DARHT—these series of DARHT experiments, will use the computer capabilities of ASCI to simulate what is actually occurring. And this will aid in reference our understanding to safety?

STOCKPILE STEWARDSHIP

Dr. REIS. The key, of course, is the computing, obviously it does not do it all by itself. You cannot validate the computer codes. We do the best we can, but indeed what we try to do is make sure we are putting the right numbers into the computer; that the numbers that come out make sense. So what we try to do with DARHT and the various other parts of the system is to be able to predict what those experiments might look like. That tells us whether our predictions are good.

We also, when we find something coming out the other end, we want to ensure ourselves that we have noticed a change, perhaps. Is that change important? We want to make sure that the theory that goes behind that is a valid one, because every year we have

to go back to the President, based on all the tests, and say, OK, is this stockpile sufficient to do the job or not? Is it still safe? Is it still reliable?

We know there are going to be changes. The issue is, are those changes enough to change your specifications?

Our safety standards we have for these nuclear weapons are certainly among the most rigid and extraordinary in the world, and we have not, nor would we anticipate changing those standards in any way, even though we are not testing in the future.

ADVANCED EXPERIMENTAL FACILITIES

Senator DOMENICI. Now, would you state for the record the other key facilities, like Livermore's national ignition facility [NIF], and state for us what capability they provide, what the schedule is for each one, and whether you foresee any significant changes that might alter the project costs and schedules.

And I am not trying to hold anybody to exact cost, but we have to be careful that we do not come up with estimates that are so far off the mark that in 3 or 4 years we are sitting around here trying to justify the money and somebody says the program is not worth it because it is too expensive, so will you do that for us?

Dr. REIS. Yes.

Senator DOMENICI. And I also have some written prepared questions that are more precise on that on these subjects.

Dr. REIS. I will be glad to do that. Those are very important issues, Senator.

[The information follows:]

ADVANCED EXPERIMENTAL FACILITIES

A suite of enhanced capabilities that are needed to fill in the knowledge gaps and provide data relevant to various stockpile concerns has been identified. The enhanced capabilities include ASCI and computations and subcritical experiments, as well as advanced experimental facilities to provide high resolution data on the stages of the nuclear explosion. The facilities are: Atlas, the Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT) and the National Ignition Facility (NIF), all of which are currently under construction or in detailed design; the Short Pulse Spallation Source enhancement to the Los Alamos Neutron Science Center (LANSCE), which is an upgrade to an existing facility; and, an advanced hydrotest facility (AHF) and an advanced pulsed power facility (APPF), both of which are being assessed for the future. Wherever possible, the goal is to obtain data experimentally by more than one method. The following table identifies the stage of the nuclear explosion that each facility would address:

EXPERIMENTAL FACILITIES NEEDED TO ENSURE HIGH CONFIDENCE IN WARHEAD SAFETY AND RELIABILITY

[Dollars in thousands]

	Atlas	DARHT	AHF	NIF	APPF	LANSCE
Improved physical models	X	X	X	X	X	X
Early implosion		X	X			X
Preboost	X	X	X	X	X	X
Boost				X		
Primary-secondary coupling				X	X	
Secondary implosion	X			X	X	
Total Cost	$48,500	$269,800	TBD	$1,198,900	TBD	$16,700
Scheduled completion	TBD	FY 2002	TBD	FY 2003	TBD	FY 2000

The current schedule for Atlas completion is the third quarter of fiscal year 1999. However, design revisions are currently under consideration by the Department to allow the design of a test capability which will meet programmatic requirements within the existing estimated cost. The original design was too costly. The completion date is being delayed by an estimated 14 months to allow time for the necessary redesign.

The first axis of DARHT will become operational during fiscal year 1999 and experiments are scheduled to begin in June of 1999. The cost reflected includes the full estimate for the four pulse technology selected for the second axis. We are very confident of this estimate and do not anticipate further increases.

The cost estimate for NIF was established in December 1996, at the end of Title 1 design, and to date, the project is on schedule and within cost.

The fiscal year 1999 budget includes $7.7 million to complete funding for the Short Pulse Spallation Source enhancement to the Los Alamos Neutron Science Center (LANSCE). These upgrades will allow Stockpile Stewardship Program researchers to obtain dynamic and surveillance measurements more quickly and accurately. It will also improve facility reliability and maintainability and reduce worker radiation exposure.

The fiscal year 1999 budget also includes $49 million for research and development leading to a decision within a five year period whether to construct an advanced hydrotest facility and/or an advanced pulsed power facility.

EXPERIMENTAL ACTIVITIES

Senator DOMENICI. The staff reminds me now that you know, we are already, certainly Senator Reid and I on this subcommittee, are going to feel a lot of pressure as to whether we need the $4.5 billion each and every year, and we are surely not going to get significantly more than that.

We are counting on the accuracy of your cost estimates and schedules. We really need you to be sure your people are doing the best work possible in that regard, because I do not perceive that we are going to add 10 percent or 15 percent over the $4.5 billion cap in order to accommodate costs which are significantly beyond the estimates when we commit to a particular project.

Senator Reid.

Senator REID. Thank you, Mr. Chairman.

Of the many experiments and tests that are planned, it is your unqualified opinion that we are doing this for the national interest, security interest of this country?

Dr. REIS. Yes, sir.

Senator REID. And these are experimental activities separate and apart from testing activities, is that true?

Dr. REIS. That is correct.

Senator REID. And the chairman has gone over in some detail the fact that while we are increasing the budget, but only by a little bit over a 5-year period. Do you feel that you are going to have sufficient resources to focus on the safety and reliability of the stockpile?

Dr. REIS. Yes; I do, Senator.

SUBCRITICAL EXPERIMENTS

Senator REID. Regarding the subcriticals at the Nevada test site, have you yet been able to gauge the value of these experiments from the few that have been done?

Dr. REIS. Senator, I must tell you that I was looking forward to those tests because I thought they would be very interesting and very useful. I must tell you that I have been more than pleasantly

surprised about just how useful they are, and you, of course, have visited and seen that.

It is a major success story, I believe, for stewardship, because it is working now. We have been able to answer some very significant problems, again in combination with our understanding flowing with previous experiments, using the ASCI computers to be able to predict and to interpret what those results are.

Just with the two experiments so far, Rebound and Holog, from the two laboratories, working together with the people at the test site, we have more information on some very difficult problems that in the past we simply did not understand by just looking at data from underground testing.

So it has been, I believe, a major success story.

LABORATORY MORAL

Senator REID. Dr. Reis, one of the things that I recognized, and I think I can speak for Senator Domenici, is the enthusiasm——

Dr. REIS. Yes.

Senator REID [continuing]. Of the scientific community out there.

When I say out there, this includes bringing some people from the laboratories when they do these experiments.

It is as if they have a chance of winning the World Series. They are really in their finest—they are dealing with pure science, and I just found an esprit-de-corps there that is hard to express.

SUBCRITICAL EXPERIMENTS

Dr. REIS. I am glad you mentioned that. I visited with General Habiger. We went down to visit before the experiment started, when they were in the process of being set up. It is a very unusual experience to put on mining gear and all the safety equipment, go down almost 1,000 feet, get down to the bottom, and then you put on lab coats and lab gear on top of that.

Senator REID. Because it is so clean.

Dr. REIS. Because it is so clean down there. As you point out, the enthusiasm of the people working is good. What is very interesting is the level of diagnostics. In terms of the amount of diagnostics we have on those subcritical experiments it is greater in many respects than we had during an actual test.

That is because you are able to get closer, but also, you get much finer detail. Of course, that is the fine detail we need, as I expressed to Senator Dominici because that is where the problems are.

ARCHIVAL TEST DATA

Senator REID. And Dr. Reis, you compare what you do there with the archival information that has been gathered with these hundreds and hundreds of tests—you do have something to compare it with, is that true?

Dr. REIS. Well, that is key. I hope I get that point across, that those archival tests are very, very important for us, because that gives us the baseline. We are always looking for changes.

We do not anticipate going back into weapon production. So how do you know whether current systems are going to work or not?

Well, you have to determine: what are the changes that are taking place; and then are those changes significant. That requires a lot more detailed scientific understanding of what happens in nuclear explosions.

SUBCRITICAL EXPERIMENTS

Senator REID. We are planning for four subcriticals per year. Only three are scheduled this year. Could you explain why?

Dr. REIS. The fourth is actually within about 2–3 weeks after the end of the fiscal year, so much of the planning of the funding for that is actually in 1998.

As you are aware, those are not easy experiments. There are a lot of diagnostics. There is a lot of thought that goes into them, and we are trying not to press the schedule faster than makes sense, but we are aggressively pushing the subcriticals, because they are on the critical path to the resumption of the pit production at Los Alamos.

So there are a number of experiments we have to do. We have to understand what is happening to both new plutonium and aged plutonium. We have to understand the difference between cast and wrought plutonium. The detailed experimental information that will be gained from those subcritical tests in relation to the previous tests that we had done underground are tying it together using the simulation techniques that we are developing at the same time.

AGING WORK FORCE

Senator REID. One of the things, Dr. Reis, that has been difficult is with the passage of time some of the scientists that we had that were working on these programs decades past are leaving because of death, retirement. Aren't we losing the knowledge of a generation of scientists, physicists, and engineers who build and test these nuclear devices?

Dr. REIS. Indeed, that gets back to why $4.5 billion and not $4 billion, or some other number. It has to do with the rate of the program, because we are moving very rapidly on many fronts, on the experimental front, on the computational front, throughout the whole program.

It is based on our feeling comfortable that we have the stewardship program in place, working, before those people retire, because those are the people that raise their hands and tell you yes, this is a program that we feel, with our test experience, will be sufficient.

While we do numbers, we do calculations, we do experiments, Senator, it really comes down to the level of expertise of those people. We need the same level of expertise, perhaps even more, when we are not testing in the future than we have in the past. The people who judge that are the people who have had that experience.

CHALLENGE OF STEWARDSHIP

Senator REID. Dr. Reis, also we have made this very difficult for ourselves, have we not, by playing with a set of rules that, for example, does not generate any nuclear yield of any kind. It makes

work for the scientific community, those that have been involved in it in the past, and those we want involved in the future, it makes their job extremely difficult, and that is why we are talking about super-supercomputers, and we are talking about all of these national ignition facilities and all these other methods of experiments that have no nuclear yields.

Dr. REIS. That is certainly true, and that is the challenge that we have to face, that these are tough, very, very difficult jobs.

I think it is a more difficult job we have to do now than, in fact, building a weapon from scratch if you had the ability to go test it.

Senator REID. Dr. Reis, there have been articles written—I read one yesterday, in, I think it was the National Journal, where I am not sure you were quoted, but there were other scientists who were quoted as saying that the program about which we are engaged is as difficult as the Manhattan project or sending someone to the Moon.

Dr. REIS. Yes; I think it is of that magnitude, and I am not at all surprised. When you are dealing with a program of that magnitude, the $45 billion over 10 years sounds like a lot of money, but certainly not way out of whack for the job we are trying to do in terms of its scientific and engineering difficulty, and also the rate at which we have to do it.

What is interesting about comparing it to Apollo and the Manhattan project is that they were time-driven. You had to have the job done by a certain time.

And that is what drives the importance of why we need experimental facilities like DARHT and Atlas and some of the pulse power work. That is what drives the rate at which we have to do subcriticals. That is certainly what drives the ASCI program, and why we simply cannot wait for the computing companies to sell us the next big computer that they find, that they are selling to everybody else.

Senator REID. Mr. Chairman, I would ask your permission to submit some questions in writing. I have to go up to the ISTEA markup, we are reporting that out, and I need to be there, so I am going to have to leave.

TRITIUM SUPPLY

Senator DOMENICI. Senator, I am going to close the meeting down now. Your questions will be incorporated into the record.

Dr. Reis, just one last question. With reference to tritium sources——

Dr. REIS. Yes.

Senator DOMENICI [continuing]. We have a situation where by 2000—what, 4 or 5?

Dr. REIS. 2005 is our current need date for new tritium.

Senator DOMENICI. We will need a new source given the current stockpile requirements.

Dr. REIS. We have to start producing a new source by 2005.

Senator DOMENICI. Now, is it not correct that if we go the accelerator technology route it will cost between $4 and $4.5 billion over time, and if it is possible to go with a commercial light water reactor—and I am not suggesting we have all the problems ironed out on that—that it would be in the neighborhood of $1 billion?

Dr. REIS. Those numbers are roughly correct.

Senator DOMENICI. And the fiscal year 1999 budget request makes no choice between the options, but includes $157 million to get started, is that correct?

Dr. REIS. To continue one of those, yes, sir.

Senator DOMENICI. Can you have your answers to our questions back by the end of March?

Dr. REIS. Certainly.

Senator DOMENICI. We are going to mark up as early as we can.

Dr. REIS. We will try to get them back to you as early as we can.

PREPARED STATEMENT OF SENATOR CRAIG

Senator DOMENICI. Senator Craig has a statement that will be inserted in the record, and Senator Cochran has a series of questions which will be submitted for answer within the established rules of getting them to us by the end of March.

[The statement follows:]

PREPARED STATEMENT OF SENATOR LARRY E. CRAIG

DEPARTMENT OF ENERGY: DEFENSE PROGRAMS

As the subcommittee convenes to consider the important national security functions carried out by the Department of Energy, I would like to take this opportunity to highlight one particular program. There has been a well coordinated effort between the Idaho National Engineering and Environmental Laboratory, in my state, and Los Alamos National Laboratory in the Chairman's state of New Mexico on a program called Defense Programs Environmental Surety. This program uses basic research results from Los Alamos and then applies Idaho's engineering skills in designing industrial systems to meet various environmental needs at Los Alamos.

The Office of Defense Programs within the Department of Energy has done a good job of integrating INEEL into the Enterprise Integration program, and deserves recognition for a job well done. In turn, the INEEL provides high-quality services to the weapons complex, while helping maintaining the security and robustness of our nuclear weapons program.

The defense programs within DOE have demonstrated leadership in recognizing the core strengths of each laboratory and encouraging this teaming effort. I commend DOE for that, and for placing the Environmental Surety program in the President's budget request for fiscal year 1999. I am sure that INEEL's skill base in applied engineering can continue to meet this and other needs for the DOE weapons complex.

Dr. REIS. All right. We will try to do that.

Senator DOMENICI. Do you have anything else you would like to discuss with the committee?

Dr. REIS. I think that should do it, other than to thank you again for more than interest in this. This is a very important project.

I cannot think of any more important one that we are doing, and again, this committee has shown, both yourself, Senator Reid, other members, and the staffs that you've assembled to work on this. They ask tough questions continually, and we are doing our best to answer those, but this has got to be a strong bipartisan effort, and Senator, we are in your debt for what you have done so far.

Senator DOMENICI. Well, I want to close the record by saying you have understated the significance, as you usually do. It is tremendously important to the nuclear stockpile. For those who do not think we ought to have a stockpile at all, and there are some, obviously this sounds like something we are wasting money on. But for those who know the significance of maintaining a solid, reliable,

and safe stockpile, it seems to me that we have a job of educating a lot more Senators from both parties.

This is not just any run-of-the-mill program. The Chief of Staff and all of those who serve with him are expecting the stockpile stewardship program to work—to keep our weapons stockpile reliable and safe. You have got the President, who has said no underground testing, expecting this to work, and I assume, although many Senators were against stopping underground testing, we have done it as a Nation and a treaty is pending.

So, we can put off a lot of things, but this one is a pretty dangerous one for the kind of world we live in. Knowing what the stockpile looked like in countries like Russia for the foreseeable future, we have to do something like this, and we will do our best, and you have done a great job explaining to the scientific community.

ADDITIONAL COMMITTEE QUESTIONS

Many of them think it is a very exciting science-based research program from which much science will evolve, and that it is one of the major research programs going on now by way of Government-directed programs, and from it will come many computer capabilities and ideas, and many other items of scientific significance are going to evolve.

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

QUESTIONS SUBMITTED BY SENATOR DOMENICI

GENERAL QUESTIONS

Question. Dr. Reis, is the nuclear weapons stockpile safe and reliable, and does DOE have the capability to meet the requirements of the Defense Department for fiscal year 1999?

Answer. Yes, the Nation's nuclear weapons stockpile is safe and reliable. The Secretaries of Energy and Defense have completed two annual certifications to the President that the nuclear weapons stockpile is safe and reliable and that no nuclear testing is required. At this time, the Department of Energy has the capability to meet the nuclear weapon requirements of the Department of Defense as approved and delineated by Presidential guidance.

Question. Dr. Reis, how long will we have to wait until it can be determined that the science-based Stockpile Stewardship program works and can be fully relied upon in the absence of underground weapons testing?

Answer. Stockpile Stewardship is working now. While it has been more than five years since the last nuclear test we have successfully addressed several stockpile issues by using the experimental and testing tools available today. This provides confidence that the even more powerful computing and testing tools being developed will allow us to solve future stockpile problems without nuclear testing. By annually certifying the safety and reliability of the stockpile, the DOE will confirm that Stockpile Stewardship can be relied on now and in the future. We have successfully completed the process twice, and the third annual certification process is well underway. A copy of the second certification was provided to the Congress by the President on February 12, 1998.

Question. Dr. Reis, how would you assess the ability of the three weapons labs to manage the critical, center-piece programs and activities of the Stockpile Stewardship initiative, such efforts as the Accelerated Strategic Computing Initiative, Subcritical Experiments, DARHT, etc.?

Answer. The Department's three weapons labs have done an excellent job of defining the stockpile stewardship program initiatives and in most key areas are moving aggressively and effectively in carrying these programs out. The labs successfully implemented the development of the world's fastest computer at Sandia National Laboratories, the conduct of three subcritical experiments, and the start of construc-

tion of the National Ignition Facility. These successes confirm their ability to manage the critical programs of Stockpile Stewardship. With respect to DARHT, unanticipated changes in technical requirements impacted the schedule and cost of the project, which in turn will require significant changes in both the DOE and LANL management. We also have concerns with some of the technical issues regarding the Blue Mountain computer at LANL, and we are shoring up our management process here as well.

Question. Do you have any concerns with the Labs ability to execute the elements of the Stockpile Stewardship program?

Answer. If long term, adequate stable funding is provided, I believe we will be able to execute all elements of the program.

Question. Are you confident that the management and leadership of the national weapons laboratories is aware of the need to effectively manage costs and schedules?

Answer. Yes, the directors of the weapons laboratories are fully aware of the importance of delivering the key elements of the Stockpile Stewardship Program on time and within budget. They have stated that Stockpile Stewardship is their top priority program, and are acting accordingly.

Question. Specifically, what are you doing to ensure that appropriate structures and personnel are in place to carry out these high priority activities?

Answer. I, and each of my Deputies and their DOE staff, conduct frequent program reviews, workshops and independent analyses. We participate fully and encourage independent reviews and analyses by the United States Strategic Command, other DOD elements, other parts of the U.S. government such as OMB, NSC, and OSTP and outside groups such as the JASONS and the National Academy of Sciences.

Question. Dr. Reis, please explain the interrelationship of each of the major elements of the Stockpile Stewardship and Management program and how they complement each other.

Answer. The Stockpile Stewardship Program is an integrated program, and all of its parts must work together if it is to be successful. As a start, we conduct surveillance to determine the condition of the current stockpile, find any defects, assess what effect these defects have on the safety and reliability of the weapons, and replace defective parts with remanufactured parts and certify that the weapons will perform to their safety and reliability specifications. Because the stockpile must remain safe and reliable indefinitely, we must project this cycle of surveillance, assessment, remanufacture and certification into the future, and much of the stockpile stewardship program involves investing in the tools, facilities and people for the future. This investment schedule is driven by the fact that the people who designed, built, and tested the current stockpile are retiring and will no longer be available.

Question. How will the work being accomplished in the science and computing area benefit the production complex?

Answer. The science and computational simulation efforts will enable the modeling of complex fabrication and manufacturing processes to a degree that has heretofore not been possible. These include, for example, rapid prototyping of newly developed parts using tools developed in the Accelerated Strategic Computing Initiative. This modeling will enable us to predict the sensitivity of manufacturing processes on product performance and to predict the life of the new product, and as a result reduce production cost and cycle time.

ACCELERATED STRATEGIC COMPUTING INITIATIVE (ASCI)

Question. Explain the importance of the ASCI program to the Stockpile Stewardship initiative and how this advanced computing capability will be integrated with other critical Stewardship activities?

Answer. ASCI is a time-critical, essential element of the Department of Energy's Stockpile Stewardship initiative. ASCI enables DOE to make the required shift from the past stockpile management approach that was based on new weapon development and nuclear testing to a science-based approach based on maintenance of the existing stockpile through simulation and fundamental experiments. Specifically, ASCI will create and provide to all stewardship activities the leading-edge weapon simulation capabilities that are essential for maintaining the safety, reliability, and performance of the nation's nuclear stockpile under the current nuclear test moratorium and will meet the challenge set forth by the Comprehensive Test Ban Treaty.

Under the Stockpile Stewardship Program, computational modeling and numerical simulation provide the integration of theory, past nuclear test data, and existing and new experimental results into results that can be verified and validated for stockpile assessment and certification. Advanced computational capabilities (applica-

tion codes, computing platforms, supercorridors, and various tools and techniques) are currently being developed and incorporated into ongoing stockpile computational activities. The weapons scientists and engineers will rely on numerical simulations and experiments to a greater extent than in the past. The goal is to combine past nuclear test data, computational modeling and new data to fill in knowledge gaps and extend the fundamental understanding in all areas related to nuclear weapons assessment.

The ASCI computational modeling and numerical simulation capabilities support the assessment and certification actions defined by the Stockpile Life Extension Program (SLEP) activities. Similarly, they are vital to the success of the Enhanced Surveillance Program plans to predict weapons component aging and lifetimes and the Advanced Design and Production Technologies (ADaPT) plans to establish weapons component remanufacturing processes and techniques. Further, the ASCI capabilities will accelerate the traditional symbiotic and iterative improvements back and forth between the designer's theories, models, and simulation and the experimentalist's tests at current and future experimental facilities, such as the Dual Axis Radiographic Hydrodynamic Test (DARHT) facility and the National Ignition Facility (NIF).

Question. Discuss briefly how the ASCI programs at each of the three weapons labs is progressing.

Answer. The three national weapons laboratories are progressing on schedule in reaching the ASCI Program Plan objectives. They are providing the application codes and related science needed to address weapon safety, reliability, and performance without nuclear testing. They are developing improved tools, methodologies, and infrastructure to utilize this unprecedented volume of data. The labs are running simulations on the new ASCI platforms with the existing codes faster, and performing calculations and simulations with new codes with physical and engineering details and physics models that were impossible to contemplate before. The laboratories are providing weapons designers and analysts with computer center operations, model development, and code maintenance services necessary to support the current Stockpile Stewardship Program activities. They support the assessment and certification of the existing nuclear weapons stockpile by providing incremental upgrades to existing codes and computing platforms.

Question. Are you experiencing any problems or delays in meeting expected schedules, and if so, why and what is being done to correct those weaknesses?

Answer. We are concerned with the some of the technical issues surrounding the ASCI Blue Mountain system. DOE and the Los Alamos National Laboratory management are working closely with SGI/Cray to resolve the technical issues they face in developing the Blue Mountain system. SGI/Cray canceled planned production of the microprocessor chip used in the computer system in the 3 TeraOps Blue Mountain system scheduled for initiation of assembly in December 1998. DOE, Los Alamos National Laboratory, and SGI/Cray are currently developing a revised plan for Blue Mountain system development. A new plan is expected in June 1998. We remain on the overall curve to demonstrate a three TeraOps capability in 1999 with the IBM Blue Pacific System at the Lawrence Livermore National Laboratory.

The Secretary of Energy announced on February 12, 1998, that DOE has awarded a contract with IBM Corporation for delivery of the 10 TeraOps system that will be sited at the Lawrence Livermore National Laboratory by 2000. In 1998, we awarded contracts to four major U.S. computer companies for the Pathforward Program to develop interconnect and scaling technologies for 30 TeraOps systems. These technologies are intended to reduce the technical risk in developing a 30 TeraOps computer system.

Question. Why was the 2004 date for development of the a 100 Tera Flop predictive simulation capability established?

Answer. The year 2004 was chosen because by that date a significant number of test-experienced weapons designers will be retiring. These test-experienced designers must be provided with the appropriate simulation tools in time for them to validate the simulation codes based on their intimate knowledge and experience with the nuclear weapons.

Question. What would be the impact of stretching out the 2004 date by several years?

Answer. Stretching out the 2004 date by several years would increase the risk to a successful stockpile stewardship program. The success of a science based stockpile stewardship program, depends upon staying as close as possible to our scheduled milestones.

Question. Provide an annual funding profile for both ASCI and Stockpile Computing for the next 5 years.

Answer. The current five year estimates for ASCI and Stockpile Computing included in the fiscal year 1999 Congressional Budget Request follow. Program funding requirements for fiscal year 2000 through fiscal year 2003 will be refined each year, guided by policy, planning, and program workload information at that time.

[In millions of dollars]

Fiscal Year	
2000	629.1
2001	681.0
2002	734.7
2003	753.8

Question. What are the key activities to be completed in fiscal year 1998 and how does progress on those items compare to the schedule required to meet the 2004 date for development of a 100 Tera Flop capability?

Answer. Within ASCI and Stockpile Computing, there are a number of key activities that will be completed in 1998 which include upgrading the ASCI Blue Mountain system to about 400 GigaOps (billion operations per second) and the ASCI Blue Pacific to 980 GigaOps; validating a new 3D hydrodynamics code with 2D legacy code results; awarding the contract for the 10 TeraOps system; developing the technical requirements for a 30 TeraOps system; prototyping high speed network switches and classified network operations; and bench marking of 3D models to hydrodynamic test data. Continued simulation and modeling with new and legacy codes will support the certification of the B61 Mod 11, W76 Revalidation, W88 pit rebuild assessment, and the W87 life extension certification. A more complete listing of detailed activities are available in the implementation plans for the ASCI program.

Question. What are the key activities proposed to be undertaken in fiscal year 1999 and what is the schedule for completing each?

Answer. The key activities proposed to be undertaken in fiscal year 1999 are the three new programs of Numeric Environment for Weapons Simulation (NEWS), Distance and Distributed Computing (DisCom2), and the Verification and Validation (V&V). These three new programs provide the weapons designers and analysts at three national laboratories the capability to work on application and weapons codes from a distance, to install supercorridors to the large-scale computers for high performance interfaces for designers, and validate simulation on archival nuclear data and above ground experiments. In addition to these new programs, we plan to begin in fiscal year 1999 the contractual process to acquire the 30 trillion operations per second computer system, the next major step in ASCI to reaching the 100 TeraOps level by 2004. Other fiscal year 1999 key activities include: an initially validated 3D burn code for primaries; linking all three nuclear weapons laboratories at an extremely high bandwidth for classified computing; implementing dedicated high-performance graphic engines to enable real-time, 3D visualization; and achieving the 3 TeraOps milestones for Option Blue.

Question. What is the current status of reaching the 3 Tera Flop computing level?

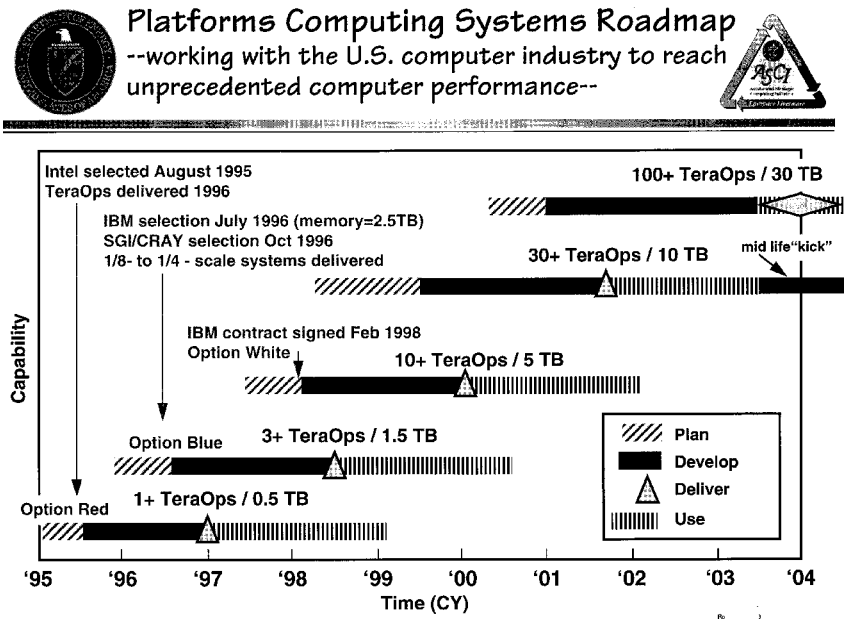
Answer. Our planning process is to reach a 3 Tera Flop computing level in 1999, and we see no difficulty in demonstrating this capability in the target time frame.

Question. What is the schedule for development of a 3, 10–30, and 100 Tera Flop computing capability?

Answer. The planned schedule for the ASCI computing capability of a 3, 10, 30, and 100 TeraOps is on target. As you see from the attached chart, the 3 TeraOps is planned for demonstration in 1999; the 10 TeraOps for which the contract to develop the 10 TeraOps was recently announced by the Secretary of Energy is planned for demonstration in 2000; the 30 TeraOps has a target date of mid 2001; and the 100 TeraOps has a target date range of late 2003 or early 2004.

Question. Provide a chart for the record which shows the key elements of reaching each computing level and the major milestones for completing each element.

Answer. The attached chart referenced in the previous question shows the key elements of reaching each computing level and the major milestones.



Question. Funding is being requested to begin the "Distributed Computing At A Distance" effort. Describe this activity and why it is important to begin this effort in fiscal year 1999.

Answer. The "Distributed Computing at Distance" effort, more commonly known as the Distance Computing and Distributed Computing (DisCom2) Program, will deliver key computing and communications technologies that complement the ASCI vision. DisCom2 will accelerate the ability of the DOE national laboratories and plants to apply vital high-end and distributed computing resources (from desktops to TeraOps) across thousands of miles to meet the urgent and expansive design, analysis, and engineering needs of stockpile stewardship. Specifically, DisCom2 includes two key strategies that will assist in the development of an integrated information, simulation, and modeling capability. The first strategy, distance computing, will develop the technologies and infrastructure necessary to enable the efficient use of high-end computing platforms by remote sites. The second strategy, distributed computing, will focus on the delivery of mid-range computing and communications technologies that can be flexibly configured to provide both capacity and capability computing that will support DOE's science, engineering, and remanufacturing requirements for stockpile stewardship.

It is essential to begin this effort in fiscal year 1999 in order for this program to keep pace with the developing ASCI related structure that requires each of the Defense Programs laboratories to use resources, particularly the large-scale computers, that are not geographically co-located with their design and analysis experts.

Question. How much is being requested in fiscal year 1999 and future years for this effort?

Answer. In the President's fiscal year 1999 budget request, the amount planned for the "Distributed Computing At a Distance" effort is $28.4 million. In fiscal year 2000, the estimated amount is $48.2 million, and for fiscal year 2001–2003, remains constant at $47.7 million. In fiscal year 2000, DisCom2 will extend the distance computing and distributed computing environment to include all the laboratories and plants, resulting in a substantial increase in both the number of end users and the scale of infrastructure required. This will enable the application of high-end computing resources to a wider set of problems that address the urgent and expansive design, analysis, and remanufacturing requirements of stockpile stewardship.

Question. The budget justification for fiscal year 1999 indicates that a "Numeric Environment for Weapon Simulation" initiative will be started. Describe this program and its relationship to the ASCI program.

Answer. The Numeric Environment for Weapons Simulation (NEWS) initiative will deploy unprecedented capabilities for visualizing, storing, transporting and

managing massive data sets resulting from the ASCI simulations, above ground experiments and previous underground tests data. NEWS will create localized Data Exploration Super Corridors to support large-scale data analysis and assimilation tasks for individual researchers and for multi-member weapons assessment teams. Future weapon assessments will rely on the judgments of technical personnel increasingly removed in time and experience from nuclear testing. Consequently, they will rely on high-fidelity simulations, coupled with above ground experiments and historical data, to build their experience base. However, the high-fidelity simulations required to train tomorrow's designers will produce data sets that will vastly exceed today's computing capability in both quantity and complexity. These data sets expected to be 1,000's to 10,000's times larger than the simulation data sets created today. New and innovative approaches to information and data management and data analysis and assimilation will be required. NEWS will focus on overcoming these technological obstacles to unleash the full potential of ASCI-scale systems for designers and analysts residing at the nuclear weapons laboratories.

Question. What is the total cost of this activity expected to be?

Answer. The total cost of the "Numeric Environment for Weapon Simulation" initiative is planned to grow to about $77 million by fiscal year 2001 and remain at that level through full validation of the ASCI simulation codes. Some savings might occur in the future if research in scalable visualization and presentation systems proves successful in the future. It is essential for this initiative to be funded in order to support the weapons designers and analysts as they work with huge amounts of data needed to create accurate weapons simulations to certify that our nation's stockpile is safe and reliable.

Question. How much funding is included in the fiscal year 1999 budget and what are the annual funding requirements expected to be over the next 5 years?

Answer. The requested amount in fiscal year 1999 for the Numeric Environment for Weapons Simulation (NEWS) initiative is $31 million. The estimated annual requirements over the next five years are expected to be approximately $68.7 million in fiscal year 2000; $77.6 million in fiscal year 2001; $77.6 million in fiscal year 2002; $78 million in fiscal year 2002; and $77 million in fiscal year 2003. This funding will implement a variety of key activities in the areas of Input/Output, Validation and Archival systems storage, weapons designer networks, pre- and post-processor systems and designer visualization environments.

SUBCRITICAL EXPERIMENTS

Question. What are subcritical experiments and how important are they to the Stockpile Stewardship effort?

Answer. The subcritical experiments at the Nevada Test Site are scientific experiments to obtain technical information needed for the success of Stockpile Stewardship and are very important to that effort. Subcritical experiments involve high explosives and nuclear weapon materials, particularly plutonium. In an experiment, the high explosive is detonated to create high pressures relevant to those achieved in a nuclear weapon; however, the configuration and quantities of materials are such that nuclear criticality cannot be reached. This means that there can be no self-sustaining nuclear chain reaction.

The experiments will provide data needed for assessing nuclear weapons performance and safety via advanced computer simulation. The experiments will provide data on the high pressure behavior of weapons material (including equation of state, strength, and ejecta), benchmark data on the hydrodynamics of weapon materials, the effects of aging on materials, the effects of remanufacturing techniques and other valuable technical data. In addition to these data, these experiments will help provide mechanisms to maintain a national nuclear test readiness capability by productively utilizing resources and operational skills needed for an underground nuclear test.

Question. Does the science-based Stockpile Stewardship plan approved by the President specifically include subcritical experiments?

Answer. The President directed that the Department conduct a program of science-based Stockpile Stewardship. The program to implement this directive is described by the Department in the Stockpile Stewardship Plan (SSP), which includes subcritical experiments as an important element.

Question. I believe sufficient funding was provided for fiscal year 1998 for DOE to conduct four subcritical experiments. Will DOE be able to execute four experiments as planned? If not, explain why.

Answer. Currently, the Department is planning to conduct three subcritical experiments in fiscal year 1998 and a fourth following shortly in the month of October. Most of the preparatory work for the fourth test will be completed in fiscal year

1998. This scheduling is dictated by technical and operational factors related to the experiments. Of course, as with any experimental program, technical and operational issues may require further changes in these plans; however, funding is not an issue at the present time.

Question. What is DOE doing to ensure that delays are held to a minimum in order that these critical experiments are completed on time?

Answer. The Department has established what we believe is an efficient system to conduct these experiments in a manner that is safe, cost-effective and scientifically productive. The process includes scientific and policy reviews and necessary safety and criticality evaluations. Once the first experiment was conducted in July 1997, the second followed a little over two months later. The next experiment is expected to be conducted in March of this year and three more are planned by the end of the calendar year.

Question. How much funding was appropriated for subcritical experiments in fiscal year 1997?

Answer. Funding for subcritical experiments is appropriated as part of the core Stockpile Stewardship Operation and Maintenance Account, not specifically for the experiments. Thus, there is no single accounting category to collect costs associated with the experiments. However, an estimate of the fiscal year 1997 funding that can be associated with this program effort is $40 million.

Question. How many experiments were planned to be undertaken?

Answer. In April 1997, Secretary Peña announced the schedule for the commencement of subcritical experiments. Two experiments were planned: one in June 1997 and the second in the fall of 1997.

Question. How many were actually completed?

Answer. The two experiments announced in April 1997 were completed. The first in July 1997 and the second in September 1997.

Question. How much funding is included in the fiscal year 1999 budget for subcritical experiments and how many experiments are expected to be executed?

Answer. In the fiscal year 1999 funding request, $82,065,000 is associated with these experiments as well as supporting our Test Readiness posture. It is expected that three to four experiments will be conducted in this time period. However, the actual number conducted may vary due to the scientific needs of the program (which bears strongly on the complexity and difficulty of each experiment), the results of prior subcritical and/or preparatory experiments, and the effect of unforseen operational issues that may arise.

Question. Provide a chart for the record which shows the schedule for each subcritical experiment planned for fiscal year 1999 along with key milestones for each experiment.

Answer. While the general technical objectives and estimated target times for the fiscal year 1999 experiments have been identified, no detailed time lines have been finalized. Preliminary target times for execution of these experiments are as follows:

Clarinet	October 1998.[1]
Trotter	June 1999.
Oboe	July 1999.
Buckskin	September 1999.

[1] With most preparatory work performed in fiscal year 1998.

NATIONAL IGNITION FACILITY (NIF)

Question. Briefly, what is the importance of the NIF to Stockpile Stewardship?

Answer. The National Ignition Facility (NIF) is essential for the success of the science-based Stockpile Stewardship program. It permits us to do the relevant weapon physics experiments and measurements important for primaries and secondaries at temperatures and densities close to those occurring in nuclear weapons detonation. The NIF will examine the effects of specific age-related changes and other nuclear component modifications on weapon performance. Experiments at the NIF will provide data on how materials behave under extreme conditions similar to those found in a nuclear weapon test. The fusion ignition mission will provide a rigorous test of simulation codes developed under the Advanced Strategic Computing Initiative.

The NIF will be the world's premier laser facility attracting the highest quality scientists for work in high energy density science important for weapons physics. It will provide an excellent tool for recruiting and training the next generation of scientists for the Stockpile Stewardship Program. Two JASON panels have stated that the NIF is the most scientifically valuable of the programs proposed for science-based stockpile stewardship. The NIF's value to the stockpile stewardship is recog-

nized internationally with similar high powered laser facilities being planned in France and Great Britain by their respective weapons programs.

Question. What is the status of the major critical path items scheduled to be completed in fiscal year 1998?

Answer. The critical path items for fiscal year 1998 are the foundations for the Laser Building and the Target Building which are currently four weeks behind schedule. These activities were delayed in November due to the impact of early El Niño rains which have now been mitigated by implementing wet weather construction features at the site. We expect that the critical path schedule can be completely recovered by the end of the year.

Question. Provide a chart for the record which shows the schedule for each major critical path item planned for fiscal year 1999.

Answer. The are several major critical path items for the NIF that will be accomplished in fiscal year 1999. These items and their schedule for completion are :

Critical path item	*Date*
Optical Assembly Building Ready for Equipment Installation	10/98
Start Special Equipment Installation	11/98
Laser Bay #2 Ready for Beam Transport Installation	3/99
Target Bay Ready for Target Chamber Installation	3/99
Laser Bay #1 Ready for Beam Transport Installation	4/99
Switchyard # 2 Ready for Space Frame Installation	4/99
Core Area Ready for Equipment Installation	6/99
Capacitor Bay Ready for Power Conditioning Installation	7/99
Optical Assembly Building Complete (Certified Clean)	8/99

Question. Manufacture and supply of high quality optical glass remains a large component of the project cost and is critical to the success of the project. What critical optical glass activities are planned for fiscal year 1998 and are they on schedule?

Answer. The NIF critical path optics, including laser glass manufacture, optics fabrication, and crystal growth facilitization, are on schedule in fiscal year 1998 and going well. Critical activities for NIF optics in fiscal year 1998 are the placement and execution of facilitization contracts to establish the manufacturing capacity at the vendors for the project. The major facilitization contracts, including those for laser glass, optics fabrication, and crystals, have all been awarded on schedule. The earliest awards were for a full-scale laser glass melter and for the laser glass finishing (that is, polishing) facilities. The glass melter was completed on schedule in fiscal year 1997, and used for a development run to provide initial data on the viability of continuous melting of full size laser glass slabs for NIF. This glass met critical specifications for platinum inclusions (the impurity of greatest concern), and other specifications. Remaining technical specifications are expected to be met during the pilot runs in fiscal year 1999. Work is on schedule for the next use of the melter, and complete facilitization of the other processing activities.

The laser glass finishing facility building has been completed on schedule, and the installation of the first of three polishers is also complete, on schedule. The rapid crystal growth program has produced NIF-size and -quality potassium dihydrogen phosphate crystals. The crystals are used to convert the laser's red light into ultraviolet light. Plates have been fabricated from these crystals, and will be tested on the Beamlet laser at Lawrence Livermore National Laboratory during the third quarter of fiscal year 1998. Other significant optics facilitization activities include the award of mirror and polarizer facilitization contracts, which are on schedule, and the mirror and polarizer substrate orders, which have been delayed to later in fiscal year 1998 to take maximum advantage of shorter delivery lead times than anticipated previously.

Question. What work is proposed for fiscal year 1999 and what is the completion schedule for each major element?

Answer. In fiscal year 1999, the facilitization contracts will be completed at all the vendors, and pilot production will begin on all the required optical components. The results of the pilot production contracts will be used to confirm vendor capabilities to meet the NIF schedule and specifications during optics production. These results also provide the basis for competitive awards for the production contracts in finalizing the split between the vendors. Pilot production will be complete, or nearly complete in laser glass, optics fabrication, and crystal growth, which are the critical path optics for NIF. Pilot production will begin in mid- to late-fiscal year 1999 in the areas of mirror and polarizer coatings and crystal finishing. Pilot production in these areas will be complete in mid-fiscal year 2000.

Question. What assurances can you give that the laser glass can be supplied on schedule and within the cost estimate?

Answer. The results of the pilot production will establish the viability of continuous melting to meet the technical specifications, and yields from the pilot will provide the basis for establishing the cost of laser glass during production. Nevertheless, considering that the development results to date have been good, and that development and facilitization has maintained the critical path schedule, our confidence remains high that the laser glass will be available as planned. We are working with two vendors each capable of producing 100 percent of the laser glass; these are two of the best glass manufacturers in the world. The furnace technology has established a new state-of-the-art for continuous glass melting. By working with two vendors, we are minimizing both technical and schedule risk to the project, and establishing competition for production to obtain the lowest possible cost. Results to date have strengthened our confidence in meeting cost and schedule for the glass. With completion of pilot production at the end of fiscal year 1999, we expect confirmation of our estimates.

Question. What impact has the El Niño rain had on the project?

Answer. The El Niño rains occurring on November 15th and 26th damaged the soil sub-base under the target building wall footings, and the grades and soil compaction site-wide. On November 25th, the project contracted with Earth Tech wet weather consultants from the Northwest. By December 5th, essential elements of a wet weather construction plan were in place to protect the site from further rain damage. Before Christmas, the site had been repaired and protected for wet weather construction. Since this time, construction has proceeded with no additional impacts due to El Niño rains.

Question. Do you expect significant delays or major cost increases?

Answer. No, all aspects of the project are making steady and satisfactory progress. The major adjustment in the project was made at the end of the Title I design phase in late 1996 and submitted in the fiscal year 1998 budget. Since then the project has made significant progress and overcome the challenge of the El Niño rains. As previously noted, a critical issue is manufacture of laser glass which is proceeding well. The NIF project is following a prudent development plan for the laser glass which takes into account the risk involved.

DUAL-AXIS RADIOGRAPHIC HYDRODYNAMIC TEST FACILITY (DARHT)

Question. Explain the changes which have taken place in the DARHT project and why those changes were necessary.

Answer. The DARHT project has changed significantly over the past ten years due to many factors including the increased scientific demands placed upon hydrodynamic testing following the cessation of underground nuclear testing, the emergence of new radiographic technology, and an increased sensitivity to environmental impacts.

A significant part of the Total Estimated Cost (TEC) increases in this project have been the result of directed changes in project scope. The DARHT project has been able to adjust to changing DOE needs driven by dramatic changes on the world scene. The moratorium on underground nuclear testing at the end of 1992 created tremendous pressure to increase hydrotesting capabilities. The evolving Science-Based Stockpile Stewardship (SBSS) plan also leads to evolving hydrotesting needs, including multiple axes with multiple pulses. The increasing need for comprehensive regulatory compliance and the need to address public concerns over emissions lead to solutions such as the DARHT phased containment effort. The DARHT, because of its modular design, has been able to accommodate these changing needs. The result of adding much greater scientific test capability, while at the same time reducing environmental impact, has resulted in a higher cost facility. A complete history of the project follows.

The DARHT was originally proposed as a 1988 project with an estimated cost of $53.4M. This design was however a complete rescoping of an earlier $30M project that included significantly lower power pulsed diode machines without an enclosed structure and with only a small instrument building. The 1988 project, which is considered to be the actual DARHT baseline project, included two 16 MeV linear induction accelerators and large enclosing structures for the machines, data recording instrumentation, component assembly and test space.

In 1990, the project was suspended until additional testing could be performed to demonstrate conclusively that all technical uncertainties with the design were resolved. The baseline design for DARHT was a modified and improved adaptation of a Lawrence Livermore National Laboratory (LLNL) design. However, these improvements caused problems that were not anticipated in 1988. As a result, project funding was suspended in fiscal year 1992 and fiscal year 1993, making way for an extensive testing during this period. Design modifications were determined to be nec-

essary, and the delay in procurement activities and other directed changes to the original design contributed to the new $81.4M price tag for a single axis machine. Based upon recommendations from two external review panels the decision was made by the Department to postpone the technology decision on the second axis machine.

Work was resumed on the construction of the first axis of DARHT in March 1993 and the project was proceeding satisfactorily until a Federal Court injunction was issued in January 1995. This injunction was issued as the result of failure to prepare an environmental impact statement (EIS) for the DARHT project.

All work associated with the project stopped for one year and four months; the total delay, including the time to re-start the project, was one year and eight months. During that time an EIS was prepared and it was decided that containment of hydro tests, phased-in over time, should be added to the design in order to reduce environmental impacts. Although the phased containment concept added additional cost and delay to the project, it was a correct decision in terms of environmental protection and the long term viability of the facility. Additional information gathered during the directed suspension of the project indicated that the 16 MeV electron beam machine planned for the first axis should be increased to 20 MeV to assure penetration of dense weapons systems. These changes in beam strength and the addition of phased containment increased the cost of the project from $81.4 to $105.7M. This increase was approved in April 1996 shortly after the lifting of the injunction. We expect to complete Phase 1 at this cost.

In October 1996, the Department requested Los Alamos National Laboratory (LANL) to determine the best technology for the second x-ray machine. The Record of Decision (ROD) stated that DOE might incorporate modified or improved technology for the second axis. The fiscal year 1998 budget included a preliminary estimate for the cost of the second axis which increased the TEC for the project by $81M, from $105.7M to $186.7M. It was clearly stated in the Construction Project Data Sheet (CPDS) that the TEC for Phase 2 was based upon planning estimates that were derived from the EIS and the ROD and based on a simple reproduction of the first x-ray machine. The ROD further indicated that a more accurate estimate of Phase 2 cost would be done upon completion of a technology option study, prior to the fiscal year 1999 budget request.

Following completion of the study to determine the best option for the second axis machine and significant design efforts to define the containment/confinement requirements, the Department approved a multi-pulse x-ray machine and completion of the phased containment requirements. This decision brought the total estimated cost of the project to the current level of $259.7M.

The DARHT project greatly increases the Department's confidence in our near term ability to provide the scientific data necessary to support a SBSS program. DARHT will incorporate the most current radiographic technology available for conducting hydrodynamic tests. The lessons learned in development, component testing and construction on the DARHT project will significantly advance hydrodynamic test technology.

Question. Why should further construction work be undertaken until a firm total cost baseline for the entire project, including Phase III, is established?

Answer. The halting of underground nuclear testing and the subsequent development of the SBSS plan have led to the generation of a well-defined list of important capabilities for radiographic hydrotesting in the future: (1) high-resolution radiographs; (2) multi-axis views; and (3) multi-time views. The DARHT (with its second axis as now proposed) is the only radiographic hydrotesting facility that will be able to address in the near term all of these issues when it is complete. It will represent the nation's initial capability for multi-axis views and multi-time views. The DOE may elect to move forward from DARHT, but such a new capability, an advanced hydro test facility will be built only if DARHT and other existing facilities prove to be inadequate for the needs of SBSS. As the stockpile continues to age beyond its design lifetime, a new generation of weapons designers and stewards will replace those who have underground nuclear testing experience, and the new Accelerated Strategic Computing Initiative (ASCI) super-computers will come on-line, requiring high-fidelity data to benchmark their predictions. In short, DARHT is the only facility capable of addressing new requirements for radiography without underground testing in the near and mid term. It will set the stage for further advances. No other construction project, or research project, can generate as much needed high-quality data in the time frame projected for the DARHT project.

The baseline Total Project Cost (TPC) for the complete DARHT project is $269.8M which includes all capital and operating costs for both Phase 1 and Phase 2. The Hydro test Firing Site construction will be completed in fiscal year 1998. The Phase I x-ray machine will be operational in CY 1999. The only significant construction

remaining will be the Vessel Preparation Facility as part of Phase 2 to complete the containment commitments made in the Environmental Impact Statement (EIS) Record of Decision (ROD). Phase 3 of DARHT was discussed within the DARHT EIS as a possibility that might be added to the project at the completion of Phase 2 in order to produce a large containment vessel capable of containing very large charges of high explosives. The Construction Project Data Sheet (CPDS) submitted for DARHT states that no additional funding would be required for Phase 3 unless a decision to develop this large vessel is made.

The Department considers it unlikely that the large vessel will be required and projects that Phase 3 will not be implemented, therefore additional funding beyond Phase 2 is not required at this time. The scope of Phases 1 and 2 include sufficient containment vessels and infrastructure to fully meet the emissions reduction requirements committed to in the ROD. Phase 1 and 2 provided the equipment, the techniques, and the experience to achieve a 75 percent reduction in emissions compared to the DARHT baseline case analyzed in the DARHT EIS. No further action will be required to achieve the required 75 percent reduction.

Question. What activities are planned to be undertaken with the $36 million being requested for fiscal year 1999, and what are the major milestones to be met during the remainder of fiscal year 1998 and in fiscal year 1999?

Answer. The $36M request for fiscal year 1999 will be used for Phase 2 activities including: Special Facility Equipment design, prototype testing and procurement, and civil construction design for the Vessel Preparation Facility. This facility will support the routine use of containment vessels at DARHT that will reduce the environmental emissions from hydrodynamics testing as required in the DARHT Final EIS/ROD.

In the Special Facility Equipment area, design of the electron beam accelerator injector will be completed and high-voltage testing of the assembly begun after all injector procurement is complete. Design of the accelerator hardware will also be completed and the initial procurement and testing of the first DARHT Phase 2 accelerator cells completed. Accelerator pulsed power design will be completed and DARHT production prototypes tested. All of this work will be completed by the Lawrence Berkeley National Laboratory (LBNL) in Berkeley, California.

The LLNL is also collaborating in the second phase of DARHT and work there during fiscal year 1999 will consist of design of the kicker and transport system that generates multiple electron beam pulses (from which the multiple x-ray pulses are made) from the single, long-pulse of electrons generated in the accelerator. Work at LLNL will also include design of the final electron beam focus, including prototype testing on their accelerator.

At LANL, work during fiscal year 1999 will include design of the Phase 2 accelerator control system, including controls of the prototype equipment being fielded by both LBNL and LLNL. In addition, the overall physics modeling of the entire system will continue at LANL as well as diagnostic development and technology transfer processes from LBNL and LLNL to LANL. Prototype work on the multipulse x-ray detector will be well advanced with the design of a prototype fast-framing recording chip being completed and the first growth of Lutetium Orthooxysilicate scintillator (LSO) being completed. The LANL design of the Phase 2 extension of the hydro test firing site control center will be completed and the purchase of additional optical diagnostics begun. Design of the dual-axis confinement vessel system will be nearing completion by the end of fiscal year 1999 and procurement of supporting vessel component hardware testing will be completed. During fiscal year 1999, design work on the Vessel Preparation Facility will progress. Finally, although no further funding during fiscal year 1999 is requested for Phase 1, it should be noted that the first DARHT x-ray machine will become operational during the fiscal year and single-axis, high-resolution radiographic hydrodynamics testing will commence.

The major project milestones for the remainder of fiscal year 1998 and fiscal year 1999 include the following:

Milestone	*Expected performance date*
Begin installation of Phase 1 accelerator systems into the Phase 1 portion of the DARHT Hydro test Firing Site (HFS) building	March 1998.
Begin installation of Phase 1 control and data acquisition systems	July 1998.
Complete first DARHT Phase 2 prototype accelerator cell and pulsed power module	Sept. 1998.
Complete all construction of the DARHT HFS	Oct. 1998.
Begin Phase 1 accelerator operations	March 1999.

Milestone	*Expected performance date*
Begin Phase 1 hydrodynamics testing operations	June 1999.
Begin Phase 2 injector assembly system testing	July 1999.

Question. What is the current status of Phase 1 of the DARHT facility, and how does the current estimated cost compare to the original baseline cost?

Answer. The first phase of DARHT is proceeding well at this time. Construction of the DARHT facility building (the "Hydro test Firing Site," or HFS) is about 75 percent complete and LANL has begun moving into the first-axis part of the building. All of the major accelerator components of the first axis have been pre-assembled and all of the accelerator's pulsed power equipment has been assembled and tested. The accelerator control and data acquisition system has been tested on the DARHT Integrated Test Stand (ITS). The ITS has generated about 40,000 electron beam pulses, giving us high confidence in the design of the accelerator and associated sub-systems. Installation of the Special Facility Equipment has begun with all pulsed power support structures and electronic racks installed. Accelerator installation of the equipment has begun. The LANL expects to complete installation by early next year and begin facility commissioning by March 1999. Initial radiographic explosives testing is planned by the end of June 1999.

Although the original fiscal year 1988 Total Estimated Cost (TEC) baseline for DARHT was $53.4M for a dual-axis facility, the current Phase 1 TEC baseline was set during the EIS process in August 1995 at $105.7M. The cost change described in detail previously includes increased power to meet program needs and the impact and scope changes from the EIS process. Since August 1995 when the latest scope was established, there have been no cost increases and we expect to complete Phase 1 in June 1999 within cost.

Question. Does the project cost baseline of $270 million reflect the entire cost for Phase I through Phase III? If not, please explain why, and what does the Department expect the cost of Phase III to be.

Answer. The baseline Total Project Cost (TPC) for the complete DARHT project is $269.8M which includes all capital and operating costs for both Phase 1 and Phase 2. Phase 3 of DARHT was discussed within the DARHT EIS as a possibility that might be added to the project at the completion of Phase 2 in order to produce a large containment vessel capable of containing very large charges of high explosives. The CPDS submitted for DARHT states that no additional funding would be required for Phase 3 unless a decision to develop this large vessel is made.

Question. Under what conditions would Phase III construction, which would implement measures to reduce testing emissions by 75 percent, be required?

Answer. Phase 3 would be needed only if a significant change in the regulatory environment occurs. The Department considers it unlikely that the large vessel will be required and projects that Phase 3 will not be implemented and that additional funding beyond Phase 2 will not be required at this time. The scope of Phases 1 and 2 include sufficient containment vessels and infrastructure to fully meet the emissions reduction requirements committed to in the ROD. Phase 1 and 2 provided the equipment, the techniques, and the experience to achieve a 75 percent reduction in emissions compared to the DARHT Baseline case analyzed in the DARHT EIS. No further action will be required to achieve the required 75 percent reduction. The CPDS states that Phase 1 and 2 will allow techniques to be implemented that will result in at least 75 percent reduction in emissions.

Mention is made in the CPDS of Phase 3 because of its inclusion in the EIS, but no funding is sought at this time because implementation of Phase 3 does not appear to be required.

Question. What are the Department's plans regarding initiating construction of Phase III?

Answer. At this time, the Department considers the scope of Phase 1 and 2 to be sufficient to meet all emissions requirements as defined in the DARHT EIS. The Department has no plans or requirements for Phase 3 and it is intended that the DARHT construction project be completed at the end of Phase 2. However, because the DARHT EIS mentions a possible Phase 3, and such action could be required if regulatory requirements change, the CPDS also lists the possibility of Phase 3. The Department intends to complete Phases 1 and 2 and, if no further requirements are identified during that period, complete the project at the end of Phase 2. Phase 3 would be needed only if a significant change in the regulatory environment or EIS requirements occurs.

PULSED POWER PROGRAM

Question. How would you assess the progress of the pulsed power program over the past year?

Answer. Over the past year, the pulsed power program made substantial progress in increasing x-ray output energy, power, and temperature on Z. Sandia National Laboratories, in collaboration with Los Alamos and Lawrence Livermore National Laboratories and other participants, have markedly increased the x-ray energy output to over two megajoules and power to over 290 terawatts from z-pinch implosions. A particularly significant achievement for Stockpile Stewardship is attaining a radiation temperature of 140 electron volts because it approaches physics regimes that are of greater relevance to weapons.

Question. When does the Department expect to have a science based technical contract completed?

Answer. In consultation with the Department and other national laboratories, Sandia recently completed a draft Z-Pinch Science and Technology Research and Development Plan that establishes a science-based technical contract for the program. A revised Plan incorporating outside comment and review will be available in final form within the next few months.

Question. Explain why you believe such a contract is warranted?

Answer. A technical contract outlining a series of experiments relevant to weapons physics, inertial confinement fusion, and weapon effects, to be conducted on Z, is needed to help guide the pulsed power program in its work for stockpile stewardship. The use of a "technical contract" follows the successful model previously demonstrated on the Nova and Omega lasers.

Question. How could this technology contribute to the Stockpile Stewardship program down the road if development is successful?

Answer. A successful pulsed power development program would provide added capability to execute a variety of experiments requiring high x-ray energy, long x-ray pulses, or large target size (this simplifies some complex measurements). High yield fusion experiments would also be useful for the stewardship program, but the credibility of ignition and yield on an advanced pulsed power facility is yet to be established. This is one of the goals for a technical contract.

Lasers and pulsed power are partly complementary. However, pulsed power devices cannot reach as high a temperature, which restricts some weapons physics, and are also less flexible than lasers with regard to pulse shaping and repetition rate. DOE and the laboratories are working towards a unified program that uses both of these capabilities in the most efficient way to carry out the experiments required by the stewardship program.

Question. What can you tell us regarding the plans for an advanced pulsed power facility?

Answer. DOE is currently conducting internal studies and anticipates an external review of the entire pulsed power program in the near future. A goal of this effort will be to determine an appropriate pace for the program, including the potential need for any new facility. Key questions will include the emphasis to be placed on experiments with a significantly upgraded Z accelerator and the mission and capability of an advanced pulsed power facility, such as the X–1 machine proposed by Sandia.

Question. What are the major hurdles that must be overcome before the decision can be made regarding such a facility?

Answer. The following criteria must be satisfied before a decision can be made on whether to proceed with an advanced pulsed power facility:

(1) The mission need must be clearly demonstrated. This involves comparing the planned capabilities (output, shot rate) of an advanced pulsed power facility with other current and planned stewardship facilities and demonstrating that such a facility would be needed to address a deficiency in the currently planned stockpile stewardship program.

(2) There must be satisfactory progress on a pulsed power "technical contract." This "contract" outlines a series of experiments whose purpose is to validate the capability of an advanced pulsed power facility in meeting physics goals. It should be noted that the contract covers both high yield fusion and "non high yield" applications.

(3) The pulsed power technology development program must demonstrate the technology required for an advanced pulsed power facility to achieve its design parameters.

(4) The required funding for construction of such a facility must fit within the expected outyear funding profile for DP and therefore be consistent with DP overall funding priorities.

(5) The completion of an appropriate National Environmental Policy Act review.

Question. How does your fiscal year 1999 budget request support this effort?

Answer. The fiscal year 1999 budget includes nearly seven million dollars of funding for technology development for an advanced pulsed power facility.

Question. How long will it take for the program to mature to the point that an advanced pulsed power facility can proceed?

Answer. In the next year DP will be conducting a series of internal studies and external reviews to determine the appropriate pace for the pulsed power program and the potential for an advanced pulsed power facility. A workshop planned for this spring on this subject will form part of this analysis effort. The DOE decision on whether to build an advanced pulsed power facility will be based on satisfying the criteria listed above.

Question. What major activities and milestones are planned or established for fiscal year 1999?

Answer. The major fiscal year 1999 pulsed power activities and milestones for the pulsed power program are:

(1) Conduct an aggressive experimental program on Z, which includes 275 experimental shots in the areas of Z performance and characterization, weapons physics, inertial confinement fusion, and weapons effects.

(2) Initiate modernization of the Z facility. The Z facility will be modernized in several phases to maintain and improve the experimental infrastructure (accelerator and diagnostics) in order to meet the requirements (i.e., shot rate, diagnostic breadth and capability, and data quality) of the experimental program. The first phase will be conducted in fiscal year 1999; this includes replacing aging facility components and commencing addition of a laser back lighter capability.

(3) Pursue pulsed power technology development relevant to an advanced pulsed power facility.

TRITIUM SUPPLY AND PRODUCTION

Question. If DOE is required to maintain an active stockpile at START II levels, with the capability to return to a START I level, how many separate weapons systems is DOE required to support?

Answer. Under the START I stockpile scenario, the DOE is required to support ten active stockpile systems.

Question. Under this strategy, when will DOE require a new tritium source?

Answer. Currently, the new tritium source need date to support a START I stockpile is fiscal year 2005, including a five year reserve.

Question. If you assume a stockpile at START II levels, how many weapon systems would DOE be required to maintain, and when would a new tritium source be needed?

Answer. At START II levels, the DOE is required to support nine active stockpile systems and the tritium inventory is sufficient to support START II requirements until about fiscal year 2011, assuming no hedge requirement to return to START I levels. However, if the current hedge policy remains, there would be no change from the fiscal year 2005 date.

Question. What is the difference in cost between the current strategy and a strategy of supporting START II level only?

Answer. The principal savings of a START II strategy, assuming no hedge requirement to START I levels, is associated with the acquisition of a tritium source. However, current policy assumes a hedge requirement under a START II force structure. The Department will provide firm cost estimates associated with tritium after the Department has developed cost figures for the commercial light water reactor option based on completion of negotiations with the Tennessee Valley Authority.

NEW TRITIUM SOURCE NEED DATE FOR VARIOUS ACTIVE STOCKPILE SCENARIOS

Question. What impact would Russian ratification of the START II treaty or moving directly to a START III treaty have on the Department's strategy for tritium supply?

Answer. If the Russian Duma ratifies the START II Treaty, there will be no significant impact on our requirement for tritium supply unless the current requirement to be able to return to START I levels is revised or eliminated. The details of a START III treaty would have to be studied before any specific impact of the need date for tritium could be established.

Question. When does the Department plan to make its tritium supply decision?

Answer. Consistent with Congressional direction, the Department will make the decision no later than December 1998.

Question. Do you expect the decision to be made mid-1998 or late in the year?

Answer. The Department is working to resolve all the outstanding issues and conducting the required analyses, so that a decision can be made in 1998.

Question. Do you foresee any obstacles which could prevent the Department from making a decision in 1998?

Answer. The Department does not foresee any obstacles that would preclude us from making a decision in 1998.

Question. Congress appropriated $68 million for fiscal year 1998 for detailed engineering and design of an accelerator production of tritium facility. The budget request of fiscal year 1999 requests $157 million to pursue the option that is selected. How are the funds appropriated for the current fiscal year being utilized?

Answer. The $200 million funds appropriated for the current fiscal year for the APT includes $68 million (capital) to support the first year of the four-year Preliminary and Final Design program, and $132 million (operating) to support the third year of the five-year Engineering Development and Demonstration (ED&D) program. The operating funds also include environmental and safety licensing and permitting activities.

The $62 million funds appropriated for the current fiscal year for the CLWR option includes $10 million in capital funding to support engineering design of the new Tritium Extraction Facility. The remaining $52 million operating funds will support confirmatory demonstration in the Watts Bar Reactor and in laboratories, to prepare analyses to be submitted to the Nuclear Regulatory Commission, to complete environmental impact statements, and to further the transition of component manufacturing to the private sector.

Question. What is the Department's strategy for proceeding and how will the funds requested for fiscal year 1999 be used based on each option?

Answer. The Department's strategy for fiscal year 1999 will depend upon the tritium production technology selected and the tritium production requirements at the time of the selection decision. The Secretary of Energy is required to make a selection, as stipulated in the National Defense Authorization Act, by December 1998. We believe that the $157 million is adequate if the purchase of irradiation services from a CLWR is selected as the primary option. If the Secretary selects the APT as the primary option, we will need to seek relief from the current target date for initiating new tritium production or request additional funding. It would be premature to anticipate the results of the ongoing process at this time. We are committed to providing the Congress with a full justification for the ultimate fiscal year 1999 funding requirement once the final decision on the tritium source is reached.

Question. What does the Department plan to do with the accelerator program if that technology is not selected?

Answer. This issue will be addressed, if applicable, as part of the Department's selection of a primary tritium technology in 1998.

Question. What would be the schedule and costs associated with developing the accelerator technology as a backup source of tritium?

Answer. The Department will address these issues should the CLWR be selected as the primary tritium technology in 1998.

Question. Review briefly the costs, benefits and problems associated with commercial light water reactor and the accelerator options.

Answer. The information requested is shown in the section below which I would like to insert for the record. The information follows:

ACCELERATOR PRODUCTION OF TRITIUM

Cost

The Department will provide cost estimates associated with the APT at the same time the Department provides firm cost estimates for the CLWR option based on completion of negotiations with the Tennessee Valley Authority.

Benefits

Use of a dedicated defense facility avoids non-proliferation or Atomic Energy Act issues, and preserves the long standing policy of separating military and civilian uses of atomic energy.

The System is fully capable of meeting current tritium production requirements with flexibility to meet anticipated changes in production requirements.

APT has no major technical issues remaining.

APT will be a new facility, dedicated to the tritium mission, with 40+ year expected lifetime.

No formal overall regulatory action, license, or license amendment is required for APT.

The system is designed to have minimal environmental impact and minimal waste generation.

APT incorporates a management approach reflecting commercial best practices and current government initiatives. The project has exemplary cooperation between the lab, site, and contractor.

APT is an investment in technology for the future that establishes production-plant capability of high-power accelerators. APT develops capability for important alternative uses: waste transmutation, advanced nuclear power, production of medical isotopes, and as a diagnostic tool for aging weapons under the science-based stockpile stewardship program.

APT costs are known and coming down, with potential to reduce near-term investment.

APT has strong regional public support.

Problems

APT requires a significant financial investment in fiscal year 1999 and out-years.

APT has some development and demonstration work to be completed.

COMMERCIAL LIGHT WATER REACTOR

Cost

The Commercial Light Water Reactor (CLWR) option is expected to be significantly less expensive than other options. Because negotiations between the Department and the Tennessee Valley Authority (TVA) are still ongoing, an accurate estimate for annual operating costs associated with irradiation services cannot be provided at this time. Detailed cost comparisons will be made available after irradiation services contract(s) are finalized.

Benefits

No technical risks.—The CLWR uses proven technology and is technically straightforward. Tritium is currently being produced in TVA's Watts Bar reactor as part of the confirmatory demonstration.

Apparent lowest life cycle cost.—The Department believes that the CLWR option will be significantly less expensive than other options. However, cost data cannot be provided at this time without revealing procurement sensitive information.

Fastest path to a domestic tritium supply.—The CLWR project is on schedule to meet or beat its required fiscal year 2005 deadline.

High reliability.—The CLWR option will use a mature industrial and regulatory infrastructure. The regulatory process is well established and has been exercised successfully to obtain Nuclear Regulatory Commission approval for Watts Bar confirmatory demonstration. The Department is seeking access to two or more commercial reactors.

Inherent flexibility.—Irradiation services options contract(s) need not be exercised until tritium is needed. The CLWR system can remain in standby indefinitely at a very low cost. Conversely, the production rate of the CLWR system can be increased on relatively short notice.

Status.—The CLWR project is progressing on schedule and within its budget.

Problems

Nonproliferation concerns must be addressed.

Question. What are the important activities planned for fiscal year 1999 for both options if you assume that option is selected?

Answer. Assuming the APT option is adopted without a schedule delay, fiscal year 1999 activities would include:

Operating Funds: Engineering Development and Demonstration and ES&H Activities

Complete site specific Environmental Impact Statement and issue Record of Decision on location, plant configuration, etc.

Complete low-energy accelerator system demonstration through first three accelerating sections.

Characterize irradiated material properties to optimizing Target/Blanket material selection.

Confirm industrial manufacturability of high-energy accelerator structure prototype.

Complete performance and operability demonstrations of high-energy beam transport and diagnostics.

Capital Funds: Design and Construction

Complete preliminary design of much of the rest of the Target/Blanket.

Complete detailed design of both the Target/Blanket Building and Accelerator Tunnels.

Procure the Target/Blanket internals.

Begin initial site construction work. This involves completing the site infrastructure required to support more extensive construction in fiscal year 2000.

If the Commercial Light Water Reactor (CLWR) option is selected as the primary or backup tritium supply, the following activities are planned for fiscal year 1999:

Operating Funds

Lead test assemblies of tritium-producing rods will complete a full cycle of irradiation in TVA's Watts Bar reactor. The rods will be removed from the reactor and transported to the Department's Argonne National Laboratory-West in Idaho where laboratory examinations will begin.

Analyses will be finalized and submitted to the Nuclear Regulatory Commission requesting the amendment of operating licenses for all reactors selected for actual or potential tritium production roles.

Destructive examinations will be completed of tritium-producing rods previously irradiated in the Department's Advanced Test Reactor.

Contracts will be executed with tritium-producing rod manufacturers and long-lead materials will be ordered.

Complete site specific Environmental Impact Statements and issue Records of Decision

Capital Funds

Detailed design and site preparation of the new Tritium Extraction Facility will begin at the Savannah River Site.

Question. Provide for the record a chart which shows the major milestones for each option through completion.

Answer. The milestones in the following table are from the current Defense Programs Stockpile Stewardship Management Plan. The current focus of the table is fiscal year 1998 and fiscal year 1999. Additional milestones will be added year-by-year as the project approaches outyears.

APT Project Milestones	Status	Plan
Select APT Site	Completed	1Q/FY 1996
Approval of Mission Need	Completed	1Q/FY 1996
Commence Conceptual Design	Completed	2Q/FY 1996
Superconducting Radio Frequency Linear Accelerator Decision	Completed	2Q/FY 1997
Issue Final Conceptual Design Report	Completed	3Q/FY 1997
Complete High Power Density Irradiation of Target/blanket Materials	Completed	4Q/FY 1997
Critical Decision—2a, Approve Start of Engineering Design	Completed	4Q/FY 1997
Begin Engineering Design of the APT Plant	Completed	1Q/FY 1998
Complete Modular Design Study of the APT Plant		2Q/FY 1998
Complete Site Specific Environmental Impact Statement and Issue Record of Decision		4Q/FY 1998
Submit Readiness Report to Support Primary Path Decision		4Q/FY 1998
Demonstrate Radio Frequency Quadruple Operation		4Q/FY 1998
Technology Down-Select		4Q/FY 1998
Critical Decision—3, Approve Start of Construction		1Q/FY 1999
Begin Plant Construction		1Q/FY 1999
Complete Preliminary Safety Analysis Report		2Q/FY 1999
Complete Target/Blanket Tritium Production Demonstration		4Q/FY 1999
Tritium Requirement Reduction Option		1Q/FY 2002
Begin Plant Startup and Commissioning Activities		3Q/FY 2004
Begin Tritium Production Certification		2Q/FY 2007
Critical Decision—4, Approve Plant Acceptance/Certification		3Q/FY 2007

Completion of the milestones identified in this table assumes sufficient funding to support planned activities. The project is completing modular design and is doing what is necessary to rebaseline the project in accordance with the modular design. These milestones will be revised when the APT Modular Design is completed in April 1998.

Commercial Light Water Reactor Project Milestones	Status	Plan
Submit Lead Test Assembly Topical Report to NRC	Completed	1Q/FY 1997
Issue draft request for proposals to nuclear utilities	Completed	2Q/FY 1997
Insert lead test assemblies in an operating reactor	Completed	4Q/FY 1997
Critical Decision–2, Approve baseline and begin design of Tritium Extraction Facility	Completed	4Q/FY 1997
Award options contracts to purchase reactor(s) or irradiation services		2Q/FY 1998
Prepare Tritium-Producing Burnable Absorber Rod Topical Report		4Q/FY 1998
Submit report on the CLWR option to support the primary path decision	Completed	4Q/FY 1998
Critical Decision–3, begin construction of Tritium Extraction Facility		1Q/FY 1999
Submit documents to initiate NRC license amendment process		2Q/FY 1999
Document laboratory examinations of absorber rods irradiated in the Advanced Test Reactor		4Q/FY 1999
Irradiated lead test assemblies delivered to examination facility		2Q/FY 2000
Begin assembly of production absorber rod components		1Q/FY 2002
NRC issues safety evaluation of absorber rod design		1Q/FY 2002
NRC license amended		1Q/FY 2003
Begin irradiation of production Tritium-Producing Burnable Absorber Rods		1Q/FY 2004
Critical Decision–4, begin operation of the Tritium Extraction Facility		1Q/FY 2005
Extraction of the first increment of tritium gas		3Q/FY 2005

Question. The budget justification indicates that future budget targets do not support the construction of an accelerator production facility. If that option is selected, what are the Department's plans regarding obtaining sufficient budget resources to ensure the project proceeds in a timely manner?

Answer. If APT is selected, the project must receive relief from current requirements or obtain sufficient additional funding to proceed in a timely manner. APT funding requirements were identified in the answer to a previous question. The Department is addressing potential requirements changes with DOD and has identified additional funding requirements. Funding for the capital requirements for APT is not included in the DP budget request. Funding for CLWR will require reprogramming to provide capital funding within current budget request.

PIT PRODUCTION CAPACITY

Question. Update the committee on DOE's strategy, and status regarding reestablishing pit production capacity for the weapons program.

Answer. DOE's strategy is a phased approach to achieving both the capability to produce war reserve pits and establishing a limited manufacturing capacity. At the base of the phased approach is the need to assure the facilities involved in the production of the pits and those which support the production are maintained and can perform their operations in a safe manner; and equipment necessary to sustain production is obtained.

The maintenance and safety of facilities involved in production and production support; and capital equipment purchases necessary for production are being accomplished through several maintenance and construction projects. These are the Chemistry and Metallurgy Research Upgrade Project (to maintain nuclear qualified space for all analytical chemistry support), the Capability Maintenance and Improvement Project (to provide plutonium facility improvements; non-nuclear component facility improvements; and capital equipment replacement), Transition Maintenance and Safety Equipment projects (to perform urgent maintenance within the plutonium facility and long lead procurement of equipment to support production), Nuclear Materials Storage Facility Renovation Project (to provide storage space to store plutonium material), and the Nuclear Materials Safeguards and Security Upgrade Project (to provide continued protection for nuclear materials).

Assuring the capability to produce war reserve pits is being achieved through the Pit Rebuild Program. It is key to capturing the manufacturing technologies and corporate memory which support the production of pits. This program centers on the production of three different technology development pits (W88 Trident II Warhead; W87 Peacekeeper Warhead; and B61–7 bomb). These pits span the technology found within the current stockpile (except one specific pit); and successful completion of these builds will reflect that the capability to remanufacture pits found in the stockpile has been retained. The Pit Rebuild Program also requires the establishment of an infrastructure to support the quality requirements defined in quality control di-

rectives and the establishment of a production control methodology to ensure that war reserve product certification is maintained and that a schedule to deliver product could be supported. This program also requires the review, revision, and issuance of specifications for materials and processes as they relate to Los Alamos National Laboratory operations. This requires that all design agency specifications be reviewed and revised and that all process control procedures be rewritten to meet Los Alamos National Laboratory requirements.

Establishing a limited manufacturing capacity is being conducted in a phased manner through production of the W88 pit. The phased approach has been instituted to maintain pit production while also performing necessary maintenance and upgrades to the facilities involved in production. Production of a "lot" of pits for qualification and certification will begin in the latter part of fiscal year 1999 at the rate of approximately 10 pits per year. Qualification and certification is scheduled to be completed by the third quarter of fiscal year 2001, at which time a war reserve pit would be available for entry into the stockpile. Production would continue on this "lot" until fiscal year 2007. From fiscal year 2001 to fiscal year 2007, Phase I of the Capability Maintenance and Improvement Project would make upgrades to the facilities involved in production. By fiscal year 2007, it is expected those construction and improvement efforts would be complete and an interim production capacity of 20 pits per year would have been established through both facility improvements and production efficiencies. This production capacity is limited by the necessity to share equipment and personnel involved in multiple programs, such as; surveillance and research and development activities.

A final capacity is being discussed between the Department of Defense and Department of Energy. Once this is agreed upon, Phase II of the Capability Maintenance and Improvement Project would proceed to make the additional facility modifications or new facility construction necessary to establish a dedicated production line. Currently, the Department of Energy's objective is to establish a dedicated production line with a capacity of 50 pits per year with single shift operation. A surge capacity of 80 pits per year could be achieved through use of multiple shifts. Both Phase I and II of the Capability Maintenance and Improvement Project would be complementary in nature and could be conducted concurrently or sequentially. A major element in project execution would be that production of pits would need to continue while construction is ongoing to meet programmatic requirements in support of the stockpile.

The status in establishing the capacity is that we are still on schedule to complete the Pit Rebuild Program, as well as, provide war reserve pits by the end of fiscal year 2001. The first early development unit in preparation for producing war reserve pits was completed February 6, 1998.

Question. How much will it cost to reestablish pit production capability at Los Alamos, and how much has been spent to date on this program?

Answer. The total costs for reestablishing a pit production capability at the Los Alamos National Laboratory will be about $400 million. This includes costs for Pit Rebuild; process development costs for manufacturing; non nuclear component production costs; urgent repair of equipment and long lead procurement of equipment supporting manufacturing in the Transition Maintenance and Safety Equipment projects; and the manufacturing element in the Phase I Capability Maintenance and Improvement Project to put in place a 20 pits/year capacity. Through fiscal year 1997, $39.2 million has been spent.

Question. What is the current schedule for reestablishing pit production capability and how does this date compare to the original dates set for this program?

Answer. The current schedule for reestablishing pit production capability is completion of the Pit Rebuild Program and completion of qualification and certification of the "lot" of W88 pits for replacement of units being pulled from the stockpile for surveillance. These efforts are scheduled to be completed by the end of fiscal year 2001. This end date has not changed from the original dates set for this program. An enduring capability associated with an interim capacity of 20 pits per year will be achieved by fiscal year 2007 through implementation of Phase I of the Capability Maintenance and Improvement Project.

The final capacity date has changed. Originally this was to be fiscal year 2005, based on a concerted construction effort that required production to be halted around fiscal year 2002 until construction on several facilities had been completed and several missions moved out of the plutonium facility. In order to maintain a production capability once established, as well as complete production of the number of W88's necessary to support the surveillance program, it was necessary to change the execution of the plutonium strategy and phase the construction effort. This has resulted in an interim capacity of 20 pits/year being established in fiscal year 2007. The final limited capacity, now planned to be 50 pits/year (single shift) and 80 pits/

year (multiple shift), will be determined through mutual agreement with the Department of Defense. Should an agreement be reached within the next year, initial design on the construction effort could begin by fiscal year 2002.

Question. What delays have been encountered and what is being done by DOE to ensure that the current schedule will be met?

Answer. Currently no delays to major milestones have been encountered in establishing pit production capacity other than the need to modify the execution of the strategy to a phased approach in order to meet programmatic requirements and maintain the operation of pit production once it is established. In order to manage the execution of the current strategy and assure the current schedule is met, an Integrated Plan is being developed by the Los Alamos National Laboratory establishing schedule, milestones, critical path, and management processes. In addition, DOE is closely coordinating with the Department of Defense to insure not only that DOD's programmatic requirements are met, but also that the processes and activities necessary to achieve qualification and certification of a war reserve pit can be completed.

Question. What key activities are planned for the remainder of fiscal year 1998 and what is the schedule for completing that work?

Answer. Key activities are the completion of the manufacture of early development pits, completion of the installation of most equipment necessary to begin production of regular development pits followed by war reserve pits, and completion of engineering test plan development. These activities are being accomplished within the historical capability to produce pits at LANL. DOE also plans to issue a site-wide environmental impact statement which will analyze those activities necessary to increase the capability to produce pits to those levels discussed in the answers to earlier questions.

Question. How much is being requested to continue this program in fiscal year 1999 and how will those funds be used?

Answer. $66.6 million has been requested in fiscal year 1999. The funding would be spent on pit rebuild; manufacturing development; process development; non-nuclear components; design development of work packages, long lead procurement of equipment, and initial maintenance under the Transition Maintenance and Safety Equipment Program; and conceptual design report development for the Capabilities Maintenance and Improvement Project Phase I construction project in preparation for fiscal year 2001 new start.

Question. What are the important activities to be completed in fiscal year 1999 and when are they scheduled to be completed?

Answer. The important activities to be completed in fiscal year 1999 are completion of the development unit build by mid-fiscal year 1999 and then subsequent initiation of the manufacture of the W88 "lot" to be qualified and certified as war reserve; and then by the end of fiscal year 1999 to have initiated the processes of non-nuclear component production required for the continuation of manufacturing and completion of two physics tests for certification.

Question. How will the $22.4 million requested to support facility maintenance and equipment procurement in TA–55 at Los Alamos National Laboratory be utilized?

Answer. The funding will be used for design of maintenance packages; initiation of construction activities on such items as a overhead trolley system to move parts and material between work stations, and maintenance on the facility uninterruptable power system; procurement of long lead items, such as machining lathes and radiography equipment; and completion of the conceptual design report of Phase I of the Capability Maintenance and Improvement Project for validation into the fiscal year 2001 budget.

Question. How important is this work to overall success of reestablishing pit production capability?

Answer. In general, nonaccomplishment of work planned in fiscal year 1999, using the $22.4 million requested, would: (1) place continued operation of the plutonium facility at a higher risk because of increasingly more frequent equipment outages; (2) place future manufacture at risk as equipment normally used for research and development break down under manufacture usage; (3) reduce the efficiency of operation by having to move materials and conduct radiography testing in other facilities and maintaining inefficiencies in movement of material and parts between work stations; and (4) place in jeopardy the ability to initiate Phase 1 of the Capability Maintenance and Improvement Project necessary to make facility upgrades and improvements in support of pit manufacturing and replace equipment being worn out by manufacturing usage.

PIT PRODUCTION—ENVIRONMENTAL IMPACT STATEMENT

Question. A recent article in The Energy Daily indicated the environmental groups have filed new demands calling for DOE to conduct supplemental environmental impact analysis on this program. Is this true and what are the issues of concern?

Answer. It is correct that NRDC and thirty-nine other environmental organizations have amended their original complaint in the ongoing lawsuit, *NRDC et al.* v. *Peña* (Civ. No. 97–936–SS). In the amended complaint plaintiffs drop many of their original allegations regarding the alleged inadequacy of the Stockpile Stewardship and Management Programmatic Environmental Impact Statement (SSM PEIS). The plaintiffs amended complaint requests that, based on new information, the Department be required to prepare a Supplemental PEIS on limited issues related to the National Ignition Facility (NIF) and plutonium pit production activities at Los Alamos National Laboratory (LANL). The issues of concern regarding pit production at LANL, as alleged by plaintiffs and broadly stated, relate to whether the SSM PEIS adequately considered and analyzed the impacts associated with the pit production mission at LANL.

Question. How does the Department plan to address these new demands?

Answer. The plaintiffs demands are being addressed by the Department within the context of the ongoing litigation. Under the current schedule set by the court, the Department filed an answer to plaintiffs amended complaint on March 9, 1998. In addition, on March 13, 1998, the Department filed a Supplement Analysis regarding pit production at LANL which concluded that the analysis in the PEIS was adequate and that there is no new information to warrant a supplemental EIS for this activity.

Question. Will there be any impact on the Department's ability to proceed with work in fiscal year 1998 and fiscal year 1999?

Answer. No. Plaintiffs are not seeking to enjoin DOE activities related to the establishment of a plutonium pit production capacity at LANL or construction of the NIF.

WEAPONS DISMANTLEMENT

Question. Why were you unable to meet your performance goal of dismantling 556 weapons in fiscal year 1997?

Answer. Last year the Department of Energy set a dismantlement goal of 944, which was later revised to 556, but only completed 498 nuclear weapon dismantlements. The Department completed the majority of its weapon dismantlement goals, in terms of weapons types, including completing the W55 (antisubmarine missile warhead) dismantlement line ahead of schedule, completing the B61–2 (gravity bomb) line on schedule, and starting and completing the B61–5 (gravity bomb) line on time. The primary reason the Department fell short of its dismantlement objective was because the W69 (Short-Range Attack Missile warhead), a high rate disassembly program, was not started as scheduled in March 1997. This program startup was delayed while additional safety analysis was conducted to confirm that newly identified, potential facility accident scenarios would not affect safe W69 weapon disassembly operations. Because this program has monthly full capacity disassembly rates of over 100, the six-month delay had a significant impact on the quantity of weapons completed last fiscal year.

The exact date on which we start up dismantlement lines cannot be precisely forecast because we delay all weapon operations until all possible concerns raised by internal and external safety reviewers have been considered. The dismantlement rate attained after startup of a line may be impacted because we stop all operations to study any unexpected conditions found in the weapons being dismantled. These factors have introduced delays of one month to a year and can cause the dismantlements performed to differ from the planned quantities by more than 50 percent. Safety in operations is our highest priority, and we did slow some operations and conduct additional safety studies to satisfy ourselves that we are performing operations safely.

Question. Do you consider this to be a problem?

Answer. We take our goal to dismantle nuclear weapons very seriously, and we strive to meet our commitments. However, our first priority is safety and safety concerns resulted in the short fall as discussed above.

Question. What is being done to correct existing problems?

Answer. We have no existing problems, but we continually assess the safety of operations at Pantex and all our facilities and factor safe operations into our dismantlement projections. Dismantlement of the W69 began in July 1997 and approxi-

mately 15 units are being dismantled weekly. Monthly dismantlement rates will increase from the current 55–65 per month to 100 in April 1998.

Question. How many weapons are scheduled to be dismantled in fiscal year 1998, and are you on schedule to meet this goal? If not, why?

Answer. DOE planning guidance calls for 1,000 weapons to be dismantled in 1998, and we are on schedule to meet this goal.

Question. How many weapons are scheduled for dismantlement in fiscal year 1999 and why is the budget request for this program being reduced from $22 million in fiscal year 1998 to $8.4 million in fiscal year 1999?

Answer. DOE planning guidance calls for 500 weapons to be dismantled in 1999, compared to the goal of 1,000 in fiscal year 1998. The budget request for direct support of dismantlements is being reduced as we change focus on some specific dismantlement programs at Pantex. In fiscal year 1999, the W56 (Minuteman II ICBM warhead) and the W79 (Artillery-Fired Atomic Projectile) dismantlement lines should be under way, so the large effort associated with their startups, such as safety studies and component characterization, will be completed. The funding cited in the question relates to startup and disassembly work only—this reduction is consistent with the reduced quantity of weapons to be disassembled in fiscal year 1999 and the fact the start-up efforts for most of the systems will already be complete.

DOE WEAPON ALTERATION, MODIFICATION, AND SURVEILLANCE

Question. Explain the reasons for not meeting established schedules and what is being done to correct problems you may be experiencing? Specifically, how does the Department plan to address and correct operational issues related to nuclear and non-nuclear systems laboratory testing at Pantex?

Answer. Starting in December 1996, safety issues were raised dealing with the Linear Accelerator Facility, Dynamic Balancer Facility, and Separation Facility at Pantex. These issues precluded Pantex from performing disassemblies and inspections, which then translated into delays in having components available for both non-nuclear system level laboratory tests and laboratory tests of nuclear components, such as pits and secondaries at Los Alamos and Y–12, respectively. The Department has reviewed the situation at Pantex over the past year. The above issues have been resolved, and we have attempted to anticipate the type of facility issues that might occur in the future.

ENHANCED SURVEILLANCE

Question. Why is there a 62 percent increase in funding proposed in the fiscal year 1999 budget request?

Answer. The fiscal year 1999 budget request supports the milestones and deliverables set forth in the Enhanced Surveillance Program Plan. It will support tests for precision performance, standards and divergence in high explosives, advanced surveillance hydrodynamic tests, new radiography, gas analysis, and endoscopy diagnostics; advanced flight test hardware, plutonium and uranium stability and performance tests, materials surveillance test and models, and systems surveillance tools and models. Outyear funding for this program will continue at this level in order to conclude the program in fiscal year 2002.

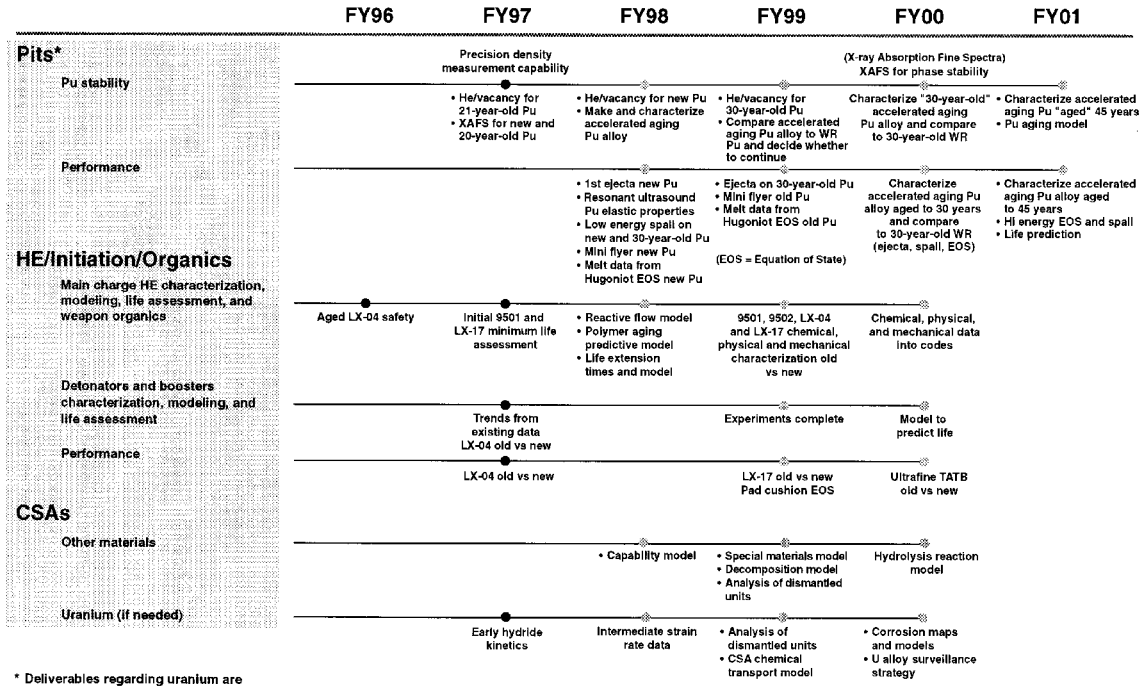
Question. A little over $27 million, an increase of $10 million over the current years level, is requested to deliver predictive capabilities for nuclear and non-nuclear components. Please describe these deliverables and the schedule and milestones planned for the remainder of fiscal year 1998 and for fiscal year 1999.

Answer. The Enhanced Surveillance Program Plan includes detailed milestones and deliverables for the delivery of predictive capabilities. These capabilities include models and simulations for use by designers to include component lifetimes. The work also includes experimentation necessary to validate the results of those predictions. Work supporting nuclear components addresses pits, high explosives/initiation and organics, and canned subassemblies. Work supporting non-nuclear components includes materials aging models, component aging models, and system aging models. Attached are Figures 1.7 and 1.8 from the fiscal year 1998 (Revision 2) ESP program plan which summarize the delivery of predictive capabilities in each of the categories. All fiscal year 1996 and fiscal year 1997 milestones and deliverables are complete. All fiscal year 1998 milestones and deliverables are currently on schedule.

Question. The budget also includes $39.7 million for the delivery of diagnostic tools for surveillance of nuclear and non-nuclear components. What deliveries are scheduled for fiscal year 1998 and are those deliveries on schedule? If not, why? What deliveries are planned for fiscal year 1999 and when are those items scheduled to be delivered?

Answer. The Enhanced Surveillance Program Plan includes detailed milestones and deliverables for new surveillance tools. Work conducted in support of nuclear components fall into the categories of high explosives/initiation and organics, hydrodynamic tests, diagnostics, and systems. Work supporting non-nuclear component surveillance are grouped in materials surveillance, component surveillance, and system surveillance. Attached are Figures 1.5 and 1.6 from the fiscal year 1998 ESP program plan which summarize the delivery of predictive capabilities in each of the categories. All fiscal year 1996 and fiscal year 1997 milestones and deliverables are complete. All fiscal year 1998 milestones and deliverables are currently on schedule.

Figure 1.7. Deliveries to Predictive Capabilities for Nuclear Components (primaries and secondaries)



* Deliverables regarding uranium are covered in the CSA section

Figure 1.8. Deliveries of Predictive Capabilities for Non-Nuclear Components

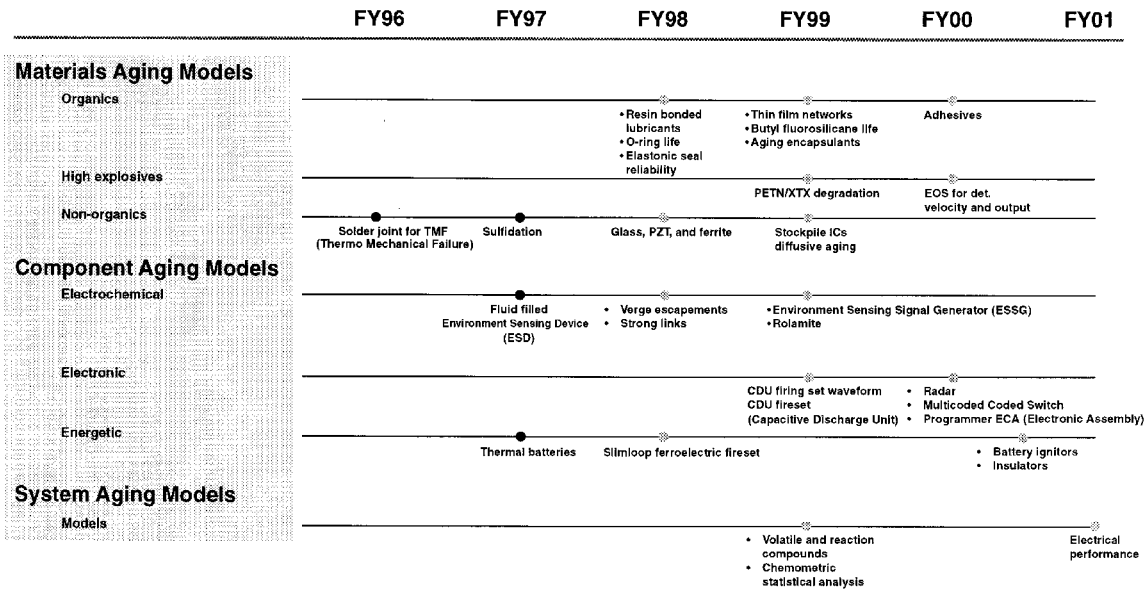


Figure 1.5. Deliveries to Traditional Surveillance Program Supporting Nuclear Components (primaries and secondaries)

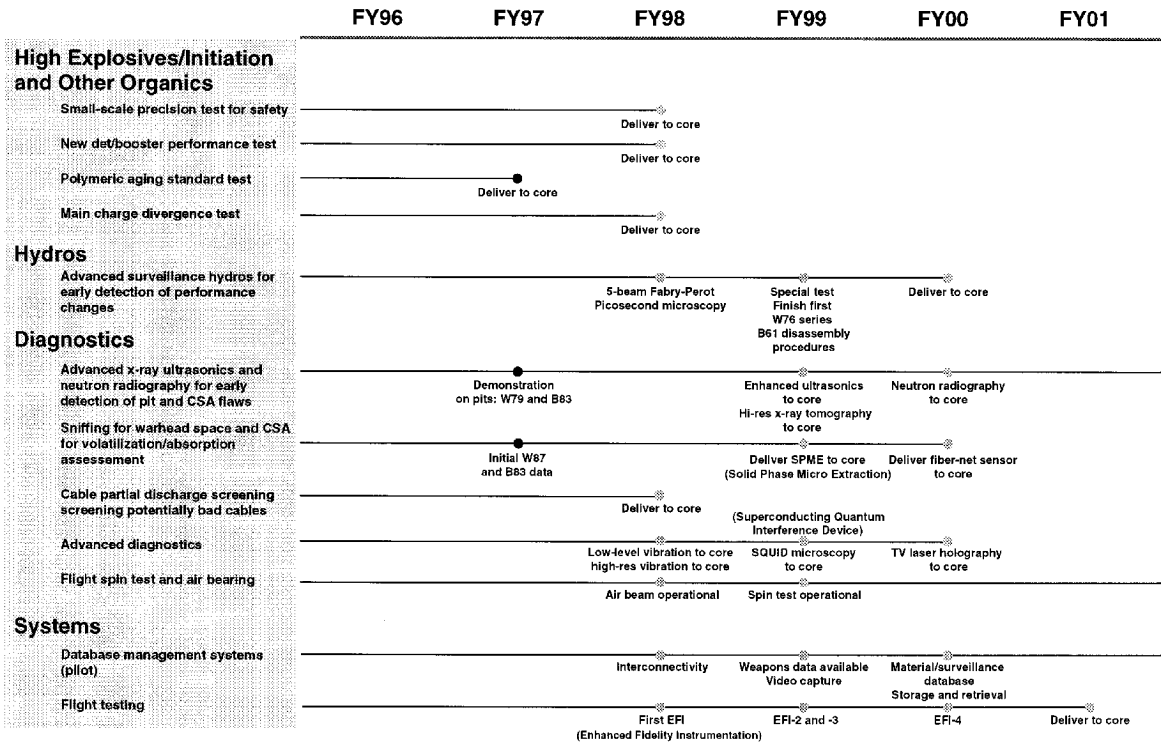
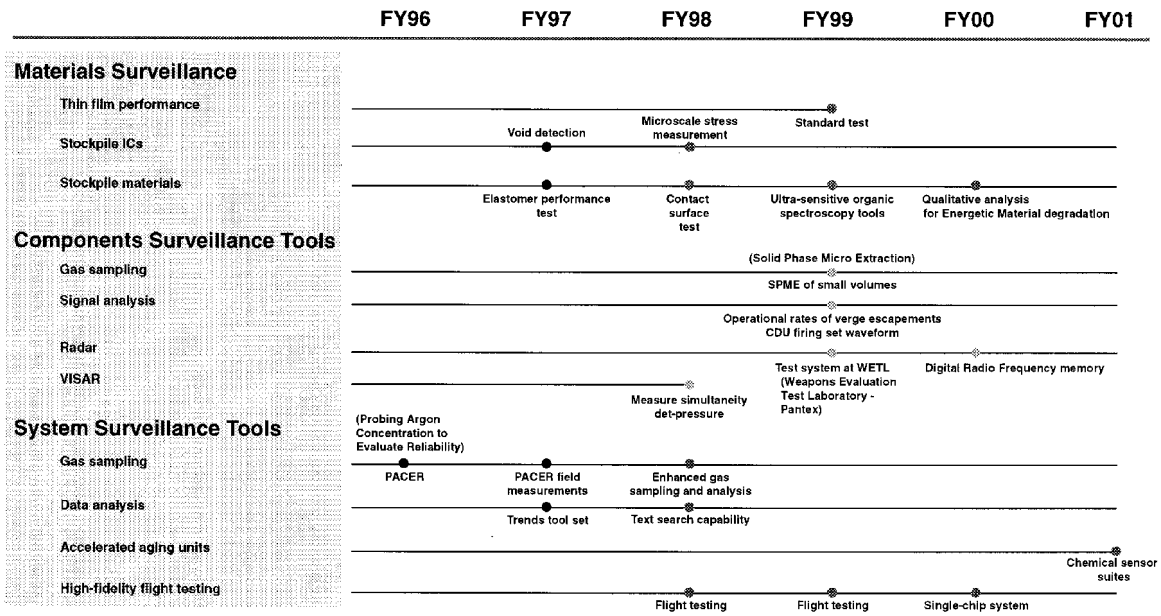


Figure 1.6. Deliveries to Traditional Surveillance Program Supporting Non-Nuclear Components



STOCKPILE MANAGEMENT RESTRUCTURING INITIATIVE (SMRI)

Question. Has the Department developed a SMRI plan for each site that lays out each project which is to be undertaken along with established baseline costs and schedules?

Answer. Yes. Each site has prepared an implementation plan and a conceptual design report for each respective SMRI Project. The Conceptual Design Report (CDR) establishes the preliminary cost, schedule, and technical baselines until completion of Title I design. Completion of Title I design will establish the projects baselines for the physical construction portion of the projects.

Question. While DOE is undertaking Title I and Title II at a number of sites, how will the baseline costs and schedules be determined?

Answer. The initial preliminary baselines are established from the CDR. The results of the Title I Design establishes the Title I Baselines that are used for the remainder of the project.

Question. Will they be based on a Conceptual Design Report or on Title I engineering?

Answer. The pre-Title I baselines come from the CDR.

Question. Why has this restructuring work been by site, with multiple subprojects and business units?

Answer. Although the SMRI program has a single goal, the restructuring of the production complex to meet current infrastructure requirements, in terms of project management each SMRI project is essentially independent of the others. Thus, individual line items by site also allows each site to more effectively manage that site's project requirements. An example that you have already seen is that the projects were started as they were ready to begin, Y–12 and Savannah River in fiscal year 1998, Kansas City and Pantex in fiscal year 1999. And again, the individual site projects will be able to individually take the appropriate actions based on the completion of title I and II design. And finally, each site project will be closed as each site project is completed. These benefits would have been significantly reduced if we had requested a single line item for the SMRI program.

Question. Why haven't larger subprojects been broken out and displayed separately for greater control and visibility?

Answer. There is always a trade-off between centrally controlling projects on the one hand, and allowing the project manager greater flexibility on the other. In the case of the SMRI projects it was decided that the appropriate balance was to manage the projects as a series of subprojects, show those subprojects in the construction data sheets so that Congress could easily see what we were doing, but to request funding at the total project level. In order to improve the cost control of larger subprojects, however, we will provide separate displays for all subprojects with a total estimated cost of greater than $10 million in the fiscal year 2000 budget.

Question. What would be the impact of requiring subprojects, over a certain total estimated cost, to be displayed and requested separately?

Answer. The purpose of each SMRI project is to restructure the site in total, not to restructure individual bits and pieces of each site. Therefore, the individual subprojects can change, in scope, schedule and cost, as we further refine the best, most efficient and effective manner to achieve the restructuring of the site. If we receive funding at the total project level, as requested, we will keep Congress informed of these changes, but will not need to request reprogramming to implement the changes and can proceed in a timely and efficient manner. On the other hand, if we receive funding by subproject, each time we decide to change how we are going to achieve the desired end point of the project, we will have to request a reprogramming from Congress, thereby imposing delays, uncertainty, and possible cost increases, into the projects. In order to improve the cost control of larger subprojects, however, we will provide separate displays for all subprojects with a total estimated cost of greater than $10 million in the fiscal year 2000 budget.

Question. What assurance can you give the committee that the total scope and costs under SMRI at each site is well defined and that the cost of each subproject can be controlled?

Answer. Each of the projects has a completed conceptual design report and each will complete Title I and II design before proceeding to physical construction. Based on these design and engineering efforts, we are confident that our estimates for the projects are robust and will not change significantly over the course of the projects.

CHEMICAL AND METALLURGY RESEARCH FACILITY (CMR) LANL

Question. What problems has the Department experienced with the CMR facility at Los Alamos?

Answer. The shortcomings in the Chemistry and Metallurgy Research Upgrades Project are the result of weaknesses in project management and construction engineering practices. Preliminary assessments by the Department and the Laboratory found that the tools and systems required to effectively execute project management in many cases were not adequate. Corrective actions under development will address both project-specific and institutional issues. Primary findings of both assessments include:

—Both Laboratory project management and Departmental oversight were inadequate in maintaining control of this project.

—Laboratory engineering and project management deficiencies resulted in subtask cost increases and schedule delays. Engineering designs were poorly specified and were accepted and implemented without evaluations of constructability. The failure to perform condition assessments prior to either conceptual development of the project or design resulted in numerous design changes late in the project, with significant cost impacts.

—Inaccurate Laboratory reporting prevented timely issue identification and resolution of issues and the reporting did not portray actual status. Management reserve, a contingency account, was consumed without communication to, or knowledge or approval of the Department.

—The project contingency was mismanaged. Contingency funds were allocated on a first-come, first-served basis as cost increases occurred, rather than allocation by risk factors to each subproject.

—The Laboratory's organization contributed to the systemic nature of the shortcomings. This project should have been constrained by finite resources and a finite scope defined in the Construction Project Data Sheets. The Laboratory construction management structure contributed to a lack of accountability and ineffective processes.

There are many details associated with the above findings, but these summaries capture the vital issues that will be addressed in a Corrective Action Plan. The Department and the Laboratory will work closely to correct both project specific and institutional weaknesses.

Question. What has the Department done to correct project management deficiencies and other weaknesses that have caused these problems?

Answer. The Department has already taken steps to strengthen oversight of Laboratory projects through personnel changes, addition of personnel, and reorganization of some offices to focus resources and management attention to Laboratory programs and projects. These steps have been specifically targeted for those field elements closest to the day-to-day activities.

The Department will control contingency funds for all Stockpile Management projects at the Laboratory, and will evaluate the Laboratory's corrective actions for implementation and effectiveness.

Both the Department and the Laboratory have designated responsible management officials with the authority to execute the Stockpile Management Construction Program at the Laboratory.

Question. When will the corrective action plan, which addresses cost overruns and construction management problems, be completed and approved by the Department?

Answer. A LANL corrective action plan addressing Laboratory construction management issues, specifically CMR, was presented to the Department in September 1997. The Department approved the plan and has been overseeing the laboratory's implementation of the plan including the emplacement of stronger management oversight procedures, improved performance and budget accountability, and the incorporation of "lessons learned" into all further construction activities.

Question. What other actions need to be completed before construction can resume and when will they be finalized?

Answer. The Department will authorize restart on a limited basis, using a step-by-step approach, measuring improvement and achievement of specific milestones by the Laboratory before proceeding to the next step. Condition assessments, detailed definition of project completion criteria, and effective integrated project and program planning with the rigor and discipline expected for work in nuclear facilities will be measures that the Department will use to evaluate Laboratory responsiveness to the Chemistry and Metallurgy Research Upgrades project. Only after completion of the above activities will the Department authorize the restart of actual construction.

Question. The budget request for fiscal year 1999 includes $16 million to resume design and construction of the project. How much of the request is to continue design and how much is for construction?

Answer. The fiscal year 1999 request for $16 million will be used to begin or continue design of necessary Phase 2 subprojects and complement Phase 1 construction

requirements as necessary. The exact split of those costs will not be determined until all facility assessments and engineering reports have been completed. Funds appropriated in fiscal year 1998 and unspent prior year funding will be used to complete the facility assessments and restart Phase 1 construction work.

Question. How confident is the Department that this project can be resumed in fiscal year 1999, and completed on schedule and within costs?

Answer. There will be impacts to the project from the changes to project management and other corrective actions that must be taken to ensure the project is ready to proceed. However, it is our intent to complete the project within the current estimated cost of $174.1 million. We will, of course, keep Congress informed of our progress on this project.

QUESTIONS SUBMITTED BY SENATOR COCHRAN

SAFETY FEATURES ON NUCLEAR WEAPONS

Question. In response to a question of mine last October during your testimony before my Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services, you said that you believed that we have safety measures that are advanced to the point they should be "at this time." Are the most advanced safety measures present in every weapon in the stockpile right now?

Answer. All weapons in the stockpile, with the exception of the W62 warhead in the Minuteman III Strategic Missile, have modern enhanced nuclear detonation safety (ENDS). All weapons, however, do not have insensitive high explosive (IHE) or fire-resistant pits (FRP). Should the W62 remain in the enduring stockpile, I strongly support upgrading its detonation system to meet modern safety design criteria. The W62 warhead is not scheduled to remain in the stockpile under START II.

Question. Would adding safety features like insensitive high explosives and fire retardant pits to weapons in our stockpile that don't already have these features make them safer?

Answer. Yes, incorporating features like insensitive high explosive and fire retardant pits into stockpiled warheads would inherently make them safer. However, all stockpile warheads meet both DOD and DOE safety requirements.

Question. Can you add all of these safety features right now, using the Stockpile Stewardship Program technologies already developed, without conducting explosive testing?

Answer. No; however, the DOD/DOE have confirmed the safety and reliability through the annual certification process, and no modifications to safety features are currently required.

TRITIUM REQUIREMENTS

Question. You also stated at our hearing that the price of a tritium generation facility is not included in the $4.5 billion per year estimate for SSP's cost. Has DOE settled yet on a method by which to produce tritium? If so, what will be its total and annual cost?

Answer. The Department has not decided which technology, accelerator or reactor, will be used to produce tritium. DOE plans to select one of the two tracks as the primary option in 1998. Based on the results of the technology decision, total and annual cost for the selected technology will be provided.

Question. If not, what is the price range, both total and annual, for the options being considered?

Answer. The funding included in the budget for tritium is:

Fiscal year	*Millions*
1999	$157
2000	145
2001	71
2002	67
2003	69
Total	509

If the purchase of irradiation services from commercial light water reactors is selected as the primary option, the budget request will be sufficient to meet current requirements. If the Department selects accelerator production of tritium as the primary option, it will need to seek relief from the current target date for initiating new tritium production or request additional funding.

The Department will provide firm cost estimates associated with tritium after the Department has developed cost figures for the commercial light water reactor option based on completion of negotiations with the Tennessee Valley Authority.

STOCKPILE STEWARDSHIP AND AGING OF NUCLEAR WEAPONS

Question. You testified at our hearing that, because the United States is no longer producing nuclear weapons, we would be encountering problems due to the effects of aging that we've not had to deal with in the past. Are you certain SSP will both identify all of these problems and be sufficient to certify their remediation?

Answer. It is not possible to declare with total certainty that the stockpile stewardship program will identify all aging problems. However, we are highly confident this strategy will be successful. We are currently enhancing our weapon surveillance process to maximize the likelihood of early discovery of the most serious of these aging problems, and we are modernizing our historical surveillance process to ensure that weapon aging defects, when present, will be detected and corrected in a timely way. Early detection is fundamental to remediation.

As the Stockpile ages, there will inevitably be changes in the weapons, some of which will require a "fix" that in the past would have been validated by a nuclear test. We expect the SSP will provide the confidence necessary to certify the safety and reliability of weapons with these changes. Specifically, the computer simulation, experimental capabilities, and expert judgement resulting from the SSP should allow the basis for the formal determination of stockpile confidence made through the Annual Certification Process.

ADEQUACY OF OUTYEAR BUDGETS

Question. Is inflation included in your $4.5 billion per year SSP pricetag?

Answer. We anticipate changes and efficiency improvements that will allow the impact of inflation in the outyears to be accommodated within the $4.5 billion annual budget level.

Question. If not, how much more will the program cost to add inflation in over the course of the FYDP?

Answer. Because of changes and efficiency improvements, we do not anticipate any increase in cost due to inflation.

Question. If DOE were refused permission to add the cost of inflation to the program's budget, what would you cut to stay at $4.5 billion per year?

Answer. Our strategy for countering the effects of inflation calls for aggressive pursuit of productivity cost savings both in terms of the cost of doing business and the cost of operating our facilities. The Stockpile Management Restructuring Initiative is an example of efforts to reduce the physical footprint of the weapons complex and thus reducing facility costs and outyear budget pressures. We fully expect these efforts to be successful.

NUCLEAR WEAPON PROBLEMS AND TESTING

Question. Are you aware of any nuclear weapons problems that have been identified in the past as a result of a nuclear test?

Answer. In the past, some nuclear weapon stockpile problems have been identified solely by nuclear testing. In general, nuclear testing has been used to confirm the existence of problems that were identified by nonnuclear experiments, computer simulation, and expert judgment for both stockpiled weapons and during weapon development. For the existing, enduring stockpile I am not aware of any nuclear weapon problems that have been identified solely by nuclear testing.

Question. Are you aware of any fixes to any nuclear weapons problems that were found to be inadequate through testing?

Answer. The only cases where nuclear testing has found inadequate fixes occurred with certain weapons that were designed or modified in the early years during the 1959–1961 Test Moratorium.

Question. The administration's current nuclear weapons policy, as set out in the Nuclear Policy Review and described by then-Deputy Secretary of Defense John Deutch in testimony before the SASC in the last Congress, says that the Department of Energy is required to "Maintain [the] capability to design, fabricate, and certify new warheads." Does stockpile stewardship maintain DOE's capability to design new warheads? To fabricate new warheads? To certify new warheads?

Answer. Yes, the Department of Energy's Stockpile Stewardship Program will maintain the capability to design, fabricate, and certify new warheads; however, there are no requirements for new warheads, at this time.

NUCLEAR WEAPON CERTIFICATION WITHOUT NUCLEAR TESTING

Question. Can a new warhead be certified without a nuclear test?

Answer. It is unlikely that an entirely new modern, high performance warhead, developed without the benefit of nuclear testing, would be certifiable by today's standards.

Question. If not, is there not a fundamental disagreement between the Clinton Administration's nuclear weapons policy and a comprehensive test ban?

Answer. We do not see a fundamental disagreement. The Stockpile Stewardship Program is allowed by and consistent with the Comprehensive Test Ban Treaty (CTBT). The Laboratories are required by the Nuclear Posture Review and the subsequent Presidential Decision Directive to maintain the capability to design and certify new warheads. Programs are in place at the Laboratories to do this. The Nevada Test Site is maintained in a state of readiness to resume testing if so ordered by the President and approved by Congress. The skills necessary for the continuing safety and reliability assessment of current weapons and for evaluating authorized stockpile modifications are the same as those needed for designing "new" weapons.

STOCKPILE STEWARDSHIP

Question. How will you know if Stockpile Stewardship is working? Have you established specific milestones short of completion of entire parts of the program that will tell you if you are succeeding or not?

Answer. We believe that Stockpile Stewardship is working now. While it has been more than five years since the last nuclear test, we have successfully addressed several problems with existing warheads by using a combination of computer analysis, archived test and manufacturing data, and most importantly the collective judgement of the two weapon design laboratories. This success, using the experimental and testing tools available today, provides confidence that the even more powerful computing and testing tools being developed will allow us to solve future stockpile problems without nuclear testing. Additionally, we have replaced the B53 with the B61–11, achieved a world record in computing speed through the Accelerated Strategic Computing Initiative (ASCI), conducted several subcritical experiments at the Nevada Test Site, produced a development warhead pit at Los Alamos National Laboratory, and have conducted safety reviews to resume enriched uranium operations at Oak Ridge Y–12. By annually certifying the safety and reliability of the stockpile, the DOE will confirm that Stockpile Stewardship can be relied on now and in the future. We have successfully completed the process twice, and the third annual certification process is well underway. A copy of the second certification was provided to the Congress by the President on February 11, 1998.

NATIONAL IGNITION FACILITY/NOVA

Question. One of the key elements of Stockpile Stewardship is the National Ignition Facility, or "NIF." Its predecessor, "NOVA," took several years to build and it wasn't until NOVA was completely built and, essentially, the switch was thrown for the first time that you found NOVA wasn't working. It then took and additional two years to get NOVA to work. With experiences like NOVA in mind, how, and when, will you know if Stockpile Stewardship is failing?

Answer. The issue of how progress on the stewardship program is assessed is clearly important. While key metrics such as the annual certification process are in place, the Department in conjunction with the laboratories and plants continues to evaluate this issue on an ongoing basis. Three important factors should be considered in evaluating the success of the stewardship program. First, the Department has outlined a series of specific milestones in its Stockpile Stewardship Plan (SSP), and progress towards these will be monitored. Secondly, we will examine how the tools developed as part of the SSP are working in addressing the full range of specific stockpile issues. A particular example relevant to the stated question would be to assess the progress of laser based experiments towards addressing high energy density science issues relevant to the stockpile such as was already done in a specific stockpile system. Finally, the judgment of the scientists and engineers engaged in the SSP will be assessed.

Assessment of the progress of the program using these three factors will rely on a combination of internal laboratory and external peer reviews, as well as the annual certification and dual revalidation processes. In general the peer review process will play an increasingly important role in establishing confidence in the stockpile.

Regarding the operation of large laser facilities such as Nova and NIF, most large science facilities require some operating experience and measurement development

(especially the latter) to realize their potential. As one example, while Nova worked from the beginning, realizing the full capability of the facility required that the laser glass be upgraded. The NIF first bundle, operational at the end of fiscal year 2001, will provide early experience with NIF operations and help prepare for the best use of the full NIF when it is available in fiscal year 2004.

LOW YIELD TESTING

Question. What yield of testing would be the lowest possible to accomplish new designs as well as ensure the safety and reliability of our stockpile?

Answer. If the Stockpile Stewardship Program (SSP) leads to a solid fundamental understanding of nuclear weapons physics as we plan, we should not need any nuclear testing to maintain the safety and reliability of existing weapons. If we were to resume testing, the lowest useful test yield for safety issues would be a few pounds, and for a reliability test around a kiloton.

As for a new, modern design, the test yield would depend upon how far the design was from an existing, well tested design. A design relatively close to current weapons might be certifiable with relatively low yield, whereas other new weapons might require something close to full yield.

NUCLEAR DESIGN STAFF

Question. One of the major aspects of the Stockpile Stewardship Program is to keep a well-trained team of scientists and engineers working at the labs. When my staff visited the Los Alamos National Lab in August, we were informed that some position announcements have been closed for lack of qualified applicants or, in some instances, applicants for positions are being hired who are of lower quality than was the case in the past. Should we be concerned that the labs won't be able to recruit and retain the best people, which has always been our standard?

Answer. Finding highly qualified applicants for our scientific and engineering positions remains a challenge. However, we continue to draw very high quality individuals to the laboratories. We have gone through dramatic changes in staffing requirements in the past decade and have a changed external environment in which we compete. While the laboratories have hired small numbers in recent years, the current requirements call for significant hires from an academic environment that is much more heavily populated by foreign national students who are ineligible for the positions we have available. Additionally, in some areas, such as computer science, it is difficult to match the industrial compensation packages offered to most highly sought after graduates. These challenges are partially compensated for by the desirability of working at a National Laboratory and by the focused technical challenges we provide and the world-leading tools we have available, as well as the clear commitment of the President and Congress regarding the importance of this work. The Laboratory Directed Research and Development Program, which supports scientists for innovative basic research in support of SSP, is an example of the opportunities that can be offered a young scientist. While recruiting will continue to be a challenge for us, we believe that we will compete favorably when the candidates consider their career options.

Question. How many nuclear weapons designers now routinely evaluate the performance of U.S. nuclear weapons by doing explosion calculations?

Answer. Approximately 85 primary and secondary designers at Lawrence Livermore and Los Alamos National Laboratories are actively and routinely engaged in evaluating the performance of nuclear weapons with simulation codes.

Question. How many have been lead designers on a nuclear test?

Answer. Of that number, 35 designers have been lead designers on a nuclear test.

Question. Are there enough qualified designers to do the jobs that need to be done today?

Answer. Yes. There are enough designers to do the job as currently defined.

Question. How confident are you that the Stockpile Stewardship Plan will maintain weapons designers' expertise?

Answer. A central objective of the Stockpile Stewardship Plan is the development and maintenance of a cadre of personnel who can effectively use the new experimental and modeling capabilities to address warhead issues as they arise. Since most of these personnel will be continually working on weapons topics, we can expect their continued commitment to address future issues that might arise. Today, we depend heavily on the experience base of veteran nuclear weapon designers and their familiarity with a wealth of past nuclear test data. These designers are working with—and, in the process, training—their younger colleagues on real stockpile issues to develop and validate the sophisticated tools that will be needed for stewardship in the longer run. These activities include dual revalidation, annual certifi-

cation, and other weapons baselining activities. We are developing additional techniques to capture the information both from the nuclear test database and from the personal experience of veteran designers, and to make it readily available for future work through our Archiving Program. The most important issue is to make the transition from reliance on the nuclear test experience to validated experimental and computational tools in a carefully thought- out manner, as quickly and reasonably as possible. That goal is built into the design of the Stockpile Stewardship Plan, and given appropriate support, I am confident in the success of our efforts.

STOCKPILE SAFETY WITHOUT TESTING

Question. President Bush informed the Congress on January 19, 1993 that the Departments of Energy and Defense had tried to find a technically responsible nuclear testing program consistent with the provisions of what is known as the Hatfield, Exon, Mitchell amendment to the 1993 Energy and Water Development Appropriations Act. His report states "We have concluded that it is not possible to do so." Later it says, "The requirement to maintain and improve the safety of our nuclear stockpile and to evaluate and maintain the reliability of U.S. forces necessitates continued nuclear testing for those purpose * * *." Did the Department of Energy participate in the effort described by the President and did the Department support the President's conclusions?

Answer. The Department of Energy participated in the January 19,1993 report referred to in these questions and the conclusions were accurate at the time.

Question. Are you aware of any technical factors that have changed since this report was sent to the Congress that would change its conclusion? This same report includes reference to an ongoing "* * * major effort to increase predictive capability, and thus reduce our reliance on nuclear testing for force safety and reliability." It goes on to say that the conditions of Hatfield, Exon, Mitchell "* * * would permit us only marginally to increase our predictive capability, and would certainly not bring us to the point that we could maintain the safety and reliability of the U.S., deterrent without underground nuclear tests." Since President Clinton decided to not even attempt the minimal number of tests permitted by Hatfield, Exon, Mitchell it would seem that the situation today must be even worse than portrayed by President Bush. Can you explain how in 1993 nuclear testing was needed to play a critical role in validating predictive capability while today you are optimistic that SSP, today's predictive capability program, does not need nuclear testing to validate it?

Answer. There have been several significant technical advances that alter the conclusions of the 1993 report to Congress. The Department's stockpile stewardship program has been an engine of enormous technical advance and the stockpile stewardship tools have allowed the DOE and DOD to twice certify to the President that the nuclear weapons stockpile remains safe and reliable and that there was no need to return to underground testing. These tools have also allowed us to solve several stockpile issues that previously would have required underground testing. This also gives us confidence that the new stockpile tools under construction such as NIF, DARHT and Atlas and more advanced computers will allow us to certify the stockpile into the future. In the unlikely event we should ever have to return to testing we are maintaining the Nevada Test Site, consistent with presidential direction.

MAJOR DEFENSE PROGRAMS PROJECTS AT THE NATIONAL LABORATORIES

Question. General Accounting Office Energy Issues Director Victor Rezendes recently informed the Congress that of 80 Department of Energy projects which spent in excess of $100 million dollars, and some of which spent billions, between 1980 and 1996, only 15 were ever completed. These statistics do not present a very promising view of the likelihood of the many SSMP capabilities coming to reality, or coming to reality on the time scale currently predicted for them. What is the record of LLNL, LANL, and Sandia over this period?

Answer. Generally, considering the fact that Defense Programs' large construction projects at the laboratories are usually unique, state of the art, or even cutting edge technology research projects, Lawrence Livermore, Los Alamos and Sandia National Laboratories have done an acceptable job bringing these projects to conclusion. Only two of the canceled projects were Defense Programs funded projects at these laboratories.

A current example of our laboratories' ability to carry out these large projects is the National Ignition Facility, which at $1.2 billion is by far our largest scientific project currently under construction. It is on schedule and within budget, even with the recent weather problems in northern California. That being said, we have had some recent problems regarding management of large projects, particularly at Los Alamos, but we are working to resolve those issues.

Question. How many projects of this size were begun and never completed?

Answer. Of the 65 incomplete projects on Director Rezendes' list, only two were Defense Programs laboratory projects. The Special Nuclear Materials Research and Development Laboratory Replacement (88–D–105) was canceled in the design phase when it was determined that renovation of the existing Chemistry and Metallurgy Research facility was a more cost effective means of responding to our changing program requirements. The Special Isotope Separation Project (86–D–148) was canceled when changing stockpile requirements meant that the materials to be supplied by the facility were no longer needed.

Question. How many projects of this size succeeded on their originally predicted timetable, with their originally predicted capabilities.

Answer. The High Energy Laser Facility (78–4–a), probably more familiar to you as "Nova", was the only major laboratory construction project completed during the 1980 to 1996 time period. The bulk of the construction activity during this time period at the laboratories was over a half billion dollars of smaller infrastructure improvements. Los Alamos and Sandia also successfully met the infrastructure requirements of accepting non-nuclear production responsibilities from Rocky Flats, Mound and Pinellas during this period.

Question. Is there some reason to believe the laboratories will be any more successful in the next 16 years?

Answer. The laboratories have been generally successful in the past on these projects and are, with some caveats, proceeding nicely with the current set of projects important for implementing the stockpile stewardship program. Where we have had problems, we have moved aggressively to identify the issues and causes of those problems and then moved just as aggressively to insure the appropriate corrective actions are taken. So, yes, I do believe we will be successful in providing the facilities necessary for conducting our program.

QUESTIONS SUBMITTED BY SENATOR GORTON

FAST FLUX TEST FACILITY

Question. Given the high cost of the two primary tritium production options under consideration—use of a commercial light water reactor and constructing a large accelerator—doesn't it make sense to keep restart of the Fast Flux Test Facility (FFTF) as a near-term "insurance" policy?

Answer. In announcing the Department's January 1997 decision to keep the Fast Flux Test Facility in standby, former Secretary O'Leary stated that keeping the reactor in standby is a low cost option that allows the Department maximum flexibility to ensure the tritium needs for the strategic nuclear stockpile are met.

The Fast Flux Test Facility will be maintained in a safe and environmentally compliant standby condition until a decision is made on the Department's overall tritium production strategy. The Department is working to ensure that this decision will be made by December 1998.

Question. Doesn't the FFTF option hedge DOE's bets, especially given the uncertainties associated with future tritium requirements?

Answer. The Department is required to meet tritium production requirements as stated in the Nuclear Weapons Stockpile Memorandum signed by the President. While the Fast Flux Test Facility is capable of producing a significant quantity of tritium on an annual basis, it cannot by itself supply the entire current requirement. The Fast Flux Test Facility is being retained in a defueled standby condition pending a decision on whether the facility can provide a cost effective capability as part of the Department's tritium production strategy.

QUESTIONS SUBMITTED BY SENATOR REID

DEFENSE PROGRAMS

Question. Isn't there a point at which our confidence in the stockpile is going to be diminished beyond repair because we simply will not be able to replace old parts of nuclear devices?

Answer. There is no expectation that our confidence in the stockpile is going to be diminished because we will not be able to replace old parts. Replacement may require that the laboratories develop new components because of sunset technology issues; however, because of programs that exist to maintain capability at both the laboratories and plants, we should be able to design and produce any parts that would be required in a reasonable amount of time. The one current exception is the

production of pits. Although we currently have no reason to believe this will be an issue in the foreseeable future, we are presently establishing that capability at Los Alamos.

Question. With the death of those who designed the current weapons, aren't we losing the knowledge of a generation of physicists and engineers who built and tested the nuclear devices?

Answer. We still have in our ranks a sizable number of physicists and engineers that built and tested nuclear weapons, and we have an active program of archiving past data, documenting past methods and understanding, interviewing experienced workers and data capture, and mentoring young scientists and engineers. In this context, dual revalidation, annual certification, and other weapon baselining activities are key to transferring and improving upon this knowledge to the next generation of weapon stewards. By working in teams—younger staff and senior designers and engineers—we are developing and applying the methods of science-based stewardship to current and projected stockpile issues. This is serving as a true test to gauge our ability to train the next generation of weapons designers and stewards, and I believe we will successfully make this generational transition.

Question. Without testing the devices, we are relying upon science that has not been done before; given that this is an uncharted science—on what do you base your confidence in the program?

Answer. Our confidence in the Stockpile Stewardship Plan is based on several key elements: (1) the extensive nuclear test database, (2) our experienced personnel still available to train a new generation of weapon scientists and to provide archival information, (3) our program of nonnuclear experiments, and 4) advanced computational capability that will improve the scientific understanding necessary to evaluate stockpile problems and possible modifications. All of these elements are absolutely essential. Our confidence is enhanced by successes so far in the program, including the institution and successful execution of the Annual Certification and Dual Revalidation programs, the progress of the Accelerated Strategic Computing Initiative in meeting its timelines for improved simulation and modeling capability, early promising results from the Enhanced Surveillance Program, and our progress on several stockpile modifications, including the B61–11 and the W87 Life Extension Program.

Question. Is the uncharted territory of a science based stockpile stewardship program leaving too much to chance by relying on computer simulations, subcritical experiments, and experiments on fusion ignition?

Answer. As I previously stated, the "uncharted territory" could indeed be very problematic without all the key elements of the plan. At this point our assessment is that a fully implemented Stockpile Stewardship Plan will be sufficient for maintaining the reliability and safety of the stockpile.

Question. Additionally, is this uncharted territory too ambitious for the current generation of scientists? I read recently where Bruce Tarter of Lawrence Livermore National Laboratory observed, "Even with these new facilities, the question remains whether we can keep from fooling ourselves about how good we are." If Dr. Tarter is incorrect, could you explain?

Answer. Dr. Tarter properly states the challenge. Our mission is a challenging one, and we are sensitive to the need for continuing critical evaluation. A critical yearly measure of the success of the SSP will be our ability to provide formal statements of stockpile confidence through the Annual Certification process. Should we not be able to certify the safety or reliability of a weapon system in the enduring stockpile, the SSP will not have been totally successful. Three supportive factors should be considered in assessing program success.

First, we can test progress on SSP compared to the specific milestones set forth in the DOE Stockpile Stewardship Plan. This comprehensive plan includes the detail needed to judge progress in providing the necessary experimental, computational and manufacturing capability, and in executing required stockpile actions. Timely execution of required modifications such as the B61–11 and W87 LEP, including certification performed to the satisfaction of a well-informed technical community, will be an important measure. So will completion of the planned facilities and meeting of the simulation and modeling milestones.

Second, we can examine specifically how well the tools being developed as part of the SSP are working by testing them against two sets of data. One is the past nuclear test database, for which we should be able to "predict" past nuclear test data (failures as well as successes). The second set is new laboratory test results, including large integral experiments such as 3–D hydros with high resolution, and future ignition capsule performance on NIF. Our computational simulations must consistently match a broad range of data with a significantly reduced need for empirical "fudge" factors and phenomenological models.

Third, there are ways we can assess the judgment of the scientists and engineers engaged in SSP. It is absolutely crucial that we maintain expert judgment about nuclear weapon issues by developing the skills and capabilities of the next generation of stockpile stewards. Our ability to retain and attract new top-notch scientists and engineers to the program will be another key index of the program's success.

The judgment of the stockpile stewards will be exercised through the Annual Certification and Dual Revalidation processes, which entail formal peer review activities involving the two weapon design laboratories (LANL and LLNL). Each of the laboratories, with its own unique capabilities, will be put to the test before the other laboratory and experts from Sandia, DOE Defense Programs, and our customer, the DOD. Peer-review activities must include independent evaluations, dual revalidation and reviews specifically aimed at finding the weak spots in the technical story. Such peer review will play an increasingly important—and very visible—role in establishing confidence in the stockpile.

Question. It seems to me that we are painting ourselves into a corner with our nuclear stockpile. We cannot build new weapons and we are to have confidence in an aging stockpile, the safety and reliability of which we are trusting to scientific experiments. There are many questions about the future that you cannot answer and that is exactly what is bothering me. How are we assured that the greater strategic questions are addressed, even though there are not yet answers?

Answer. We can only answer strategic questions by continuing to question and evaluate whether the stockpile stewardship program effectively balances current and future needs and whether the system of labs, plants and Federal management are meeting their objectives effectively. This process must be done every year and with a vigor commensurate with the responsibility of the "supreme national interest."

Question. Metering our progress toward the program goals will certainly measure success of the plan, but will it measure mission success?

Answer. Mission success is reflected in our ability to annually certify to the President that the nuclear weapon stockpile is safe and reliable. We have completed two annual certifications and we will continue to measure how well we are meeting our programmatic goals. The combination of annual certification and meeting program goals will help ensure that the Stockpile Stewardship Program is successful.

Question. Will it measure the reliability and safety of the stockpile?

Answer. The annual certification has one main purpose—to ensure that the U.S. nuclear weapon stockpile is safe and reliable.

Question. I am concerned that success with the plan allows us to say only that, so far, we have found no "cause for alarm." Is there another measurement that could more accurately reflect the status of the stockpile?

Answer. The status of the stockpile is reported, in detail, through several classified reports currently provided to the Congress including the President's transmittal of the annual certification report.

Question. Science Based Stockpile Stewardship at least offers us some hope that we can maintain the stockpile without testing. But, is it enough? Have we overlooked something that might materially add to our confidence?

Answer. Science Based Stockpile Stewardship, now referred to as the Stockpile Stewardship Program (SSP), offers the best opportunity to meet the goal of maintaining the aging nuclear stockpile without nuclear testing. The DOE and the DOE weapon laboratories believe that if the SSP is fully funded, then it is the right program based on over fifty years of nuclear weapons experience. We believe that we can manage the risk of no nuclear testing and that we have not overlooked anything that would materially contribute to our confidence.

SUBCOMMITTEE RECESS

Senator DOMENICI. So it is, indeed, an exciting thing, and with that, the committee stands in recess until the call of the chair.

Dr. REIS. Thank you, sir.

[Whereupon, at 10:35 a.m., Tuesday, March 3, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 1999

TUESDAY, MARCH 10, 1998

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

The subcommittee met at 2:40 p.m., in room SD–116, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Cochran, Gorton, Reid, Kohl, and Dorgan.

DEPARTMENT OF ENERGY

OFFICE OF ENERGY RESEARCH

STATEMENTS OF:

DR. MARTHA A. KREBS, DIRECTOR

DAN W. REICHER, ASSISTANT SECRETARY FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY

OPENING STATEMENT OF SENATOR DOMENICI

Senator DOMENICI. Well, first I apologize for being a little bit late. We will not keep anyone too long, I do not think. Thank you for coming.

Today, we are going to consider the Department of Energy's 1999 budget request for science, magnetic fusion, and renewable energy. We will hear from Dr. Martha Krebs, Director of the Office of Energy Research. The administration has requested an 11-percent increase in science programs for fiscal year 1999. To pay for these increases, the administration has proposed to reduce funding for water projects by $1.3 billion below the level required to continue ongoing projects.

Simply put, with the $9.4 billion the President has proposed spending on nondefense programs within this subcommittee's jurisdiction, the subcommittee will have to find on the order of $1.3 billion for ongoing water projects if we are to avoid higher cost to the Government and delayed benefits to local interests. That means we almost certainly cannot provide for these proposed increases and will probably have to reduce some programs below their current level.

With that said, you should know that I am a strong supporter of the Department's science programs and will do everything I can

to mitigate any changes that we have to make to the President's budget.

From the standpoint of your programs, I am willing to listen. You have some very interesting and innovative thoughts on the subject, and I commend you for the new position you have and the Department for having someone of your high qualifications in that position. We have not always agreed on a lot of things in your prior life. Maybe we can agree on a few more now. It might be better for you if we do. I should not have said that, should I? [Laughter.]

Having said that, do you understand the dilemma we are in on the water projects issue?

Senator COCHRAN. I do.

Senator DOMENICI. I think the appropriators are now fully cognizant at the level above us, the full committee chairman level, of the very dramatic decrease in water projects. What has to be done, in our opinion, is probably to get us some additional resources for these water projects. We are very hopeful they will be concerned enough to consider that with us.

I do plan in the budget, Senator Reid, so you will know, to make room to make some adjustments where some of that water money will be made available in the various functions that we have to take care of that in the budget resolution.

Senator, do you have any opening remarks?

STATEMENT OF SENATOR REID

Senator REID. Mr. Chairman, I have an opening statement I would like to be made part of the record in its entirety.

Senator DOMENICI. It will be done.

Senator REID. I would only say that, even though we do not spend a lot of time on some of these programs that we are going to be talking about today with these two witnesses they are important. I think it is one of the areas where the American public should be very happy that we are doing something. It has a lot of scientific potential. I am very glad that we are involved in this, and they will get my full attention. I think the energy research programs are extremely important for the future of this country.

[The statement follows:]

PREPARED STATEMENT OF SENATOR HARRY REID

This hearing today deals with some very important issues. How we deal with them will affect in fundamental ways our general quality of life. Long term economic health and vitality depend critically on secure access to abundant and affordable energy.

Today's testimony addresses investments that will help determine what the new energy resources will be. New energy resources, and how we use them will be enormously important to the air we breathe and the water we drink. The past two decades have taught us that even our weather will be affected by our choice of primary energy.

The so-called "greenhouse" gases from fossil fuel combustion and other processes can change global weather patterns in ways we cannot predict. Continuing "business as usual" guarantees that we will continue to add to the growing inventory of atmospheric greenhouse gases with consequences of unknown magnitude. Global power generation must turn to new fuels and to new conversion processes.

Eighty percent of today's energy in the United States comes from finite and diminishing stores of natural gas, oil, and coal. Only 10 percent of our current energy production comes from renewable resources that will never run out—and the majority of this renewable energy today is hydroelectric power, a mature resource that we are unlikely to develop further. So, not only must we stop adding to the green-

house gas inventory, we must develop renewable resources to ensure supplies for the indefinite future.

Presently, 70 percent of U.S. petroleum consumption powers our transportation systems, and more than 50 percent of that fuel is imported. By early in the next century, more than 70 percent of the world's oil will be supplied by countries in the Persian gulf. Such a monopoly on the supply side has historically led to abuses, as we experienced in the 1970's and early 1980's.

In response to those abuses, we increased domestic production and implemented new efficiencies so that competition was restored by reduced import demand. Energy efficiency continues to be highly relevant, but by itself only delays the inevitable depletion of non-renewable resources and only slows the accumulation of atmospheric greenhouse gases. So the development of more renewable resources that do not damage the environment is an essential part of preparing for the future.

The Chairman and I represent great western states with enormous potential for renewable solar energy production. Solar power is technically feasible, but not yet economically competitive—a deficiency that I hope to hear today is being dealt with.

I don't know about New Mexico, but Nevada has developed significant geothermal generation capability, and Nevada's distribution of mountains and valleys makes it ideal for wind power development. I do know that Sandia Laboratories in the Chairman's great state of New Mexico has made significant technical advances in both solar and wind power generation. I am looking forward to the time when I can visit the New Mexico Labs and see some of these things first hand.

I welcome our witnesses today from the Department of Energy. I fully expect to hear wonderful things about science and technology from the Department that many refer to as the "Department of Science" instead of the Department of Energy. But I hope to hear also about how this wonderful science and technology is being harnessed and directed for the national benefit. What the Department does is important; how it is done is just interesting.

Right this moment, we are in the middle of a technical revolution; one that many say is as important to the future as the industrial revolution has been to the present. This is an information revolution. It affects the ways we receive, deliver, and act on information.

Our citizens today observe our wars when they are happening, up close and personal. They have international news updates on events as they happen, at all times of the day and night. They carry cellular phones, satellite-serviced pagers, lap-top computers, and the shirt-pocket computer with a built-in modem is just around the corner.

More than 50 percent of American homes have a personal computer, and most of these have an on-line service provider that allows instant access through the world wide web to Internet sites in all the countries of the world. There are some amusing moments with automated translators, but just the same, the world of nations is becoming a very large village. Electronic gossip, or "Internet chats" is being supplanted by electronic barter and electronic commerce is just beginning.

The United States leads the world in developing innovations in communications and computations technologies. In many respects, the Department of Energy stimulated that leadership by requiring advanced computational technology for its nuclear weapons program. DOE's programs stimulated the computer revolution by requiring continually increasing computation speed and memory in digital computers. But the real revolution has been pretty much independent of the government. Business and individual citizens have driven the real revolution of universal connectivity provided by small personal computers and the Internet.

The Federal government is investing significant effort and resources to accelerate this revolution through the Next Generation Internet Initiative. This is only one of several information technology initiatives in the Department of Energy.

The business community is rapidly developing innovations that expand internet access through product cost reductions and through network assets sharing with high bandwidth carriers, like cable television fiber optic lines. I am concerned that the Next Generation Internet Initiative might be diverging from the path being defined by industry. If this should happen, then this would be one of those projects of great interest, but little importance.

I hope that testimony today will clarify the relationships of these information technology initiatives and that compelling arguments can be presented for their continuation.

In another matter, the President's Committee of Advisers on Science and Technology has recommended research investments in the key obstacles to nuclear power. The President's budget request reflects this advice in the Nuclear Energy Research Initiative.

The United States is the world leader in nuclear technology and in nuclear power production. Yet, in spite of that leadership, nuclear power is widely held to be a dying industry in the United States.

Apart from public fear of nuclear power, there are two overwhelming obstacles preventing a healthy nuclear power industry: the cost of nuclear power and the waste it generates.

This industry generates exceptionally dangerous wastes that presently must be carefully sequestered for more than 10,000 years. Industry claims and Federal investments notwithstanding, there is still no acceptable means of managing this waste. The present program of geologic disposal is universally opposed by a majority of U.S. citizens. If the disposal site happens to be in one's own state, that opposition becomes virtually unanimous among those so affected.

It does not matter what the industry says; it does not matter what the engineers say; and, believe it or not, it will not matter what the politicians say. If our United States citizens find the waste disposal proposition unacceptable, it will not succeed.

Now, managing the waste of this industry is important. It is important if the industry is to continue, and it is just as important if the industry is to terminate. This feature distinguishes nuclear waste from all other issues surrounding nuclear energy.

All the other obstacles to nuclear power vitality are only important to the continuation of the industry. They are important, but not as important as finding an acceptable way to manage the waste.

I will be enormously disappointed if the Department has not recognized the central and overwhelming priority of acceptable resolution of the nuclear waste dilemma in its planning of the Nuclear Energy Research Initiative.

I know that the Chairman is aware of technically feasible options for making this waste problem more manageable. One of those comes from his great lab in Los Alamos, New Mexico. This idea promises a reduction in the amount of waste to be sequestered by a factor of 20—instead of 70,000 tons of radioactive material, only 3,500 tons would need to be managed. It would reduce the period of sequestration from more than 10,000 years to about 300 years. The concept appears to do all this for not more than 20 percent of the cost of the geologic disposal program. Indeed, it is not at all obvious that geologic disposal would make sense under these new terms of waste management.

So if the Department of Energy wants to pursue the Nuclear Energy Research Initiative, it needs to focus its investments on the highest priority problems surrounding nuclear power—and that would be finding an acceptable waste management path.

STATEMENT OF SENATOR KOHL

Senator DOMENICI. Senator Kohl.

Senator KOHL. Thank you, Mr. Chairman. I am delighted to be here today. I do not have an opening statement. I have a specific question I would like to ask at the appropriate time.

Senator DOMENICI. Did you just have one?

Senator KOHL. One single question.

Senator DOMENICI. Would you like to go ahead?

Senator KOHL. Oh, I would love to.

Senator DOMENICI. And you have some other business?

Senator KOHL. Yes.

Senator DOMENICI. Then you may proceed.

Senator KOHL. I do appreciate that. Thank you so much.

FEDERAL ENERGY BANK LEGISLATION

We appreciate your willingness to testify before us today regarding the Department of Energy's energy and renewable energy programs. I would like to take this opportunity to bring to your attention a bill that I have introduced, the Federal Energy Bank Act, S. 1375. This bill creates a bank to fund the purchase of energy efficiency projects by Federal agencies and in the long run will great-

ly reduce the overall amount of money spent on energy consumption by the Federal Government.

According to the recent Federal energy efficiency and water conservation study drafted by the DOE, an investment of $5.7 billion is required through 2005 to achieve the Federal Government's goal of a 30-percent reduction in the Federal Government's energy consumption by the year 2005 as compared to the year 1985. The best estimate of total funding available for this project is $2 billion less than what we need to meet our goal.

My legislation addresses this shortfall by creating a revolving fund that Federal agencies can use to purchase energy efficiency systems. The agencies would contribute 5 percent of their previous year's utility costs into this fund. The agencies would then take out loans from the bank to pay for energy conservation systems and pay them back as their use of efficient technology leads to increased energy savings.

So, in your opinion, do you believe a revolving fund of this kind, designed to generate revenue to purchase energy conservation systems, such as the energy bank bill could help solve this shortfall in funding, and does the Department have a position on my legislation, S. 1375?

Mr. REICHER. Senator Kohl, the Department does not currently have a position. We are reviewing the bill. I have only, to be honest with you, become aware of it in the last several days, and we are developing a position. We are working on a position with OMB.

Let me say as a general matter, we completely agree with the challenge that you pose in Federal energy. The Federal Government spends $8 billion a year on 500,000 buildings to provide the energy for those buildings and to fuel our transportation fleet, and there is great opportunity to make substantial energy savings and there are a variety of ways to do it.

We are in the midst of a program where we are going to provide contracting authority up to $5 billion through an energy savings company concept to make investments in energy retrofits in Federal buildings. That is one approach we can take.

Your approach, which is not necessarily in conflict with that approach, may well be one that would serve an additional useful purpose in meeting this big challenge, which is to reduce Federal energy use. We will be taking a careful look at the bill. We will work with your staff on it and we will get you a position from the administration on it very quickly.

Senator KOHL. I do appreciate that interest on your part. I appreciate your willingness to work on it quickly, as you said. We think that the bill has great merit and offers the potential for great savings. Thirty percent on $8 billion is $2.5 billion a year. So I am looking forward to working with you.

And I thank you, Mr. Chairman.

Senator DOMENICI. Senator, would you like the answers in the record?

Senator KOHL. Yes; I would appreciate it.

Senator DOMENICI. Would you do that as soon as you can, and we will put them in this record.

Senator KOHL. Thank you.

[The information follows:]

FEDERAL ENERGY BANK BILL

The proposed Federal Energy Bank Bill offers a critically needed means of providing funding for Federal energy management. In past years, the Federal sector has invested approximately $1.8 billion to improve energy efficiency in Federal buildings and has achieved cumulative costs savings to taxpayers of $5.1 billion. Typically, projects that are awaiting funding have the potential to return $4 in savings for every $1 invested. The Federal Energy Bank Bill can help provide funds to make those investments.

However, the current version of the bill has a provision that capitalizes the Bank by taxing agencies 5 percent of their energy expenses in the first three years. While this would result in a net benefit over a long period of time, it would leave the agencies short of money to pay their energy expenses in those first three years. Agencies have expressed unwillingness to support the bill in its current form without some relief from the 5 percent tax.

One excellent suggestion for overcoming this problem would be to allow the Federal Energy Bank to use the services of the Federal Financing Bank to raise the initial capital. This would be consistent with the Financing Bank's role of supporting other agencies' minor borrowing needs. The Federal Energy Bank would then make loans to agencies for specific energy saving projects. The borrowing agency would pay back the loan out of future year energy savings. Because Federal energy savings projects offer such high rates of savings ($4 saved for every $1 invested), after projects are implemented and savings result, agencies would have access to more than enough in savings to repay the loans.

A portion of the excess cost savings from each project could be used to establish a permanent capital fund within the Federal Energy Bank. This would minimize the need for further borrowing after a few years of Federal Energy Bank operation.

This approach has several advantages. First, it would allow the Federal Energy Bank to capitalize itself only at a level consistent with the demand for funds from the agencies each year. Second, it would not require appropriations. Third, the amount funded by the Federal Energy Bank would not need to be held to the current limit of 5 percent of agencies' energy bills and would allow agencies to borrow greater amounts for the earlier completion of more energy saving projects.

If the Federal Financing Bank approach is not adopted and the agencies are taxed 5 percent each year, the agencies will be unable to pay their annual energy expenses. In such a case, they will have two options: to seek additional funds from Congress or to take funds from programs critical to their mission. The agencies would face uncertain funding and would be unlikely to support the Federal Energy Bank despite its long-term promise.

For these reasons, the Department of Energy recommends using the Federal Financing Bank as a funding mechanism for the initial capitalization of the Federal Energy Bank.

STATEMENT OF MARTHA KREBS

Senator DOMENICI. Now, Dr. Krebs, you may proceed.

Dr. KREBS. Thank you, Mr. Chairman. Mr. Chairman, members of the subcommittee: It is a pleasure to be here, and I will submit my written remarks for the record.

Over the holidays as I was waiting for the administration's budget process to close and anticipating your return to the Hill, I went through a reading marathon to prepare myself. I happened upon a book by a man named Max DuPrie, who writes on leadership, and he gave me a number of ideas and quotes. The one I want to refer to, that particularly struck me as appropriate for this discussion on science and leading science today, goes like this:

> It's much easier to extrapolate from the past than to imagine what's possible in the future. Yet, the more complex the job, the more important it is to deal with the future, and the more complex the job is, the more talented the people, the higher you want to go on that scale of working on the future.

The Department of Energy in all of its missions has some very complex jobs, critically dependent on advances in complex science and technology endeavors and the talents of our scientists and engineers. The budget for Energy Research [ER] in fiscal year 1999

builds on our past, but proposes new investments for the possibilities of the future.

I am going to limit myself to only the major elements of the fiscal year 1999 ER request, and that means I will leave a lot unsaid. ER has a history of great science and effective management of scientific facility construction and operation. It continues and we, all of us in the administration, in the Department, and in the Congress, can be proud of that.

The fiscal year 1999 budget request for Energy Research is about $2.7 billion, $246 million above the fiscal year 1998 appropriation or, from my point of view, a 10-percent increase, but I would take 11 percent. What this means is that it is good news for science if we can make this happen. It builds on and sustains our investments and our history of large-scale scientific user facilities. It establishes and enhances research agendas that enhance science and the economy.

SPALLATION NEUTRON SOURCE

The first topic that I want to discuss and the major element in that increase is the spallation neutron source at the Oak Ridge National Laboratory. We propose to initiate construction of that $1.3 billion facility with a request of $157 million in fiscal year 1999. It is important to note that in fiscal year 1999 and in the out-years the President has identified the increases required for the profile of that facility, has added them on top of our targets in fiscal year 1999 and in the out-years.

This facility has been on the scientific community's agenda explicitly since 1984 and implicitly for nearly 20 years. The role of neutron science and its connection with the Oak Ridge National Laboratory from the very discovery of neutron diffraction has made critical contributions to the Department's energy and science mission; from advanced fibers and plastics to catalysts, magnetic materials for efficient electric generators, magnetic recording tapes, and computer hard drives.

In addition to the need and opportunity for this facility, we believe we are ready to start construction in the fall. The cost has been validated through two independent review processes. We have a management structure in place. Key hires are being recruited and other hires have been made, and the systems for managing the facility are being put in place.

CLIMATE CHANGE TECHNOLOGY INITIATIVE

The other major element, or a major element, of our initiative is related to the President's climate change technology initiative. That is related to work that Mr. Reicher will describe as well.

In Energy Research we have $27 million added to our budget, $16 million in the Basic Energy Sciences Program, that relates to advanced materials and chemical processes associated with both efficiency and renewable applications. In the Biological and Environmental Research Program, we also have $11 million that is focused on natural cycles, carbon sequestration through natural cycles, as well as in oceans, and an increase in microbial genome work that has had such attention in the recent past.

SCIENTIFIC USER FACILITIES

Within the budget, not quite so obvious, is our continuing commitment to our other unique scientific facilities. We have increased the budget for these facilities from $915 million to $1 billion. This includes facilities like Fermi and the Stanford Linear Accelerator Center. It includes our work at the Los Alamos Neutron Scattering Facility. It will provide for the computing capability at Fermi, Brookhaven, and Stanford in order to prepare those facilities for when the B-factory and the main injector come on board.

NEXT GENERATION INTERNET

Another element is the Next Generation Internet at $22 million.

It builds on our base activity and will allow us to interact with the high-speed networks, the very high-speed networks, being invested in by DARPA. It will also make our applications available to the advances that are being invested in now by other agencies.

SCIENCE EDUCATION

Finally, in terms of new funding provided within this effort is our request for $15 million to reestablish the science education programs that will build on our lab assets and provide collaborations between the National Science Foundation and the Department of Education.

I think at this point I will complete my initial comments. I would be happy to deal with questions on the large hadron collider and the fusion program, but also I understand you are interested in progress on the human genome.

[The statement follows:]

PREPARED STATEMENT OF MARTHA A. KREBS

Mr. Chairman and Members of the Subcommittee: I am pleased to be here today to present the fiscal year 1999 budget request for the programs supported by the Office of Energy Research (ER). In his State of the Union address, President Clinton spoke about how we must use science and technology to give the next generation the tools they will need for the 21st century. The Department of Energy (DOE) budget for fiscal year 1999 reflects that commitment by providing a $246.0 million increase above fiscal year 1998 for the programs in the Office of Energy Research. The increase will permit initiation of the Spallation Neutron Source (SNS), the first world class neutron source built by the United States in more than 30 years. In addition, ER will build on its existing programs to undertake increased efforts in areas of basic science that support efficient, clean, new technologies for the production and use of energy as well as the sequestration of carbon, in coordination with the DOE technology programs. The increase will sustain the availability and productivity of the Department of Energy's (DOE) unique scientific user facilities that serve the DOE missions as well as other national research needs. The University and Science Education program will enable DOE to utilize more effectively the human and scientific assets of its National Laboratories to inspire and educate young scientists and engineers from elementary through undergraduate education.

ER's fiscal year 1999 budget request, detailed in Table 1, supports national laboratory, university, and industry based research in six key areas: High Energy and Nuclear Physics, Biological and Environmental Research, Basic Energy Sciences, Computational and Technology Research, and Fusion Energy Sciences. This support entails thousands of individual projects at hundreds of research facilities across the United States. In addition to this diverse research portfolio, ER plays a unique role in providing researchers, professors and students nationwide access to the large-scale, state-of-the-art research equipment and scientific user facilities that are critical to their scientific work. As a result, the programs help to expand the Nation's human and intellectual resources, continuously replenishing the Nation's capabilities for scientific and technological innovation.

It is this base program that has and continues to produce the achievements and contributions of Office of Energy Research programs. The detailed budget request outlines the proposed research agenda for fiscal year 1999 that would continue your investment in the base program. Today, I would like to provide you with some of the recent results of that investment and share with you our vision for the research program and the fiscal year 1999 initiatives and priorities that support that vision.

In keeping with the Government Performance and Results Act (GPRA), ER's fiscal year 1999 budget request includes program specific goals, strategies, and measures that focus our research activities and ensure continuity with Departmental plans and national goals. These measures and mechanisms will continue to be refined with use and as we benchmark our activities against the other federal science agencies and the best of the private sector.

ENERGY RESEARCH—SERVING TODAY

Research sponsored by the Office of Energy Research is producing benefits today. ER's current investments are extending the frontiers of knowledge and contributing to many of the Nation's most pressing concerns and priorities. Each year, ER research and investigators have been recognized by national and international scientific societies, magazines, and prizes.

Nobel Prize.—The 1997 Nobel Prize in Chemistry was shared by an ER-supported researcher, Professor Paul Boyer, for his "elucidation of the enzymatic mechanism underlying the synthesis of adenosine triphosphate (ATP)". The energy cycle of all biological organisms involves the central molecule, ATP. The energy captured from photosynthesis or released from respiration is converted into ATP where it is used for maintenance of cells, synthesis of cellular components and other energy-requiring processes such as movement. ATP is frequently referred to as the "energy currency" of the cell. Dr. Boyer's work examined the detailed chemical reactions involved in this synthesis and the roles specific parts of the ATP synthase molecule played in the overall synthesis. Dr. Boyer's work on the synthesis of ATP was supported in part by the Energy Research Basic Energy Sciences and Biological and Environmental Research Programs and their predecessor organizations. This basic research into energy capture and use in plants and bacteria continues to advance our understanding of how these processes work and how they might contribute to future energy production and use.

Top Scientific Breakthroughs in 1997.—Each year "Science" Magazine lists the top ten significant developments in scientific research. The 1997 list included three topics strongly supported by ER programs—synchrotrons, fullerenes and genomes. Richard Smalley's Nobel Prize winning discovery of fullerenes continues to generate exciting science at the nano- (one billionth of a meter) scale. Dr. Smalley's work was supported by Basic Energy Sciences and the structure of buckyballs and many of its derivatives were determined at ER's National Synchrotron Light Source and neutron scattering facilities. Today, ER supported research such as Lawrence Berkeley National Laboratory's characterization of the properties of nanotubes are a continuation of this research agenda. Microbial genome research, that builds on our capabilities and contributes to our mission, has contributed to the accomplishment of "what once seemed a pie-in-the-sky goal—analyzing whole genomes". Third generation synchrotron radiation sources, the Advanced Photon Source and the Advanced Light Source were called out for enabling breakthroughs in the structure of materials.

The Advanced Photon Source (APS) completed its first year of operation in 1997. The floor of the APS was filled with experiments, many of which could not have been conducted anywhere else. Results are beginning to flow out of those experiments in many fields including: materials science and condensed matter physics, biological sciences, plant and environmental sciences, and geosciences. For example, a new structural determination and biochemical analysis of the human fragile histidine triad (FHIT) protein was performed at the APS during its first year of operation. This protein derives from a fragile site of human chromosome 3 that is commonly disrupted in association with cancer development. The unique capabilities of the APS are advancing our understanding of this tumor suppressor protein and a great many other scientific mysteries.

In the News.—ER's advanced materials research is also contributing to human health. A new sensor has been invented, by researchers at DOE's Lawrence Berkeley National Laboratory, that makes it possible to instantly and inexpensively detect a wide range of biological toxins and common disease-causing organisms. The sensors detected cholera and botulism toxins, similar to those recently discovered in fruit and fast food hamburgers. These toxins are responsible for hundreds of American deaths each year. Existing tests require a 24 hour culture, but with develop-

ment, the new sensors could, with development, be placed on packaging for instant and simple identification of contaminated foods and materials. Other sensors are being developed to detect viruses such as the influenza virus.

The William R. Wiley Environmental Molecular Sciences Laboratory (EMSL), a unique scientific user facility for molecular-level research in environmental and life sciences, became fully operational on October 1, 1997, at Pacific Northwest National Laboratory. In addition to its potential for breakthrough research in environmental sciences and remediation technologies, EMSL has advanced the concept of "virtual and remote" laboratory research.

The Large Hadron Collider.—DOE and NSF completed negotiations with the European Physics Lab, CERN, regarding contributions to the Large Hadron Collider (LHC) accelerator and detectors as part of the U.S. participation in the LHC program. The enabling agreements were signed in December 1997. Participation will provide U.S. scientists with continued access to the forefront high energy physics facilities in the next decade.

Partnerships.—For over 50 years, ER and its predecessor organizations, have demonstrated an unwavering commitment to the pursuit of cutting-edge scientific research. More recently, ER has committed to forging more effective partnerships that leverage our research investments and connect us more closely with other federal science programs and the direct beneficiaries of our research. ER is fostering new kinds of partnerships among its national laboratory, university and industry based researchers to maximize the effectiveness and impact of research activities. In partnership with the Department's applied programs, ER is also working to bridge the gap between basic research and application to ensure the continued relevance of our research portfolio and maximize the return on the taxpayers' investment. These partnerships include: joint planning of long-term research; joint solicitations and funding of targeted research efforts; and annual integration workshops that bring together program managers and researchers from across DOE. ER strives to be the premier basic research organization in the basic energy and natural sciences in order to contribute to a more secure energy future with a clean environment, a healthy citizenry, and a strong economy including the ability to meet future challenges and providing a range of energy and policy options necessary for future prosperity.

FISCAL YEAR 1999 PRIORITIES—EXPLORING THE FUTURE TODAY

The highest program priorities in fiscal year 1999 are to move the U.S. toward International Leadership in Neutron Science, provide the scientific basis for a DOE Climate Change Technology Initiative, maintain Scientific User Facilities Utilization, develop DOE applications and technologies for the Next Generation Internet, and renew our commitment to Science Education to tap the human resources of the National Laboratories to ensure an adequate supply of scientists and engineers for the future.

The Spallation Neutron Source.—Since the late 1940's, DOE and its predecessor agencies have been the major supporter of neutron science in the United States. DOE support extends from the earliest work at the Oak Ridge National Laboratory's Graphite Reactor in the 1940's to the Nobel Prize in physics in 1994 for work on neutron scattering. The Spallation Neutron Source (SNS) is included as a line-item construction project in the fiscal year 1999 President's budget at a level of $157.0 million. The purpose of the SNS project is to provide a next-generation short-pulse spallation neutron source for neutron scattering and related research in broad areas of the physical, chemical, materials, biological, and medical sciences. The SNS will be a national user facility open to scientists from universities, industries, and federal laboratories. It is anticipated that the facility will support the work of between 1,000 to 2,000 scientists and engineers each year and that it will meet the national need for neutron science capabilities well into the next century.

The U.S. currently lags behind both Europe and Japan in neutron research capability and planned foreign neutron sources threaten to further increase their lead. The unique information that neutrons provide about the hundreds of materials that we use every day affects us all. For example, information from neutron scattering is used by chemical companies to make better fibers, plastics, and catalysts, and by drug companies to design drugs with higher potency and fewer side effects. Magnetism research with neutrons has led to more efficient electric generators and motors and to improved materials for magnetic recording tapes and computer hard drives. The importance of neutron science for fundamental discoveries and technological development has been enumerated in all of the major materials science studies since the 1970's. These include the 1984 National Research Council study "Major Facilities for Materials Research and Related Disciplines" (the Seitz-Eastman Re-

port); the 1993 DOE Basic Energy Sciences Advisory Committee (BESAC) report "Neutron Sources for America's Future" (the Kohn Panel Report); and the 1996 BESAC Report (Russell Panel Report).

The Conceptual Design Report was prepared by a team involving several DOE laboratories. Lawrence Berkeley National Laboratory is responsible for the ion source; Los Alamos National Laboratory for the linear accelerators; Brookhaven National Laboratory for the compressor ring; and Argonne National Laboratory and Oak Ridge National Laboratory for the target and instrumentation. Oak Ridge National Laboratory has overall responsibility for the project. In preparing the Conceptual Design Report, the SNS project used internal technical reviews, international collaborations, and workshops involving technical experts and the user community. Technical reviews were held for the accelerator systems, the target station, and the conventional facilities. Four workshops were held on various aspects of the design and technology challenges. Based on the recommendations of the scientific community, particularly the 1996 Russell Panel Report, the SNS Conceptual Design was completed in June of 1997. At an initial operating power of 1 megawatt, the design will create the most powerful spallation source in the world.

We developed the conceptual design focusing on the technical specifics of the project and the needs of the scientific community, decoupled from the site preference. Cost differences associated with different sites will be minimal and will be associated with site preparation and, perhaps, minor differences in labor rates. The final decision on the location of the Spallation Neutron Source has not been made and will come in the first quarter of the calendar year 1999, after alternative sites are evaluated in the Environmental Impact Statement.

The SNS Total Project Cost (over 7 year schedule) is $1,332.8 million. In August of 1997, ER's Division of Construction Management reviewed the Design with a team of 60 experts and concluded that the design was credible and the costs reasonable. The DOE Independent Cost Estimate done by Burns and Roe, validated the cost to within less than 1 percent. On December 23, 1997, Secretary Peña reviewed and approved the SNS Baseline. The fiscal year 1999 request will allow the start of Title I design activities, initiation of subcontracts and long-lead procurements, and continuation of critical research and development work necessary to reduce technical and schedule risks in this project.

One of the major technology decisions—a full-energy linac with an accumulator ring versus a rapid cycling synchrotron—was considered in great detail and was the subject of numerous discussions and review. This was perhaps the most vigorously discussed aspect of the entire project. The DOE Review of the CDR summarized the findings of the community on this issue as follows:

"To address the needs expressed by the neutron community, the NSNS team examined the relative merits of several technology options, including a full-energy linac plus accumulator ring versus a lower-energy linac plus rapid cycling synchrotron. While it was realized that the synchrotron option might be less expensive, the reduced technical risks and the flexibility for future upgrades of the full-energy linac and accumulator made this option a superior choice for keeping pace with evolving needs."

Oak Ridge National Laboratory was chosen as the preferred site because of its long standing role in developing neutron science and its role in applying advances in basic materials science to DOE's missions. The Oak Ridge Graphite Reactor was the world's first production reactor and first continuous neutron source. The Graphite Reactor produced an array of radioisotopes for defense, medicine, industry and research. Two Oak Ridge researchers, Clifford Shull and E.O. Wollan realized that the reactor's neutrons could be just as useful for probing matter as for transmuting it. In a series of pioneering experiments, Shull and Wollan used neutron diffraction, or scattering, to reveal structural details and magnetic properties never before seen. The science of neutron scattering was thus born at Oak Ridge in the late 1940's—an event recognized in 1994 by the award of a Nobel Prize in Physics to Clifford Shull. To demonstrate the State of Tennessee's backing for the SNS project, Governor Don Sundquist has pledged $8.0 million for a user support facility, which will include office space, general computing capabilities, and dormitory space for students.

As neutron scattering flourished, Oak Ridge physicists developed and harnessed these and other powerful research tools, such as accelerators, in the study and manipulation of materials. The Oak Ridge National Laboratory High Flux Isotope Reactor is one of the world's most productive research reactors, capable of creating radioisotopes, exposing alloys to brutal radiation intensities and revealing the molecular architecture of plastics and magnetic materials. Oak Ridge's high-strength, high-temperature alloys lead to tougher power plants and trucks while reinforced ceramics form the world's fastest, most durable machining tools; and Oak Ridge

radioisotopes enabled millions of home smoke detectors and an estimated 100 million medical diagnostic procedures each year. Surface-treated plastics, recently developed at Oak Ridge, may soon find their way into both fighter jets and credit cards while fundamental contributions to semiconductor science are already etched into every computer chip made today.

We are organizing our management at the labs, the field offices, and headquarters to be ready for prompt initiation of the project in fiscal year 1999. Key lab management positions such as the Associate Laboratory Director for the SNS, the Deputy Project Director, the Engineering Manager, and the Science Director have been filled. Senior Team Leaders have been appointed at all of the participating laboratories. The Cost and Schedule Control System is being developed and will be in place before construction begins.

In addition to project management, a Steering Committee has been formed, consisting of distinguished members of the neutron science community to provide input on instrumentation and user needs to the laboratory. The Megascience Forum of the Organization for Economic Cooperation and Development has formed a Working Group on Neutron Sources that includes in its scope of activities cooperation in research and development for new neutron sources. Agreements are already in place with England's Rutherford Appleton Laboratory and the European Spallation Source project to allow joint research and development.

Climate Change Technology Initiative.—Energy drives our economy but also challenges environmental stewardship locally, regionally and globally. About 85 percent of human generated greenhouse gas emissions are associated with energy production and use. To control or reduce these emissions we must rethink our use of carbon-based fuels. New technologies for efficient fossil fuel use, carbon sequestration, or use of renewable fuels will be key. The foundation for both technology and policy innovation is new knowledge. Building on existing programs and capabilities, DOE is proposing to contribute to the President's Climate Change Technology Initiative by expanding its energy science and technology programs. The fiscal year 1999 budget request provides $27.0 million for Energy Research programs.

Within the Climate Change Technology Initiative, Energy Research will provide the science base for new technologies that will lead to reduced greenhouse gas emissions. For example: fundamental materials science will enable low-friction, lightweight, and nano-scale materials that improve energy efficiency; biomimetic (biological-mimicking) chemistry such as artificial photosynthetic system, biochemistry, and molecular genetic analysis will promote low- and no-carbon emitting energy sources such as hydrogen; catalysis research will result in advanced, energy efficient chemical processes, for example, improving the catalytic converters in automobiles; and the natural carbon sequestration processes of ecological systems, such as forests and oceans, will be explored for possible enhancements. These topics and their integration into our existing programs arise from the recommendations of a draft report from a set of 1997 Energy Research workshops entitled "Carbon Management: Fundamental Research Needs Assessment," as well as the President's Committee of Advisors on Science and Technology (PCAST) report on Energy R&D entitled "Federal Energy Research and Development for the Challenges of the Twenty-First Century."

The expanded Energy Research efforts in carbon management will be closely coordinated with DOE's technology programs. Many activities will impact the Office of Energy Efficiency and Renewable Energy by providing technology options for increasing efficiency and reducing energy consumption. The basic research program will also provide the knowledge base needed to increase the use of renewable resources and alternate energy sources. Other aspects of the research program impact the Office of Fossil Energy by providing a foundation for effective and safe underground sequestration, enhanced natural sequestration on land and in the oceans, new materials, a better understanding of combustion, and improved catalysts. In support of this initiative the Biological and Environmental Research program will be increased by $11.0 million. This increase supports research on the determination of which biochemical mechanisms and natural systems of plants, interacting with the components of their native environments, can be induced to increase their net utilization of atmospheric carbon dioxide, thus reducing carbon dioxide in the atmosphere. Ocean sequestration of carbon will be studied to identify and enhance key pathways by which marine microorganisms sequester carbon in the oceans. The microbial genome program will sequence the genomes of methane-producing and hydrogen-producing microbes. The microbial sequences will enable the identification of the key genetic components of the organisms that regulate these gases. Once we identify and understand more fully how the enzymes and organisms operate, we will be able to evaluate their potential use in producing methane or hydrogen from either fossil fuels or other carbon sources, including biomass and perhaps some waste products. For instance, recently discovered "extremophile" organisms could be used

to engineer biological entities that could ingest a feedstock like methane, split off carbon dioxide for sequestration, and give off hydrogen. This activity capitalizes on the significant accomplishments of our genome investments that have increased sequencing rates and capabilities and on our unique work in microbial genome sequencing.

The Basic Energy Science program will be increased by $16.0 million in materials sciences, chemical sciences, geosciences, and energy biosciences. Investments in materials sciences will enable the derivation of new and improved materials for: more efficient combustion; improved performance and corrosion resistance in high temperature applications; reduced energy loss from magnetic materials; and improved efficiency in the conversion of light to electricity. Basic research in chemical sciences for carbon management includes multidisciplinary efforts to reduce carbon dioxide emissions through catalytic and photochemical reduction of carbon dioxide to specialty chemicals or hydrocarbons and improved fundamental understanding of the chemistries of combustion to improve combustion and reduce emissions. Geoscience will support basic research in areas of geophysics and geochemistry, that impact carbon dioxide sequestration in subsurface geologic formations. In energy biosciences, there are a number of unexplored opportunities in photosynthesis that complement the current work in the biophysics and biochemistry of energy capture. Studies in this area are central to understanding global carbon cycling.

Scientific Facilities Utilization.—Each year, over 15,000 university, industry, and government sponsored scientists conduct cutting edge experiments at these large and small user facilities that include particle accelerators, neutron sources, synchrotron light sources, and smaller facilities. To meet the demand for operating time and to improve research capabilities at existing facilities, the Science Facilities Utilization Initiative began in fiscal year 1996. In fiscal year 1999 we maintain the Science Facilities Utilization Initiative with a renewed commitment to operate our facilities and sustain adequate operating levels. An increase of $84.8 million in fiscal year 1999 will raise total ER support for facilities to $1.0 billion. The increase will enable ER to sustain or expand utilization of scientific user facilities nationwide throughout the Basic Energy Sciences, High Energy Physics, Nuclear Physics, Biological and Environmental Research, and Computational and Technology Research programs.

In Basic Energy Sciences, the fiscal year 1999 request includes $317.0 million to maintain support of the scientific user facilities, an increase of $46.3 million. This funding includes increases for the synchrotron radiation light sources and for the neutron scattering facilities to adjust for increased cost-of-living expenses. In addition, in accord with the highest recommendations of the Basic Energy Sciences Advisory Committee (BESAC) Panel on Synchrotron Radiation Sources and Science (the Birgeneau Panel), additional funds are provided to the National Synchrotron Light Source for increased support for users and to the light source community for instrumentation and beamline construction at the light sources; the latter funds will be allocated via peer review. Research and development in support of Spallation Neutron Source (SNS) construction is increased and is included in the Science Facilities Utilization Initiative increase. Finally, increased research activities are planned for the Combustion Research Facility, which will complete construction of Phase II in fiscal year 1999. These increases were made possible because, in fiscal year 1999, all funds associated with the SNS were added as an increment above the base program. Research communities that have benefitted from the BES supported Science Facilities Utilization Initiative include materials sciences, chemical sciences, earth and geosciences, environmental sciences, structural biology, superconductor technology, medical research, and industrial technology development.

For High Energy and Nuclear Physics (HENP), the Scientific Facilities Utilization Initiative has meant a focus on providing funding for a high level of operation of the accelerator facilities. For optimum scientific progress in HENP, a balanced strategy is essential. Operation of facilities, support for the (mostly university based) researchers using the facilities, and support for R&D and fabrication of facility upgrades for enhanced future capabilities must be carefully balanced. An increase of $36.6 million in HENP in fiscal year 1999, will ensure aggressive and successful commissioning and improve the computing capability at the Stanford Linear Accelerator Center's (SLAC) B-factory, the Fermilab Main Injector, and the Brookhaven National Laboratory Relativistic Heavy Ion Collider (RHIC) in order to increase the productivity of users when these facilities go on-line. Some of the increase will go to university groups to improve their productivity on site. In addition, this funding will provide for about 26 weeks of operation of the Alternating Gradient Synchrotron (AGS) at Brookhaven for High Energy Physics research. The transfer of the AGS to the Nuclear Physics program for use as the injector for RHIC will occur during the 3rd Quarter and RHIC operations will begin in the 4th Quarter of fiscal year 1999.

Scientists supported under the President's Climate Change Technology Initiative will have the opportunity to take advantage of the unique research capabilities provided by Energy Research. For example, research results from the Climate Change Technology Initiative on methane and hydrogen producing microorganisms and on marine microorganisms will develop, in part, through structural biology studies conducted at the DOE light sources. They will also extend the use, and develop new applications and techniques, of the range of spectroscopies available at both the synchrotron sources and the William R. Wiley Environmental Molecular Sciences Laboratory, to be able to identify and quantify species critical to carbon fixation in model and natural systems, as well as within plant roots, soil particles, bacteria, and other components of the ecological system involved in the carbon fixation processes. In addition, Climate Change Technology Initiative researchers will make use of Energy Research's Free Air Carbon Dioxide Enhancement Experiment and the AmeriFlux carbon network.

The user community is extremely pleased with the results of the Scientific Facilities Utilization Initiative as seen in many letters and customer surveys. However, the full impact of the Initiative has not yet been realized since new beamlines and instrumentation are not yet fully operational. Many of the funding commitments for instrumentation are spread over multiple years and continued support in fiscal year 1999 is important to the success of this Initiative.

The Next Generation Internet.—Key to the solution of large complex multidisciplinary problems is the ability to maintain strong communications and collaborations among researchers in remote locations. As the complexity of problems and the importance of international collaboration grows, it increases the need to communicate and transmit massive amounts of data. DOE currently utilizes advanced networks to provide thousands of remote users nationwide with access to its large, unique computer facilities. In addition, DOE uses the internet to link researchers in universities, laboratories, and industry who are working to solve the multidisciplinary problems that underpin the DOE mission. These problems include computing the effects of greenhouse gases on global warming, designing the next generation of clean diesel engines, and guaranteeing the safety of the nuclear stockpile. As a result, DOE's projected data transmission requirements of about a thousand-trillion bytes per year (peta bytes/year) will critically stress existing internet capabilities.

The Next Generation Internet (NGI) is important to DOE because we support thousands of teams of researchers spread across the world. The NGI network capabilities and services are necessary to advance mission-critical applications in our science and technology programs that are carried out through collaborations between remote institutions. Without the NGI, DOE will not make the kind of progress on its mission-critical programs that NGI funding will enable. Accessing and visualizing large scientific data sets are critical to the future of high energy and nuclear physics, genome research, and other DOE programs. Prompt development and integration of NGI technologies and infrastructure is absolutely essential for making DOE's unique online facilities, supercomputers, and data sets securely and efficiently available to remote researchers.

In addition, DOE participation is important to NGI because adapting our scientific applications to the advanced NGI technologies and networks will provide the important tests for stressing the new network technologies. If DOE researchers are not on the NGI networks then these tests cannot occur. DOE's ESnet is one of the most advanced research networks supported by the federal government. A critical issue for the NGI will be testing the interconnection of high speed and advanced capability networks of different kinds. If ESnet is not involved, that goal of the NGI program will be seriously hampered. DOE applications require advanced production network services, as well as the ability to "live in the future" through the early use of experimental technologies. In order to concurrently satisfy these competing goals and remain fiscally responsible, DOE will have to support both types of traffic on as much of the same network infrastructure as possible. Other agencies and the university community face the same problem, and therefore will directly benefit from DOE's work in this area. DOE's NGI research and development of intelligent middleware for DOE applications will also benefit other "application agencies," such as NASA, NIH, and NSF, as well as university applications.

The fiscal year 1999 request includes $22.0 million for the DOE NGI program. This program has three major components: core network research, enhancements through intelligent software and "middleware" [software between the computer operating system and the network application to allow the two to work together properly], and a new DOE- University partnership that enhances the collaborative application environment through joint DOE-University NGI technology development and deployment. All of these components cut across and make contributions to the three

NGI goals of technology development, advanced testbed infrastructure, and revolutionary applications. The Core Network Research component focuses on developing new technologies and capabilities to be integrated into the network infrastructure. The middleware component focuses on providing easy-to-use interfaces and software to DOE's applications so that they can ascertain the status of the network and then intelligently and dynamically make the best use of that infrastructure to support their application. DOE will enhance DOE-University collaborative research on DOE mission critical applications by defining a new NGI-based partnership. This partnership will focus on jointly developing NGI technologies, accelerating the establishment of end-to-end DOE Laboratory to Campus network and testbed infrastructures, and adapting DOE application codes at both the labs and universities to support DOE programs.

Science Education.—The ER programs support university faculty, graduate students and post-docs in specific areas as part of their ongoing research efforts. ER also operates its unique research facilities for the peer reviewed use of university scientists. However, the scientific and technical challenges of the DOE missions demand the availability of an adequate and diverse supply of excellent scientists, engineers, and technicians for the future. Therefore, the Department also uses the resources of its national laboratories to provide hands-on research opportunities to undergraduate students and faculty, and to K–12 teachers to contribute to the national effort to improve math and science education.

In line with this educational philosophy, ER's fiscal year 1999 budget includes a modest request to support University and Science Education (USE) programs aimed at maintaining a diversity of students in the science pipeline from small colleges and universities and minority serving institutions across the country. The Department has requested $15.0 million to reestablish this effort and provide a focus for DOE corporate investments in the next generation of scientists and engineers in support of DOE missions. The proposed USE program will support activities that utilize DOE resources in partnership with other agencies thereby ensuring against duplication of efforts. For example, DOE is working with the National Science Foundation and the Department of Education to leverage our substantial investments in science and technology facilities and personnel in support of national goals in science education. By opening the National Laboratories to students and teachers, providing them with hands-on research opportunities and other technical tools, DOE fills an important gap in math and science education across the nation. The internet provides an excellent opportunity for DOE to utilize its scientific infrastructure to advance science education with minimal capital and opportunity costs. The proposed USE program will make extensive use of internet tools both for outreach and coordination.

The DOE fiscal year 1999 education initiative is extremely important and vital to help improve our nation's understanding of science. In particular our kids and teachers. The Secretary has set an agenda, in partnership with the National Science Foundation that will help train thousands of teachers in science and technology and also develop a mechanism to distribute this knowledge via the internet.

The Large Hadron Collider.—On December 8, 1997, the Secretary of Energy and the Director of the National Science Foundation took on a historic, national responsibility when they, and the President of the CERN Council and the Director General of CERN, signed the "International Co-operation Agreement Concerning Scientific and Technical Co-operation on Large Hadron Collider Activities". The LHC Agreement represents the largest commitment ever made by DOE and NSF to an international project overseas. We realize that this unique project poses new management challenges, and have, in partnership with NSF, taken steps to ensure effective coordination and strong leadership of the U.S. part of the LHC project.

DOE, NSF and CERN have established a management structure that looks at the U.S. contributions from the various perspectives entailed in an international research program. The Agreement with CERN established a Co-operation Committee to monitor and facilitate activities with annual meetings beginning this spring. DOE and NSF are now official Observers at the CERN Council, the governing body of CERN. As Observers, DOE and NSF receive the same information and reports as Member State delegates on the LHC Project, and can influence the deliberations of the Council on the LHC. By being part of the Committee of Council, a closed session of the CERN Council which meets quarterly, DOE and NSF now have the capability (and the forum) to discuss privately LHC concerns with CERN management. DOE and NSF also have full membership in the Resource Review Boards that monitor and oversee resource matters related to LHC experiments.

DOE and NSF are forming a Joint Oversight Group, the decision-making body that will be responsible for the joint co-ordination, oversight and programmatic direction of DOE and NSF activities regarding the U.S. LHC effort. Its purpose is to

ensure that the commitments made to CERN (and the U.S. Congress) under the Cooperation Agreement and Protocols are met in a timely and effective manner, and that DOE and NSF are reliable, predictable, and credible international partners with CERN and with the Compact Muon Solenoid (CMS) detector and ATLAS (A Torroidol LHC ApparatuS) detector collaborations. A U.S. LHC Program Manager located at DOE Headquarters and a U.S. LHC Project Manager located at Fermilab, both federal employees, will support the work of the Joint Oversight Group. Reporting to the U.S. LHC Program and Project Managers are the individuals with the technical expertise and experience to design, build and operate the in-kind contributions that are part of the U.S. LHC effort.

Under the LHC Agreement, DOE is to contribute $200.0 million worth of goods and services for the LHC accelerator over ten years. The U.S. LHC Accelerator Project Manager, an employee of Fermilab, is responsible for the programmatic coordination and management of the $110.0 million worth of high-tech hardware for the technically challenging LHC Interaction Regions to be built by Brookhaven National Laboratory, Fermilab and the Lawrence Berkeley National Laboratory and for advising DOE on the $90.0 million worth of procurements from U.S. industry.

The ATLAS and CMS detectors are being built by international Collaborations in close coordination with CERN. DOE and NSF will provide $250.0 million and $81.0 million respectively for goods and services for the ATLAS and CMS detectors, with most of those funds provided to U.S. universities. DOE and NSF communicate and interact with these Collaborations primarily through the ATLAS and CMS Resources Review Boards convened by CERN and through the U.S. ATLAS and U.S. CMS Project Managers, non-federal employees situated, respectively, at Brookhaven and Fermilab. Currently, they are completing Project Management Plans which delineate the organization and distribution of management responsibilities within the U.S. ATLAS and U.S. CMS efforts.

In December 1997, LHC management informed the CERN Council that the project is advancing according to schedule and within budget. DOE and NSF are active members of the collaboration with a management structure in place to assure responsible stewardship for the resources devoted to this effort.

ITER and the Fusion Transition.—In fiscal year 1999, the fusion energy sciences program will continue the restructuring recommended in 1996 by the Fusion Energy Advisory Committee to a program that emphasizes science, with a long-term energy goal. In fulfilling our mandate to restructure the program, we have shut down the Tokamak Fusion Test Reactor (TFTR) after obtaining significant scientific results and setting a world record for the production of fusion energy. The money saved by shutting down TFTR is being used for an initiative in plasma science that introduces young scientists with fresh ideas into the program. In addition, a reinvigorated program of research on alternative fusion concepts and better use of our remaining tokamak facilities has been put in place.

International cooperation is, and will continue to be, a vital part of our fusion program. It is essential to our ability to participate in large scale experiments and to advance the energy goal of the fusion program. We plan to expand our collaborative activities with our partners as long as such collaborations are beneficial to the restructured program.

The largest of our international fusion activities, the International Thermonuclear Experimental Reactor (ITER) project, has proven to be a valuable focusing element for our program both in terms of the technical product, which is excellent, and the process by which we work together. In July 1998, the ITER Agreement between the United States, the European Union, Japan and the Russian Federation for conducting the Engineering Design Activities (EDA) is scheduled to expire. The four ITER Parties are working toward an extension of the Agreement for three years to continue international collaborations in fusion, including the additional activities that may be required to be ready for construction decisions in the 2000–2001 time frame in case there is the interest to proceed.

The four ITER Parties are coming to the view that we should plan now to evaluate possibilities for reducing the cost of ITER, in the event that the parties are financially unable to proceed with construction of the current design. Therefore, for fiscal year 1999, the U.S. will refocus its ITER contribution toward the evaluation of a variety of lower-cost design options while reducing our participation in ITER baseline design activities.

The restructuring of our participation in ITER will allow further reallocation of funds to high priority science and technology activities in the fiscal year 1999 budget. Enhanced science activities include increased research operations and modifications to the Alcator C–MOD and DIII–D experiments, additional alternate concept experiments, and increases in theory efforts, collaborations on existing experiments overseas, and plasma science initiatives. With the restructuring of our participation

in ITER, we are refocusing most of our technology efforts on the needs of existing and planned domestic and international experiments. Much of these efforts will likely be beneficial to ITER as well. The remainder of our technology effort will focus on providing the knowledge base needed in the longer term for an attractive fusion energy source.

In particular, we have started a coordinated national effort on a facility that will be located at the Princeton Plasma Physics Laboratory (PPPL). This facility, the National Spherical Torus Experiment (NSTX), is a proof-of-principle scale, innovative fusion concept experiment with exciting scientific potential. During the past year, PPPL and its collaborators, Oak Ridge National Laboratory, Columbia University, and the University of Washington, have made rapid progress on completing the design and initiating component fabrication for the NSTX. Their work is on schedule and within budget; we expect to begin operations in mid-fiscal year 1999. Work has also begun to form an NSTX national research team through an open solicitation process whereby scientists across the country have been invited to participate in various topical areas of research. In addition, scientific collaborations are continuing to develop between NSTX and similar efforts on spherical torus research in England and Russia, where complementary experiments will begin operations at about the same time.

CONCLUSIONS

The significant increase in the fiscal year 1999 budget for the Office of Energy Research recognizes the critical role that fundamental knowledge plays in achieving the mission of the Department as well as for the general advancement of the Nation's economy and the welfare of its citizens. The SNS, the Scientific Facilities Utilization, and Next Generation Internet initiatives will build upon and sustain the Department's role in the development and operation of large, unique scientific instruments and facilities. The Energy Research part of the President's Climate Change Technology Initiative will provide fundamental knowledge for a long term portfolio of clean, efficient energy technologies. On behalf of the Administration and the Department, I am pleased to present this budget for Energy Research programs and welcome the challenge to deliver the required results.

ATTACHMENT

THE PROGRAMS OF THE OFFICE OF ENERGY RESEARCH

Fiscal year 1998 appropriation—$2,474.7 million; fiscal year 1999 request—$2,720.5 million

The Energy Research budget request of $2,720.5 million for fiscal year 1999 is shown in Table 1. Energy Research is seeking $836.1 million for its Basic Energy Sciences (BES) program, $392.6 million for its Biological and Environmental Research (BER) program, $691.0 million for its High Energy Physics (HEP) program, $332.6 million for the Nuclear Physics (NP) program, $228.2 million for the Fusion Energy Sciences (FES) program, and $160.6 million for Computational and Technology Research (CTR). The request also includes $15.0 million for the University and Science Education program, $21.3 million for the Multiprogram Energy Laboratories Facilities support program, $39.9 million for Energy Research Program Direction, and $1.0 million for Energy Research Analyses, and $9.8 million for the Technical Information Program. Prior year Superconducting Super Collider funds in the amount of $7.6 million not needed for termination activities are used to offset the fiscal year 1999 appropriation request.

BASIC ENERGY SCIENCES

Fiscal year 1998 appropriation—$667.3 million; fiscal year 1999 request—$836.1 million (Figure 1)

The Basic Energy Sciences (BES) program fosters and supports fundamental research in the natural sciences and engineering leading to new and improved energy technologies and to understanding and mitigating the environmental impacts of energy technologies. The BES program obtains fundamental knowledge by supporting innovative, peer-reviewed basic research in areas important to the Department of Energy mission (see Figure 1).

FIGURE 1.—*Basic Energy Sciences*

[In millions of dollars]

Construction	132.4

Engineering and Geosciences	44.4
Materials Sciences	417.2
Chemical Sciences	209.6
Energy Biosciences	32.5
Total	836.1

The BES program is a principal sponsor of fundamental research in the U.S. and funds more than 2,400 researchers at 200 institutions nationwide. In fiscal year 1997, principal investigators funded by BES won 70 major prizes and awards sponsored by 34 professional societies, and 57 BES-supported researchers were newly elected Fellows of 24 professional societies. In addition, ten principal investigators became members of the National Academy of Sciences in 1997, and five were inducted to the National Academy of Engineering. Paramount among the honors for BES in fiscal year 1997 were Nobel Prizes. The 1997 Nobel Prize in Chemistry, shared by BES researcher Paul D. Boyer, was the fourth Nobel Prize awarded to BES principal investigators in the four years.

The BES program supports the missions of the Department of Energy (DOE) by promoting the transfer of the results of basic research to contribute to DOE missions in areas of energy efficiency, renewable energy resources, improved use of fossil fuels, reduced environmental impacts of energy production and use, science-based stockpile stewardship, and future fusion energy sources by using established management practices to link BES staff and BES-supported principal investigators with their counterparts in the energy technology offices and in industry. For example, such practices include co-funding and collocating basic research programs supported by BES with applied research programs supported by the technology offices at DOE laboratories. In addition, the Partnerships for Academic-Industrial Research (PAIR) Program, to be initiated in fiscal year 1999, will link basic researchers in academia with those in industry.

To fulfill its mission, the BES program plans, constructs, and operates premier national scientific user facilities to serve researchers at universities, national laboratories, and industrial laboratories, thus enabling the acquisition of new scientific knowledge. These facilities include synchrotron radiation light sources, high-flux neutron sources, electron-beam microcharacterization centers, and specialized facilities such as the Combustion Research Facility. BES encourages use of these facilities in areas important to BES and also in areas that extend beyond the scope of BES activities, such as structural biology, environmental science, medical imaging, rational drug design, micromachining, and industrial technologies. Open to all qualified researchers, BES facilities have more than 5,000 users, including scientists from about 100 U.S. companies.

The BES program ensures stable research communities in critical areas to maintain our domestic ability to respond quickly and appropriately to national needs and scientific opportunities. For example, BES serves as the nation's primary or sole supporter of such important subdisciplines as heavy element chemistry, natural and artificial solar energy conversion, catalysis, organometallic chemistry, combustion related science, separations science, neutron science, radiation chemistry, and radiation effects in materials.

A BES initiative in Complex and Collective Phenomena will be expanding the frontiers of basic research in fiscal year 1999. Research under this initiative is intended to be revolutionary rather than evolutionary, and it is expected to involve multidisciplinary and/or interdisciplinary efforts. Further the Complex and Collective Phenomena initiative is expected to bridge the gap between an atomic level understanding and a continuum mechanics understanding of complex and collective phenomena. For example, understanding materials that involve collective phenomena—such as superconductivity—will help to develop revolutionary new materials that are needed for the next generation of energy technologies.

Materials Sciences.—The Materials Sciences subprogram supports basic research in condensed matter physics, metals and ceramics sciences, and materials chemistry. This basic research seeks to understand the atomistic basis of materials properties and behavior and how to make materials perform better at acceptable cost through new methods of synthesis and processing. Basic research is supported in corrosion, metals, ceramics, alloys, semiconductors, superconductors, polymers, metallic glasses, ceramic matrix composites, non-destructive evaluation, magnetic materials, surface science, neutron and x-ray scattering, chemical and physical properties, and new instrumentation. Ultimately such research leads to the development of materials that improve the efficiency, economy, environmental impact, and safety in energy generation, conversion, transmission, and use.

In fiscal year 1999, the Materials Sciences subprogram will support research routes to improved carbon management in support of the Climate Change Tech-

nology Initiative which include: reducing fuel consumption (and consequently emissions) via higher temperature operation through the use of improved heat and corrosion resistant alloys; reducing energy losses in motors via improved magnetic materials; and displacing fossil fuels with higher-efficiency photovoltaic cells. Materials Sciences research under the Complex and Collective Phenomena initiative in fiscal year 1999 will focus on new classes of magnetic materials and their behavior in thin films and layered arrangements; new classes of alloys; and an increased understanding of mechanical behavior between the atomic scale and the macroscopic continuum model.

Chemical Sciences.—The Chemical Sciences subprogram has two major components. One major component is comprised of atomic, molecular and optical physics; chemical physics; photochemistry; and radiation chemistry. This research enables the production of more efficient combustion systems with reduced emissions of pollutants, and it also broadens our knowledge of solar photoconversion processes resulting in new, improved systems and production methods. The other major component of the research program is comprised of inorganic chemistry, organic chemistry, analytical chemistry, separations science, heavy element chemistry, and aspects of chemical engineering sciences. This research has resulted in improvements to known catalytic systems for the production of fuels and chemicals; better analytical methods for applications in energy processes and environmental sciences; and new knowledge of actinide elements and separations important for environmental remediation and waste management.

In fiscal year 1999, as part of the Climate Change Technology Initiative, chemical physics and photochemistry will provide knowledge that enables more efficient combustion, a new understanding of the photochemical conversion of CO_2 and the direct conversion of solar radiation to electricity. Separations science, physical chemistry and inorganic chemistry enable new catalysts for converting fuels to carbon dioxide and hydrogen; carbon dioxide conversion to chemicals, separation of the conversion components; and new electrochemical energy production and storage systems. Chemical Sciences research in fiscal year 1999 under the Complex and Collective Phenomena initiative would fall in the areas of atomic, molecular and optical physics with a focus on scaling in space and time, functional synthesis, and improved photochemical processes.

Engineering and Geosciences.—In Engineering Research, the goals are to extend the body of knowledge underlying current engineering practice to create new options for improving energy efficiency and to broaden the technical and conceptual knowledge base for solving the engineering problems of energy technologies. In Geosciences Research, the goal is for fundamental knowledge of the processes that transport, concentrate, emplace, and modify energy and mineral resources and the byproducts of energy production. The research supports existing energy technologies and strengthens the foundation for the development of future energy technologies to improve efficiency, reduce pollution, and increase energy supplies, while improving the effectiveness of environmental remediation.

In fiscal year 1999, the Geosciences Research program will contribute to the Climate Change Technology Initiative by providing the science for improved characterization of subsurface formations and their host potential for carbon dioxide sequestration. Geomechanical studies and research on rock-fluid interactions will support carbon dioxide injection technologies, reservoir storage capacities, and long-term storage stability. Research concerning the physics of multiphase flow in fractured rock systems will provide the basis not only for advancing the predictability of terrestrial carbon dioxide sequestration, but also for providing the basis for improved efficiency of fossil energy and geothermal energy production. Research on Complex and Collective Phenomena in fiscal year 1997 will address: the coupling between geochemical, hydrodynamic, mechanical, and thermal processes in shallow crustal conditions; the effects of heterogeneity and scale on geological structures, transport processes, and properties; and non-linear controls in processing.

Energy Biosciences.—The Energy Biosciences subprogram supports research to provide a basic understanding of the biological phenomena associated with the capture, transformation, storage and utilization of energy. Research on plants and nonmedical microorganisms focuses on a range of biological processes including photosynthesis, bioenergetics, primary and secondary metabolism, the synthesis and degradation of biopolymers such as lignin and cellulose, anaerobic fermentations, genetic regulation of growth and development, thermophily, e.g., bacterial growth under high temperature, and other phenomena with the potential to impact biological energy production and conversion.

In fiscal year 1999, the Climate Change Technology Initiative will be focused on plant science and fermentative microbiology. Biological systems, particularly plants, algae, and microbes, play a major role in the capture and release of atmospheric

carbon dioxide. The biological processes of carbon dioxide fixation offer numerous possibilities for reducing atmospheric carbon dioxide levels such as recycling the carbon or providing fixed carbon for longer term sequestration. Research in Complex and Collective Phenomena in fiscal year 1999 will examine the fundamental nature of interactions between the biological macromolecules responsible for self-assembly and the effects of their intercommunication.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

Fiscal year 1998 appropriation—$405.9 million; fiscal year 1999 request—$392.6 million (Figure 2)

The Biological and Environmental Research (BER) Program provides fundamental science to support the Department of Energy missions. Through its support of peer reviewed research at national laboratories, universities, and private institutions, the program develops the knowledge needed to identify, understand, and anticipate the long-term health and environmental consequences of energy production, development, and use. The goal of the BER program is to develop the information, scientific "know-how," and fundamental science that underpins new technologies used in the pursuit of detailed understanding of the consequences to health and the environment of energy production, development and use.

FIGURE 2.—*Biolgoical and Environmental Research*

[In millions of dollars]

Medical Applications	43.9
Environmental Remediation	67.5
Environmental Processes	119.2
Life Sciences	162.0
Total	392.6

The integrated, cross-disciplinary nature of the BER program is reflected in its division into four subprograms: Life Sciences, Environmental Processes, Environmental Restoration, and Medical Applications and Measurement Science.

Life Sciences.—During fiscal year 1999, the Department's Human Genome Program (HGP) will continue its major emphasis on enhancing automated high-throughput DNA sequencing. Fiscal year 1999 will be the first year of full operation for the DNA sequencing factory in Walnut Creek, California that will begin operation in August 1998. We are excited by a new partnership between leading genome scientists at our nation's universities and Department of Energy laboratories that will provide additional technology, expertise and resources to the Department's Joint Genome Institute and its DNA sequencing factory. Our sequencing goal for fiscal year 1999 of 40 million bases of DNA is double our fiscal year 1998 goal, indicating our serious commitment to sequence our share of the total human DNA as part of the U.S. and international genome programs.

As more of the human genome is sequenced there will be an increasing need for tools that lead to a rapid understanding of the organization, regulation, and function of the human genome. The fiscal year 1999 request provides for the development of some of these tools by taking advantage of rapid progress that has been made in discovering and understanding the function of new genes in experimental organisms such as yeast, the fruit fly, and the mouse.

Fiscal year 1999 will be another year for rapid and exciting progress in our Microbial Genome Program. This past December, "Science" magazine identified microbial genomics as one of this past year's top 10 fields of discovery. In addition, three of last year's "Hottest 11 Papers in Biology", based on the number of times the papers were cited in the scientific literature, described the complete genomic sequencing of microbes, two of which were funded by BER. The DOE program has supported the sequencing of six of the 13 bacteria whose DNA have been completely sequenced. We plan to complete the sequencing of up to seven additional microbes this year and will be well underway to completely sequencing eight more microbes in fiscal year 1999. These sequencing projects include bacteria important in the remediation of organic pollutants and toxic metals and that process carbon monoxide and produce hydrogen or methane.

As the complete genomic sequences of microbes are determined, the DNA sequences are also analyzed, or annotated, to identify all the potential genes encoded in their DNA and to get clues about their potential functions. This annotation of the microbial genomes is a critical and fascinating part of the Microbial Genome Project. More than half of the genes identified in these newly sequenced microbes are unrelated to any genes that have previously been discovered. These new genes

represent exciting opportunities for future basic research and potential sources of biological resources to be "mined" for future use.

Fiscal year 1999 will also see a linkage with the Microbial Genome Program as we focus on the genetic characterization of methane and hydrogen producing microbes that can be exploited in the development of useful and efficient non-fossil fuel sources and on microbes that can be induced to increase their natural carbon sequestration capabilities.

The fiscal year 1999 request provides for structural biology research to continue developing and supporting DOE national user facilities for scientists to learn the molecular structure of important biological molecules, such as enzymes, antibodies, or other proteins. These facilities, used by scientists from universities, industry, and national laboratories, are critical tools in applications ranging from energy production to environmental remediation. They also provide a means for better understanding the mechanism of action of current drugs and for the design of new drugs to control or treat a variety of diseases.

The fiscal year 1999 request provides for the development of new molecular-based tools for health surveillance, biological dosimetry, and individual susceptibility determination to understand and characterize the risks to human health from exposures to low levels of radiation and chemicals both at home and at work. An emphasis is placed on research that utilizes the unique resources and tools developed in the Department's human genome, structural biology, and cellular and molecular biology programs.

Environmental Processes.—The Environmental Processes program conducts research on a range of issues related to the mission of the U.S. Global Change Research Program. Thus, activities are focused on understanding and predicting the potential consequences on climate and ecological health of energy-related emissions, especially carbon dioxide, from fossil fuel combustion.

As the major federal agency supporting research into climate predictions on the decade-to-century time scale, the DOE has an integrated observational and modeling program focused on predicting climate variability and climate change 10 to 100 years in advance. New generation coupled atmosphere-ocean general circulation models have been developed and will be used to perform simulations of possible climate response to increasing atmospheric concentrations of greenhouse gases. The fiscal year 1999 request provides for continued development of more accurate and computationally efficient models and improvements in the observational data bases and methods necessary to test and verify the capacity of climate models to predict decade to multi-century climate variability.

The fiscal year 1999 request also provides for continued investigation, under the ARM Program, of what has been called the most important barrier to improving these general circulation models—the effect of clouds and water vapor on the Earth's energy balance. This research has already demonstrated that existing climate models may underestimate how much radiation from the sun is absorbed in the atmosphere, a result that may not only affect our ability to improve climate and weather predictions, but that may also lead to improved technologies for accurate positioning of satellites.

The fiscal year 1999 request enables the second atmospheric radiation and cloud station (ARCS) in the Western Tropical Pacific, in Nauru to begin yielding data and for operation to begin at the first polar ARCS in Barrow, Alaska. This will result in a rapid increase in the data being generated from the ARM program. Operation of the Southern Great Plains site in Oklahoma and Kansas, that has been in operation for five years, will continue with at least five intensive observational periods. Data from these sites continue to be openly provided to the interested scientific community. The fiscal year 1999 request will also support a combined unmanned aerospace vehicle (UAV) and manned aircraft mission over the Southern Great Plains Site that will provide essential data on the radiation budget in the cloudy atmosphere to be correlated with measurements of cloud characteristics. The Atmospheric Sciences Program complements these studies with research into ultraviolet-B radiation, aerosols, and mid-latitude stratospheric and tropospheric ozone. Analysis of data measured during the prototype megacity (Mexico City, Mexico) air quality study will be completed.

In addition to these studies on the key physical processes that affect the Earth's atmosphere and climate, the fiscal year 1999 request supports research on the fundamental mechanisms by which terrestrial ecosystems respond to environmental changes such as increased atmospheric carbon dioxide or altered temperature and precipitation. Key to such studies is an understanding of the atmosphere-land-ocean carbon cycle and the impact of energy usage on that cycle. The research provides a scientific basis for assessing the effects of human activities on the Earth's climate and for assessing the need for action to mitigate any adverse change. Beyond their

mutual scientific support, the environmental processes programs are coordinated with other agencies through the National Science and Technology Council's Committee on Environment and Natural Resources.

The fiscal year 1999 request provides for research, that is part of the Climate Change Technology Initiative, focusing on the underpinning science that will enable mitigation of climate change while maintaining a robust national economy. Research will determine which systems of terrestrial plants, interacting with the components of their native environment can be induced to increase the net sequestration of atmospheric carbon dioxide to enhance understanding of the potential to enhance natural carbon sinks on land that could help stabilize or reduce the concentration of atmospheric carbon dioxide. Similarly, research activities on carbon sequestration in oceans will include identification of key pathways by which marine microorganisms enhance carbon flow from the atmosphere to the oceans, ways these pathways might be enhanced, and the mechanisms and role of these microorganisms in sequestering carbon and its transfer from the ocean surface to the deep ocean.

Environmental Remediation.—The fiscal year 1999 request supports research focused on understanding the fundamental physical, chemical, geological, and biological processes that must be marshaled for the development and advancement of new, effective, and efficient processes for the remediation and restoration of the nation's nuclear weapons production sites. The two highest priorities of this subprogram are bioremediation and the operation of the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL) which will have completed its first full year of operation at the beginning of fiscal year 1999. Facility operation supports the operation of the EMSL as a national user facility for basic research that will underpin the development of safe and cost-effective environmental remediation methods and technologies and other environmental research priorities. Another key activity is the continuation of joint scientific endeavors with the Office of Environmental Management, including the transition of basic research into potential field applications.

The fiscal year 1999 request provides for increased research to help resolve many of the questions that today prevent bioremediation from being a major weapon in the arsenal of tools for environmental remediation. The fiscal year 1999 request will provide for the establishment of the first field research center for the Natural and Accelerated Bioremediation Research (NABIR) program, that will be sited after completion of the NEPA process. This site will help correlate the complexities of the natural field environment with the discoveries in more simplified and controlled laboratory settings. Research will include identifying key microbial communities, biotransformation pathways, and biogeochemical processes to enhance the utility of bioremediation, and will begin to develop strategies to represent these processes in predictive models. The fiscal year 1999 request will also further development of the program on bioremediation and its societal implications and concerns, an effort parallel to the ethical, legal, and social implications program within the human genome program. The NABIR program will continue to build on other components of the BER program, most notably activities in structural biology and the microbial genome program. In short, the combination of this research with the research performed at the EMSL will make the BER program an international leader in fundamental molecular and biological sciences that underpin strategies to cleanup the environmental legacy of the Cold War.

Medical Applications and Measurement Science.—The Medical Applications program fosters research to develop beneficial applications of nuclear and other energy-related technologies for medical diagnosis and treatment of patient's problems. The infrastructure promotes a fertile partnership among the major biomedical disciplines of science and technology, biology, and medicine in support of three major research areas which include nuclear medicine, boron neutron capture therapy (BNCT), and instrumentation.

The fiscal year 1999 request provides for research with broad impacts for the understanding, diagnosis, and treatment of disease. These impacts include radiopharmaceutical chemistry and radionuclide imaging instrumentation, the investigations of a broad range of diagnostic and therapeutic applications, the scientific and technological foundation for the major medical specialty of nuclear medicine, and the expansion of a vital industry for radiopharmaceutical development and radionuclide imaging instrumentation. Early phase I/II clinical trials of BNCT at reactor sources of neutrons will be completed for at least 50 patients and a feasibility study of accelerator-based BNCT will be underway.

The technology developed under this program provides for the non-invasive detection and localization of small lesions in the body, the quantitative measurement of dynamic organ function, and the selective treatment of cancer with internal molecular radiation therapy. Nuclear medicine research supported by the Department continues to make contributions that improve the diagnostic accuracy and use of radio-

pharmaceuticals for the study and treatment of coronary artery disease; the effects of smoking, alcoholism and substance abuse; neurodegenerative diseases including Parkinson and Alzheimer diseases; and for mitigation of bone-pain from generalized skeletal cancer metastases. Medical Applications research, in partnership with the Department's human genome and molecular and cellular biology research, is forging new alliances in molecular nuclear medicine for imaging the biochemistry and gene expression of cells and tissues in the body to find not only where some disease processes take place, but to locate and study the action of genes involved in still mysterious normal functions such as learning and memory.

Our measurement science program supports basic research that will lead to the development of new instruments and measurement technologies for direct application to environmental and life sciences research. The scientific knowledge developed under this program is also relevant to the need for new analytical instrumentation in the Department's Office of Environmental Management. The fiscal year 1999 request will enable us to maintain the core capability for developing advanced measurement technologies for environmental and biomedical research at the Department's National Laboratories.

FUSION ENERGY SCIENCES

Fiscal year 1998 appropriation—$229.7 million; fiscal year 1999 request—$228.2 million (Figure 3)

The Fusion Energy Sciences program is a broad-based, fundamental research effort, producing valuable scientific knowledge and practical benefits in the near term and, in cooperation with our international partners, making substantial progress toward an economically and environmentally attractive energy option in the long term. The mission of the Fusion Energy Sciences program is to: "Acquire the knowledge base needed for an economically and environmentally attractive fusion energy source."

This is a time of important progress and discovery in fusion research. The Fusion Energy Sciences program is making great progress in understanding turbulent losses of particles and energy across the magnetic field lines that are used to confine fusion fuels. In addition, the program is identifying and exploring innovative approaches to fusion power that may lead to less costly development paths.

FIGURE 3.—*Fusion Energy Sciences*

[In millions of dollars]

Technology	50.0
Facilities Operations	61.0
Other	6.7
Science	110.5
Total	228.2

Cross-cutting goals of the Fusion Energy Sciences program as developed through stakeholder meetings and endorsed by the Fusion Energy Sciences Advisory Committee are summarized below.

Understand the physics of plasmas, the fourth state of matter.—Plasmas comprise most of the visible universe, both stellar and interstellar, and have many practical applications. Progress in plasma physics has been the prime engine driving progress in fusion research, and conversely, fusion energy has been the dominant motivation for plasma physics research.

Identify and explore innovative and cost-effective development paths to fusion energy.—There is a continuous spectrum of approaches to fusion, from the tokamak, which is the leading reactor candidate, to other magnetic configurations to inertial confinement using particle beams or lasers. The current fusion program is encouraging both research on tokamak improvements and research on other innovative concepts.

Explore the science and technology of energy producing plasmas, the next frontier in fusion research, as a partner in the international effort.—One of the strongest factors that favors fusion power is the potential for self-sustaining operation. Energy from the fusion reaction of deuterium and tritium is released in two components: (1) most of the energy released is in a form that can be extracted and used for commercial purposes; and (2) the remaining energy released is used to replace the energy losses of the confined plasma and to heat the deuterium and tritium sufficiently to sustain the fuel temperature and maintain the reaction process. When this replacement energy exceeds the energy losses, the fusion plasma is said to be "ignited." Understanding the physics of ignited, or self-heated plasmas and develop-

ing the technologies essential for fusion energy are linked goals that are achievable through the cooperative efforts of the world community. The long-term benefits to the United States of being a credible partner in this cooperative effort include ensuring our own scientific and technological integration in the world fusion program and contributing to a major step in the development of fusion as an energy source for a growing world population.

Restructuring Our Participation in ITER.—The largest of our international fusion activities, the International Thermonuclear Experimental Reactor (ITER) project, has proven to be a valuable focusing element for our program both in terms of the product, which is technically excellent, and the process by which we work together. In July 1998, the ITER Agreement among the United States, the European Union, Japan and the Russian Federation for conducting the Engineering Design Activities (EDA) is scheduled to expire. The four ITER Parties are working toward an extension of the Agreement for three years to cover the additional activities necessary to be ready for possible construction decisions in the 2000–2001 time frame.

The four ITER Parties are coming to the view that we should plan now to evaluate possibilities for reducing the cost of ITER, in case we are financially unable to proceed to the construction of the current design. Thus, for fiscal year 1999, the U.S. will refocus its ITER contribution on an evaluation of a variety of lower-cost design options while reducing our participation in ITER baseline design activities.

Reallocation of ITER funds to high priority science and technology activities.—The restructuring of our participation in ITER will allow us to enhance science activities and better use of our remaining tokamak facilities. These enhancements will include increased research operations and modifications to the Alcator C–MOD and DIII–D experiments, additional alternate concept experiments, and increases in the theory efforts, collaborations on existing experiments overseas, and plasma science initiatives.

During our involvement in the six year ITER EDA, most of our fusion technology development activities were focused on the needs of the project. With the restructuring of our participation in ITER, we are refocusing most of our technology efforts on the needs of existing and planned domestic and international experiments. The remainder of our technology effort will focus on providing the knowledge base needed in the longer term for an attractive fusion energy source. It is expected that much of the results obtained from fiscal year 1999 technology development efforts will be applicable to ITER, and we expect to share these results with the other Parties as part of our participation in the ITER project.

Continued Leveraging of Program Resources through International Collaborations.—International cooperation is, and will continue to be, a vital part of our fusion program. It is essential to our ability to participate in large scale experiments and to advance the energy goal of the fusion program. We plan to expand our collaborative activities with our partners as long as such collaborations promise to meet our needs.

Completion of National Spherical Torus Experiment Construction Activities.—We have started a coordinated national effort on a facility that will be located at the Princeton Plasma Physics Laboratory (PPPL). This facility, the National Spherical Torus Experiment (NSTX), is a proof-of-principle scale, innovative fusion concept experiment with exciting scientific potential. During the past year, PPPL and its collaborators, Oak Ridge National Laboratory, Columbia University, and the University of Washington, have made rapid progress on completing the design and initiating component fabrication for the NSTX. Their work is on schedule and within budget; we expect to begin operations in mid-fiscal year 1999.

Creating National Teams that will Use New and Existing Facilities.—Work has begun to form a NSTX national research team through an open solicitation process whereby scientists across the country have been invited to participate in various topical areas of research. In addition, scientific collaborations are continuing to develop between NSTX and similar efforts on spherical torus research in England and Russia, where complementary experiments will begin operations at about the same time.

With the restructuring of the U.S. fusion program and the shutdown of TFTR, the two remaining major U.S. fusion facilities have evolved into national collaborative research programs. Over half of the scientists working on DIII–D at General Atomics in San Diego and a quarter of the scientists working on Alcator C–MOD at MIT are from other major fusion laboratories and universities in the U.S. and abroad. The broad collaborative nature of these experiments is leading to new ways of doing business. For example, remote data analysis is now routine at both facilities, and "brain storming sessions" for the planning of experiments are open to all members of the fusion community through live broadcasts on the internet. The

NSTX, has been planned from the outset as a national collaborative research effort, and has already begun to reach out to future users both in the U.S. and abroad.

COMPUTATIONAL AND TECHNOLOGY RESEARCH

Fiscal year 1998 appropriation—$150.6 million; fiscal year 1999 request—$160.6 million (Figure 4)

The Computational and Technology Research Program (CTR) addresses complex problems important to Department of Energy missions and national goals, through an integrated program in applied mathematical sciences, high performance computing and communications, information infrastructure, advanced energy projects, and technology research. The forefront of scientific research is increasingly multidisciplinary and fast-paced, requiring new research technologies and approaches that keep pace with scientific advance. The CTR program emphasizes multidisciplinary research that builds on the existing capabilities and skills of universities, national laboratories, and industrial research institutions.

FIGURE 4.—*Computational and Technology Research*

[In millions of dollars]

Laboratory Technology Research	16.3
Advanced Energy Projects	3.0
Mathematical, Information and Computation Sciences	141.3
Total	160.6

The CTR program funds research that extends from fundamental investigations to technology development including: High Performance Computing and Communications; the National Information Infrastructure; inter-agency development of the Next Generation Internet; and the joint initiative between Energy Research and Defense Programs—DOE 2000. The CTR program also explores the scientific feasibility of advanced energy concepts and other technology research activities that include multi-year collaborations and technical assistance to small business. The CTR program works closely with Energy Research, Department of Energy, and other agency programs in establishing its research portfolio.

Mathematical, Information, and Computational Sciences.—The Mathematical, Information, and Computational Sciences (MICS) program supports fundamental research, technology development and demonstration in applied mathematical sciences, high performance computing, communications and information infrastructure. These diverse activities are integrated toward: National Collaboratories (NC) that develop tools and capabilities to permit scientists and engineers working at different facilities to collaborate on research as easily as if they were in the same building; and the Advanced Computational Testing and Simulation (ACTS) that develops an integrated set of algorithms, software tools and infrastructure that enable computer simulation to better complement experiment and theory or to be used in place of experiments when real experiments are too dangerous, expensive, or inaccessible. These two strategic thrusts support the mathematics, computational science, and information technology needs of all of the Department of Energy mission areas and are closely coordinated with related activities supported by Defense Programs.

The fiscal year 1999 request includes funding for the DOE 2000 initiative. Support for the Advanced Computational Testing and Simulation piece of this initiative will foster advanced computational testing and simulation tools to attack complex technical problems and accelerate applications critical to Department of Energy missions. Support for the National Collaboratory piece of the DOE 2000 initiative will develop and test a common technology base that will permit scientists and engineers at various remote sites to simultaneously participate in research at large science facilities. The DOE 2000 initiative is coordinated with parallel research in other agencies through the Committee on Computing, Information, and Communication of the National Science and Technology Council, in partnership with other Department of Energy programs.

The MICS subprogram provides supercomputer access and advanced communication capabilities, through the National Energy Research Scientific Computing (NERSC) Center and the Energy Sciences Network (ESnet), to scientific researchers.

The fiscal year 1999 request also includes funding for the Department's participation in the President's NGI Initiative. This initiative, which involves a number of federal agencies, has three goals: (1) promote experimentation with the next generation of networking technologies; (2) develop a next generation network testbed to connect universities and federal research institutions at rates that demonstrate new

networking technologies and support future research; and (3) demonstrate new applications that meet important national goals and missions. This initiative will leverage previous MICS investments in ESnet and other advanced networking technologies. At this level of funding, DOE's goal one activities will focus on developing and deploying technologies that provide DOE applications greater control and management of the network infrastructure, and provide enhanced network interconnection capabilities to support agency and university collaborations. DOE's participation in goal two is focused on connections to six National Laboratories at 100 times today's Internet and two connections to National Laboratories at 1,000 times today's Internet, as well as enhanced support for some strategic university access to DOE facilities and collaborations. DOE's focus in goal three is the enabling of DOE's applications to utilize goal one technologies immediately in DOE's goal two infrastructure, specifically those applications that require University and Laboratory access to DOE's unique facilities. The National Collaboratory Pilot Projects initiated in fiscal year 1997 would continue as NGI applications.

Laboratory Technology Research.—The Laboratory Technology Research (LTR) subprogram supports high risk, energy related research that advances science and technology toward innovative applications that could significantly impact the Nation's energy economy. Laboratory Technology Research is a scientific research program that fosters the production of research results motivated by a practical energy payoff, through formal cost-shared collaborations between the Energy Research (ER) multiprogram laboratories and industry.

Laboratories under the stewardship of the Office of Energy Research conduct breakthrough research in a variety of scientific and technical fields and operate unique scientific facilities for visiting scientists. Viewed as a system, these five laboratories, Argonne National Laboratory, Brookhaven National Laboratory, Lawrence Berkeley National Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory, offer a comprehensive resource for research collaborations. The major component of the LTR research portfolio consists of investments at these laboratories to conduct research that benefits all major stakeholders—the DOE, the industrial collaborators, and the nation. These investments are further leveraged by the participation of an industry partner, using Cooperative Research and Development Agreements (CRADA's). Research proposals are chosen for award using external peer review to ascertain scientific and technical merit. The program focuses on key initiatives and other high leverage areas including advanced materials, intelligent processes and controls, and sustainable environments. Another important component of the LTR program provides rapid access by small business to the research capabilities at the ER multi-program laboratories, using several flexible mechanisms including personnel exchanges and technical consultations with small businesses.

The fiscal year 1999 request will maintain support for technology research in areas that advance science and technology toward innovative energy applications through cost-shared partnerships between the Office of Energy Research multiprogram laboratories and industry.

Advanced Energy Projects.—The Advanced Energy Projects (AEP) subprogram funds research to establish the feasibility of novel, energy-related concepts that span the Department's energy mission and goals. Funded projects are based on innovative ideas that span multiple scientific and technical disciplines and do not fit into any other DOE program area. A common theme for each project is the initial linkage of new research results to an energy application with a potentially significant payoff. Typically, AEP supports projects up to a level of about $250,000 per year for a period of about 3 years. Projects are selected from proposals submitted by universities and national laboratories. Funding criteria emphasize scientific merit as judged by external peer review.

The fiscal year 1999 request supports high-risk research at universities and national laboratories to establish the feasibility of novel energy related concepts that are at an early stage of scientific definition. No new novel, energy related concepts will be initiated in fiscal year 1999.

HIGH ENERGY PHYSICS

Fiscal year 1998 appropriation—$679.7 million; fiscal year 1999 request—$691.0 million (Figure 5)

The Department of Energy provides over 90 percent of the federal support for the nation's high energy physics (also called elementary particle physics) research. High energy physics research seeks to understand the nature of matter and energy at the most fundamental level, as well as the basic forces which govern all processes in nature. High energy physics research requires accelerators and detectors utilizing

state-of-the-art technologies in many areas, including fast electronics, high speed computing, superconducting magnets, and high power radio-frequency devices.

FIGURE 5.—*High Energy Physics*

[In millions of dollars]

Facility Operations	456.6
Construction	21.0
Research and Technology	213.4
Total	691.0

In these areas, high energy physics research has led to many developments with practical applications in the civilian marketplace. High energy physics technology research continues to make major contributions to accelerator technology and develops technical expertise which supports widespread accelerator utilization in other scientific disciplines and industrial processes such as synchrotron light sources and medical diagnostics and treatment.

This program provides the basis for an excellent educational experience for the brightest young scientific minds, so necessary for the program to continue research at the intellectual frontier. Experimental and theoretical researchers from more than 100 universities conduct about three-fourths of the research, with the remainder conducted by staff at the national laboratories. This combination of highly skilled scientists and engineers from universities and our national laboratories contribute significantly to the transfer of technology to other fields.

Progress in high energy physics research depends on the availability of forefront experimental capabilities, effective use of specialized facilities, and new and upgraded facilities designed to take advantage of new technologies and research opportunities. The Department of Energy supports three major high energy accelerator research centers. Each brings unique capabilities to the program and is operated as a national facility available to qualified experimenters around the nation and abroad on the basis of scientific merit of their research proposals. Approximately 2,000 U.S. scientists and 200–300 foreign scientists work at these facilities at any given time.

At the Fermi National Accelerator Laboratory (Fermilab), the Tevatron, the world's highest energy particle accelerator, provides both fixed target and colliding beam research programs. The colliding beam research program benefits from having two major detector facilities, the Collider Detector at Fermilab (CDF) and the D-Zero Detector, which complement each other in their differing technical capabilities. Following on their earlier discovery of the long sought top quark, the CDF and D-Zero collaborations have now measured its mass and production properties. In fiscal year 1999, the Fermilab accelerator complex will operate for about 14 weeks to complete commissioning of the new Main Injector. This will be followed by about 26 weeks of operation in the fixed target mode.

Construction of the Fermilab Main Injector project is on schedule for completion and initial commissioning in fiscal year 1999, and continues within budget. By providing a fivefold increase in collider luminosity, and a doubling of intensity for the fixed target program, this project will greatly enhance the physics capabilities of the Tevatron accelerator and its detector facilities by the end of the decade, and greatly increase the likelihood of major new scientific discoveries early in the next century. The Main Injector will also allow for simultaneous operation of the fixed target and colliding beam research programs, currently not possible.

At the Stanford Linear Accelerator Center (SLAC), the Stanford Linear Collider (SLC) is the world's only operating high energy linear collider. The SLC continues to collect data using its beam of polarized electrons, a capability unique to the SLC which gives physicists an added degree of control over the experimental conditions. In fiscal year 1999, the SLC will be replaced by the B-factory as the principal facility at SLAC, and the SLC will be shut down.

In these SLC experiments, a high energy beam of polarized electrons collides with an unpolarized beam of positrons (the electron's antimatter counterpart) to produce what are referred to as Z particles, the heaviest known elementary particle. More than 200,000 Z particles were observed and recorded by the SLAC Large Detector (SLD) in the latest data run. The SLC data has provided high precision results on the details of electron-positron interactions at high energies.

The SLAC B-factory project is on schedule for completion and commissioning in 1998. The B-factory will provide a high luminosity, asymmetric electron-positron colliding beam facility to study the reasons for the preponderance of matter over antimatter in our universe, a fundamental concept necessary for our very existence. This project will also provide opportunities to pursue a rich program of experiments

in a large number of other areas of intense interest in high energy physics. The project was designed and is being built by SLAC in collaboration with Lawrence Berkeley and Lawrence Livermore National Laboratories. An international collaboration, about half of which is from the U.S. and half from abroad, is building the BaBar detector, the principal experiment at the B-factory. In fiscal year 1999, the B-factory is expected to operate for about 36 weeks in its inaugural data run.

The Alternating Gradient Synchrotron (AGS) at Brookhaven National Laboratory (BNL) will transition, during fiscal year 1999, from primarily being a proton accelerator for the high energy physics program to primarily being the injector for the Relativistic Heavy Ion Collider (RHIC) project in the Nuclear Physics program. During the fiscal year 1998 run, the experiment to search for rare decays of particles called kaons reported preliminary positive results, and the experiment to measure the magnetic properties of the muon successfully completed its initial test run. During fiscal year 1999, the AGS will operate for about 26 weeks in the final major run in the high energy physics program.

The European Laboratory for Particle Physics (CERN) in Geneva, Switzerland, has begun construction of a proton collider, called the Large Hadron Collider (LHC). Formal negotiations for U.S. participation in the LHC began in January 1996, and culminated in December 1997 with the signing of the formal agreement between the U.S. and CERN. While there is a long history of international collaboration in high energy physics experiments, this is the first time the U.S. will contribute significantly to the construction of an accelerator outside the U.S. The agreement is also the first between CERN and the U.S. government.

Participation in the LHC is extremely important to the goals of the U.S. high energy physics program, and over 500 U.S. scientists are involved in the two major LHC detector collaborations and in the magnet/accelerator research and development collaborations. U.S. participation will primarily take the form of the design and fabrication of components and subsystems for the LHC accelerator and the two LHC detectors and will allow CERN to finish the project at full operating capability in the year 2005 instead of 2008. The fiscal year 1999 budget requests $65.0 million for fabrication of components and subsystems for the LHC accelerator and detectors as specified in the agreement with CERN.

The extraordinary benefits to the U.S. include continued access to the energy frontier at what will then be the highest energy accelerator in the world. It will ensure continued world class excellence of our university and national laboratory scientists and will provide training to many students in leading edge science and technology. In addition, most of the U.S. money will be spent on detector and accelerator components manufactured largely by U.S. industries. This will improve the capabilities and expertise of U.S. scientists and industries and will ensure their access to the high-level technologies being developed. The LHC is a significant next step in the internationalization of large scientific construction projects, since in the future, nations will have to work together to build these necessary but expensive research facilities.

NUCLEAR PHYSICS

Fiscal year 1998 appropriation—$320.7 million; fiscal year 1999 request—$332.6 million (Figure 6)

The primary goal of nuclear physics research is to understand the structure and properties of atomic nuclei and the fundamental forces between the constituents that form the nucleus of the atom. Nuclear processes determine essential physical characteristics of our universe and the composition of the matter that forms it.

FIGURE 6.—*Nuclear Physics*

[In millions of dollars]

Heavy Ion Nuclear Physics	150.3
Low Energy Nuclear Physics	33.2
Nuclear Theory	15.6
Construction	16.6
Medium Energy Nuclear Physics	116.9
Total	332.6

Beyond helping to maintain world leadership in basic research, the Nuclear Physics program develops and transfers knowledge to enhance the nation's technological and economic competitiveness in such fields as nuclear medicine. The Nuclear Physics program continues to be a vital source of trained people for fundamental research and for these applied technology areas. The program supports the graduate

training of approximately 450 students per year, and typically 100 Doctorates in nuclear physics are awarded each year at DOE-supported nuclear physics programs. A majority of these highly trained researchers will take positions in high-technology private industry.

Many future nuclear physics investigations will study questions related to the quark presence in composite nuclei. Until the last few years, the fundamental understanding of nuclear properties has been based on the idea of a nucleus composed of protons and neutrons that interact through a combination of weak, strong, and electromagnetic forces. It became clear that achieving a deeper knowledge of many nuclear properties depends on understanding nuclear structure based on quarks and other particles called gluons that bind the quarks together. Quarks and gluons are the building blocks of protons and neutrons (nucleons). The Long Range Plan for the U.S. Nuclear Physics Program, prepared by the nuclear physics community in 1996, has emphasized the importance of addressing the role of quarks in nuclear matter as well as other pressing questions in nuclear science.

Studies of nuclear structure require ultrahigh resolution "microscopes," accelerators that produce particle beams of very high and well-defined energy. These particle beams are the "probes" which have the ability to react to the detailed structure hidden within an atomic nucleus. The Operating Expenses request is designed to provide the maximum operating hours for these facilities, optimized by funding from the Scientific Facilities Initiative, so that researchers may take maximum advantage of their unique capabilities.

Research at the Thomas Jefferson National Accelerator Facility (TJNAF) is now studying the effects due to the presence of quarks in nucleons in the nucleus. Two principal focuses of these studies are to continue to develop an understanding of how the "spin" of a nucleus originates in the quarks, and how to extract the role of different kinds (flavors) of quarks in the makeup of the proton and neutron. However, no one has ever observed a single free quark; they always travel in closely knit groups within nucleons. In fiscal year 1999, TJNAF will operate for 4,500 hours which will allow the completion, continuation, and commencement of several high priority experiments at this new laboratory.

In fiscal year 1999, the Bates Linear Electron Accelerator at the Massachusetts Institute of Technology will operate on a limited schedule of 1,000 hours to concentrate on the construction of a new Bates Large Acceptance Spectrometer (BLAST), a major particle detector which will be used in conjunction with the South Hall Pulse Stretcher Ring. The South Hall Ring and BLAST will enable a unique program using the very high beam currents in the ring and very thin gas targets to pursue a program of research on few-body nuclei. This new program will complement, both in energy range and in experimental capability, the new program at TJNAF, and will be the primary activity at Bates in the future.

A "quark-gluon plasma" will be produced with a second major facility for the study of new "quark-based" nuclear physics, the Relativistic Heavy Ion Collider (RHIC) at the Brookhaven National Laboratory. In fiscal year 1999, RHIC will complete construction and begin operation in the last quarter of the fiscal year. It is predicted that if a collection of nucleons are compressed and heated to a very high temperature by collisions of high energy heavy nuclei, there will be a phase transition to a new state of nuclear matter in which the quarks are "freed" from their nucleon boundaries to form a so-called "quark-gluon plasma", creating conditions in the laboratory that are similar to those of the expanding universe just a few millionths of a second after the Big Bang. RHIC will be a unique, world-class facility with colliding beams that provide collision energies of 100 billion electron volts (GeV) per nucleon, for heavy ions as massive as gold nuclei.

Some of the most critical nuclear reactions in stellar burning processes involve nuclei which, because of their short lifetimes, have not been available for laboratory studies. Another new generation facility, the Radioactive Ion Beam (RIB) Facility at Oak Ridge National Laboratory is now producing some of these previously unavailable nuclei so that these important stellar processes can be studied in the laboratory. A variety of unique radioactive beams for experiments will be increasingly available in fiscal year 1999 and it is already possible, for the first time, to study many processes which are crucial to our understanding of how nuclei were synthesized in the Big Bang. The RIB will be operated for 2,400 hours for studies of nuclear measurements of astrophysical significance and for studies of very far from stable proton rich nuclei.

The solar neutrino problem remains one of the great challenges in astrophysics. The predicted rate of neutrino production by the sun is significantly higher than the observed rate. There are two possible explanations for the discrepancy. Either our understanding of solar burning is very wrong, or the neutrino has a small mass, in contradiction to the long-held belief that it is massless. The third major new facil-

ity which will be operational in fiscal year 1999 is the Sudbury Neutrino Observatory (SNO) in Canada. SNO's new detector, which is being filled with heavy water as we speak, is located 6,000 feet below the earth's surface in a nickel mine in Sudbury Ontario. Calibration and testing will be underway during much of the remainder of fiscal year 1998. Slated to begin data collection in early fiscal year 1999, SNO is designed to sort out this longstanding problem. The project involves an international collaboration among the U.S., United Kingdom, and Canada.

MULTIPROGRAM ENERGY LABORATORIES—FACILITIES SUPPORT

Fiscal year 1998 appropriation—$21.2 million; fiscal year 1999 request—$21.3 million (Figure 7)

The Multiprogram Energy Laboratories-Facilities Support (MEL–FS) program addresses the larger general purpose infrastructure needs at the five multiprogram ER laboratories. The five multiprogram energy laboratories are: Argonne National Laboratory-East, Brookhaven National Laboratory, Lawrence Berkeley National Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory. These laboratories have over 1,100 buildings with a total of 14.3 million gross square feet of space. The estimated replacement value of all buildings and other structures is over $10.0 billion. The average age of the buildings at these laboratories is over 33 years. All facilities at these laboratories are government-owned and contractor-operated. Total operating funding for these laboratories is over $3.0 billion a year.

FIGURE 7.—*Multiprogram Energy Laboratories—Facilities Support*

[In millions of dollars]

Construction	20.1
Infrastruction Support	1.2
Total	21.3

Fulfilling the science and technology goals and objectives identified in the DOE Strategic Plan depends heavily on the existence and operating efficiency of these multiprogram laboratories. However, a significant portion of the infrastructure of these laboratories is old, deteriorating, obsolete or inadequate for current use and function, and needs improvement to comply fully with the environment, safety and health requirements and to meet operational needs.

The MEL–FS program is designed to help preserve the government's investment in these laboratories by supporting line item construction for the refurbishment and replacement of inadequate general purpose facilities and infrastructure. The fiscal year 1999 budget supports the initiation of four projects including Electrical Systems Modifications at BNL, Rehabilitation of Building 77 at LBNL, the Central Supply Facility at ANL–E, and the Sanitary Systems Modifications, Phase III at BNL.

In fiscal year 1999, the program will also begin funding Payments in Lieu of Taxes (PILT) ($1,160,000) as authorized by the Atomic Energy Act of 1954, as amended, for communities surrounding Brookhaven National Laboratory and Argonne National Laboratory. These discretionary payments are made to state or local governments where the Department or its predecessor agencies has acquired property previously subject to state or local taxation.

UNIVERSITY AND SCIENCE EDUCATION

Fiscal year 1998 appropriation—$0; fiscal year 1999 request—$15.0 million (Figure 8)

The University and Science Education (USE) program ensures that the Department effectively utilizes and leverages the resources of the laboratory system to support DOE's university and science education mission. USE provides leadership and program support necessary to use and leverage the resources of the Department's laboratories to help replenish the overall pool of well trained, diverse scientists and engineers of the future, and to achieve significant, long-term improvements in their scientific and technological skills.

FIGURE 8.—*University and Science Education*

[In millions of dollars]

Community Outreach	2.0
Minority Institution Development	2.0
Educational Technology	5.0

Research Participation	6.0
Total	15.0

In fiscal year 1999, USE plans to support: undergraduate students participation in the National Undergraduate Laboratory Fellowship program; development of Internet based education technologies for elementary through college students and faculty; coordination with other DOE programs and improved integration of science education activities; high priority Administration and Congressional science education and diversity programs; a developmental award program for faculty and students from primarily undergraduate institutions and minority institutions that stimulates collaboration with DOE scientists and enhances faculty grant competitiveness; and partnering with National Science Foundation in support of its Minority Institutions of Excellence program to enhance coordination and effectiveness of support for undergraduate programs at HBCU's and coordination with other federal, state, and local agencies.

ENERGY RESEARCH ANALYSES

Fiscal year 1998 appropriation—$1.5 million; fiscal year 1999 request—$1.0 million

The Energy Research Analyses (ERA) program provides DOE program managers and senior managers with objective assessments of research projects and programs in order to evaluate the quality and impact of these efforts, to identify undesirable duplications and gaps, and to provide analysis of key technical issues in support of long range energy research planning, science and technology planning, and technical and performance evaluation of departmental strategic plans, and objectives.

Over 100 independent peer reviews were completed in fiscal year 1997. However, these levels will be scaled down in coming years to accommodate reduced funding. The program continues to refine the recently developed process for appraisal of Energy Research Laboratories and a new DOE-wide system for simplified technical reviews of National Laboratories has been developed and the pilot process completed at three National Laboratories.

TECHNICAL INFORMATION MANAGEMENT

Fiscal year 1998 appropriation—$10.1 million; fiscal year 1999 request—$9.8 million

The Technical Information Management (TIM) program, under the leadership and guidance of the Office of Scientific and Technical Information (OSTI), is responsible for the collection, preservation, and dissemination of scientific and technical information resulting from DOE's research, development, and environmental programs. Emphasis is on forging a National Library of Energy Science and Technology, and bringing energy science to the user's desktop electronically through the effective application of innovative information-age technologies.

In fiscal year 1999, TIM will provide mechanisms and procedures for accessing electronic journals at the desktop, develop and implement tools to facilitate access to DOE's scientific and technical information via electronic means, increase public access to DOE scientific and technical information, establish mechanisms to provide web-based access to energy-related scientific and technical information obtained by DOE via multilateral international partnerships, and establish customer feedback mechanisms to assess effectiveness of DOE's information program and related products and services.

ENERGY RESEARCH—PROGRAM DIRECTION

Fiscal year 1998 appropriation—$37.6 million; fiscal year 1999 request—$39.9 million

Program Direction provides the federal staffing resources and associated costs required to plan, direct, and manage a viable, high quality national program of basic research and advisory responsibilities for the Office of Energy Research. Energy Research Program Direction supports staff in the Basic Energy Sciences, Fusion Energy Sciences, Biological and Environmental Research, High Energy and Nuclear Physics, Computational and Technology Research, University and Science Education, Multiprogram Energy Laboratories-Facilities Support and Energy Research Analysis programs, including management and technical support staff. In addition, Energy Research Program Direction provides funds through the Working Capital Fund to cover the costs of centrally provided goods and services such as supplies, office space, utilities, etc., which previously were budgeted in Departmental Administration.

This program also supports staff at the Chicago, Oakland and Oak Ridge Operations Offices directly involved in program execution. Staff includes scientific and

technical personnel and program management support in the areas of budget and finance, general administration, grants and contracts, information resource management, policy review and coordination, infrastructure management and construction management.

MAGNETIC FUSION ENERGY RESEARCH

Senator DOMENICI. Please review the current status of the fusion program.

Dr. KREBS. Fusion. Within the fusion program, the budget request is basically constant. We are requesting $228 million, down $1 million from fiscal year 1998. Within that budget, we propose to significantly reduce our participation in ITER. We believe that the agreement that has enabled the ITER engineering design activity, which will be completed this summer, is a very effective mechanism for us to work with our partners around the world. We are proposing it be continued. In particular, the partners wish to have a transition period where they make a determination amongst themselves as to whether or not they will offer specific sites in their countries.

We would propose to have $12 million associated with continuing the joint baseline design. The remaining $39 million, which was allocated to the ITER program in fiscal year 1998, would be redirected for increases in current facility operations, the DIII–D at General Atomics in San Diego, the Alcator C-Mod at MIT, and it also would enable us to include the National Spherical Torus Experiment in Princeton.

We would also put more money into plasma and fusion technology that would be carried out in part in collaborations at JET in Europe and the JT–60 in Japan.

I think that is the summary of what I would say relative to fusion.

Senator DOMENICI. Your entire statement will be made a part of the record.

Senator Gorton, did you want to make some remarks?

Senator GORTON. I do not. I have one question for Mr. Reicher, so I will wait my turn and make whatever statement I have then.

Senator DOMENICI. Is that all you have for the day, is the one question?

Senator GORTON. That is all I am going to have for the day, yes.

STATEMENT OF SENATOR DORGAN

Senator DOMENICI. Do you have more than one question?

Senator DORGAN. I have three questions, but let me ask consent to have an opening statement be made part of the record, and I will wait my turn.

Senator DOMENICI. Sure.

I tell you, if you only had one I would let you go now and then you could leave.

Senator DORGAN. I have one-half a question with three parts. [Laughter.]

[The statement follows:]

PREPARED STATEMENT OF SENATOR BYRON DORGAN

Mr. Chairman, Senator Reid, thank you for convening this hearing. The topics discussed today are of great concern to North Dakota—particularly to the Energy and

Environmental Research Center at the University of North Dakota which has so much to offer to this country in the way of excellence in energy and energy-related research. The Department of Energy has a long relationship with the EERC, and I would like to see that relationship strengthened through the President's Global Climate Change initiative.

I also want to take this opportunity to restate my support for fossil fuel energy research and, particularly, for clean coal technology. Lignite is the only rank of coal in North Dakota, and there is a 1,000-year supply in my state based on the existing recoverable resource of 35 billion tons. Many developing countries use low-rank coals. Coal will remain the workhorse in our nation's energy future. So research in clean coal technology is absolutely essential and should be a priority for ours and other nations.

While I recognize the continued importance of coal, and its role in our future, I am supportive of the need to develop renewable energy sources. I am glad to see an increase in this budget for those purposes.

I commend the Department for reversing its past course to shift funding away from coal research. I do want to work with the Administration to make sure that adequate priority is given for clean coal research and clean coal technologies—especially in light of its commitment to emissions reductions.

Buildings account for about 35 percent of U.S. greenhouse gases when electric usage is included. I support the budget request for a significant increase for building technologies (up $118 million). I would ask today's witnesses to consider carefully the importance of focusing efforts on building technologies in cold weather climates. This is where a disproportionate share of energy is used per capita.

I am in total agreement with the President on the need to push for new advances in science and technology and I support the proposed increase of $246 million for the Office of Energy Research.

FUEL EFFICIENCY STANDARDS FOR AUTOMOBILES

Senator DOMENICI. Senator Gorton.

Senator GORTON. Well, first I would like to welcome Dr. Krebs. I would like to thank her for her mention of EMSL, the laboratory that I think is doing very, very good work, as she does.

My question, however, is for Mr. Reicher. I have gone through all of your testimony on energy efficiency and statements with respect to energy independence for the United States. I fail to see anything this year and I failed to see anything in the previous 4 years in the Clinton Administration about fuel efficiency standards for automobiles.

For a dozen years now, every year the Congress ends up enjoining, prohibiting the administration from doing anything to further our fuel efficiency. You have here programs that cost tens or hundreds of millions of dollars. You have got one available to you, it seems to me, that lessens our dependence on foreign oil, cuts down on air pollution, cuts down on our use of fossil energy resources. And yet, year after year, you stay absolutely silent on that.

Can you tell me why the administration does not make it a high priority to go ahead with what back in the 1970's was probably the single most successful energy initiative in the history of the country?

Mr. REICHER. Senator, let me first say that we have a very active program focused on the fuel efficiency of automobiles. It is funded in the Interior account, which is the other two-thirds of the budget for the Office of Energy Efficiency and Renewable Energy. It is a very substantial program, primarily carried out with the big three in Detroit, that is looking to develop a fuel-efficient vehicle by 2004 that will get 80 miles per gallon in a 5- to 6-passenger car, with all the safety and features that people are looking for at an affordable price.

So that is the sort of technological emphasis of the Department of Energy and indeed the administration through the Partnership for a New Generation of Vehicles.

Your question is regarding the CAFE standards, as I understand it, and I think, in that regard, the administration early on considered the issue of CAFE. I think, in discussions within the administration and in discussions with Congress, a decision has been made not to pursue additional increases in the CAFE standards, but instead to focus on the most cooperative and most effective way we can to develop a technology that will ultimately give us the fuel-efficient automobiles that we need.

Senator GORTON. Well, the research program of which you speak is funded by a subcommittee of which I am chairman, as Senator Domenici pointed out. And I have, within the constraints of our budget, always been enthusiastically in support of that proposition. It has never seemed to me, however, that you were involved in an either-or situation. We were not 10, 20 years ago.

But I take it that you have expressed the policy that will continue to be the policy, that this administration regards CAFE standards as a dead-end street and is going to do nothing with respect to them?

Mr. REICHER. Let me just say that I think the administration finds that there are probably more—there are greater opportunities to advance the fuel efficiency of vehicles on the technology side today than there would be in potentially reopening the CAFE issue.

Senator GORTON. Well, it is at least a straightforward answer, Mr. Chairman, not necessarily the one I wanted. But I appreciate being able to ask it, and that is all I have.

Senator DOMENICI. I let you go first, even before any of us, not because I wanted to get rid of you——

Senator GORTON. You have succeeded in doing so. [Laughter.]

Senator DOMENICI. But if that is the result, it is out of an act of generosity, knowing how busy you are.

We are going to now hear from you, Mr. Reicher.

Incidentally, those name signs that you bring when you testify are very nice.

Senator REID. You bring your own name plates?

Senator DOMENICI. They bring their own signs. It says on there "United States Department of Energy." Do we make them or do they?

Mr. REICHER. Mr. Chairman, these were prepared by Federal employees, not contractors. [Laughter.]

Senator DOMENICI. It is nice.

STATEMENT OF DAN REICHER

Mr. REICHER. Mr. Chairman and members of the subcommittee: I appreciate the opportunity to appear before you to discuss the fiscal year 1999 budget for the Department's Office of Energy Efficiency and Renewable Energy. Our budget request calls for increases to support cost-shared resource development and precommercial deployment of clean, efficient, and cost-effective energy technologies.

SOLAR AND RENEWABLE ENERGY

Mr. Chairman, there is often a tendency to view energy efficiency and renewable energy as somehow different from our traditional energy investments, as some green alternative to the real business of energy. Given that over 90 percent of the energy we consume today comes from fossil and nuclear fuel, we must use these sources as efficiently as possible. The investments we make in energy efficiency do not simply save energy, they represent one of the best public investments we can make to ensure the productivity and competitiveness of our economy and one of the cheapest, least intrusive ways of accomplishing our environmental objectives.

Renewable technologies are also far more than just a green alternative. They are, in fact, essential elements of our energy mix today, tomorrow, and in the coming decades. Today hydropower, just one renewable, provides approximately 10 percent of the total U.S. electrical generating capacity. In fiscal year 1999, we propose to begin engineering design of a fish-friendly turbine that will better protect fish while allowing existing hydropower facilities to function at capacity. Without these and other technological improvements, the Nation risks losing a large portion of this existing clean energy source.

In terms of tomorrow's energy market, wind is well positioned to become another major renewable energy source. In fiscal year 1999, we propose to continue our work with the wind industry to design and test the next generation of wind turbines, which will reduce energy costs to as low as 2.5 cents per kilowatt-hour by 2002. By building turbines that can operate in moderate wind speeds, we can open up the Nation's tremendous wind resources from Washington, Idaho, and Montana, to New Mexico, North Dakota, and West Virginia, and establish these areas as the "Saudi Arabia of wind."

Senator REID. If you had mentioned Nevada it would have been a big help to you. [Laughter.]

Mr. REICHER. I will in one moment. [Laughter.]

Senator REID. You just overlooked it, right?

Mr. REICHER. Absolutely. I will amend the record, but I am going to get to it in 1 second.

We will also establish a U.S.-based, internationally recognized organization to expedite certification of wind turbine systems and allow U.S. manufacturers to compete more effectively in the rapidly growing world market.

I would also like to mention our rapidly expanding efforts to burn energy crops and agricultural wastes in combination with coal in existing power plants. There is strong industry interest in this cofiring technology because it could provide a cost-effective option to meet more stringent environmental regulations.

Looking to the future, our R&D investments are stimulating the development of entirely new technologies that will fundamentally change the energy landscape. Superconductivity, which allows electricity to move through wires without resistance, has the potential to reduce the Nation's electrical system losses by 50 percent, equivalent to the output of 60 conventional power plants. In our fiscal year 1999 budget, we propose to transfer breakthrough tech-

nologies to industry so that we can eventually manufacture miles, rather than only meters, of super-efficient wires.

As part of our hydrogen R&D in fiscal year 1999, we propose to develop a facility in Nevada that would use a path-breaking fuel cell to produce hydrogen and supply power to the Department's Nevada Operations Office and a fleet of 20 to 30 vans and buses. I guess that is two mentions of Nevada.

Our R&D programs not only build the foundation for our energy future, but also open markets for U.S. manufacturers of advanced energy technologies. The World Bank has estimated that over the next four decades developing countries alone will require five million megawatts of new electricity capacity, compared to the world's total current installed capacity of three million megawatts. In order to meet this explosive energy demand and reap the resulting technology sales and jobs, we must invest in the research, development, and, yes, in appropriate circumstances, the deployment of energy technologies.

With Federal support, the U.S. photovoltaics industry has grown more than 20 percent annually over the last 7 years and now holds 40 percent of the world market. We expect even greater market penetration with the million solar roofs initiative.

As part of our focus on the most promising technologies, we are increasing the level of competition in selecting contractors and we are proposing a $10 million R&D solicitation to stimulate the best proposals for crosscutting renewable technologies to address economic competitiveness, air quality, and climate change.

We are also better coordinating our research with State energy R&D programs. Just last week we signed an agreement with the California Energy Commission to increase R&D cofunding and decrease duplication. We are also expanding our collaboration with other DOE programs, including fossil energy, energy research, and nuclear energy.

Mr. Chairman, just as we are committed to a wise R&D strategy, we are also dedicated to managing taxpayer dollars responsibly. I recognize that we must put our financial house in better order. I have already mentioned our expanded emphasis on competition. We are also looking carefully at our noncompetitive grants and contracts. We are focusing closely on program evaluation and terminating projects that have reached their goals or do not measure up.

In fiscal year 1999, for example, we will finish testing and conclude our work on the Solar II power tower. We are also developing a clearer budget and a more open budgeting process.

Thank you again, Mr. Chairman and members of the subcommittee, for the opportunity to discuss our fiscal year 1999 budget, and I look forward to working with you and your staff over the coming year.

[The statement follows:]

PREPARED STATEMENT OF DAN W. REICHER

Mr. Chairman and members of the Subcommittee, I am pleased to have the opportunity to appear before you today to discuss the Energy and Water Development portion of the fiscal year 1999 budget request for the Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE).

As the 21st century approaches, our nation faces tremendous energy, economic, and environmental challenges. Over the next few years, we will encounter growing

demand for energy in an increasingly volatile global energy market; we will witness the complete restructuring of U.S. electricity markets; we will implement sweeping new federal and state clean air requirements; we will respond to concerns about global climate change; and we will confront increasingly stiff competition from other nations in global commerce. In the face of these challenges, we must invest in key new energy supply technologies and use energy efficiency technologies to make better use of conventional energy sources.

Research and development (R&D) is a key driver of long-term economic development. In fact, the ability to innovate, develop and deploy new technologies in a wide range of fields has been a key reason for the stunning success of the U.S. economy in the last fifty years and will likely continue to drive our economic development over the next fifty years. Sustained commitment to R&D in both private industry and the federal government has produced these results. However, corporate downsizing, increased competition, financial pressures and other factors have drastically cut the level of private investment in basic and applied R&D in many industries—especially in the energy sector. In the face of the energy and environmental challenges of the next century and these declines in private sector R&D, the role of the federal government is critical. Without a substantial federal energy technology R&D effort—conducted in collaboration with industry—many advanced technologies will likely not be developed and our nation will suffer the resulting economic losses.

In its 1997 review of the national energy R&D portfolio, the President's Committee of Advisors on Science and Technology (PCAST) recommended expansion of a number of national energy R&D programs and targeted renewable energy programs for large increases in funding, second only to energy efficiency R&D. Crediting DOE with remarkable gains in technology performance and cost reductions, PCAST noted that renewable energy technologies offer a number of benefits, including, cleaner air, economic development, and reduced dependence on oil imports.

The fiscal year 1999 budget request for EERE programs calls for increases to support cost-shared research, development, and pre-commercial deployment of clean, efficient, and cost-effective energy technologies. These programs target federal resources in key areas that provide critical national benefits, stimulate complementary private investments and leverage market forces. Our budget request responds to five significant drivers: economic competitiveness; energy security; environmental quality; electric utility restructuring; and global climate change.

Economic Competitiveness

Carried out in partnership with industry, national laboratories, and universities, EERE's research and development programs help to maintain America's technological expertise and competitive advantage here at home and in the rapidly growing global market for clean energy technologies. EERE's investments not only build the foundation for a sustainable energy future but also open markets for U.S. manufacturers of these advanced technologies. EERE sponsors international programs to promote U.S. renewable electric and related power sector technologies in international markets. EERE's work on renewable energy reduces the U.S. trade deficit by creating technologies for export, reducing costly energy imports, and thereby stimulating economic development and job creation.

The World Bank has estimated that over the next four decades developing countries alone will require five million megawatts of new electrical capacity to meet the needs of their citizens and their expanding economies (the world's total installed capacity today is three million megawatts). Meeting this demand will require worldwide investments of several trillion dollars and thus represents a tremendous opportunity for U.S. clean energy technology sales and job creation. EERE programs help ensure that advanced American-made clean energy technologies are developed that can meet this demand and ensure the technological competitiveness of U.S. companies. We cannot afford to cede the development of these innovative technologies to other nations or to develop them and allow other countries to realize the resulting economic benefits.

Energy Security

During the past 23 years, three major disruptions in the world oil market have shaken the global economy. Further disruptions in the future are quite possible. In 1996, U.S. net oil imports accounted for 46 percent of domestic petroleum consumption. By 2020, U.S. net oil imports are expected to grow to 63 percent of domestic petroleum consumption—with an annual oil bill of $130 billion. By that time, Persian Gulf nations will likely account for over two-thirds of the world's oil exports. And as the current Iraq situation illustrates, the Persian Gulf continues to be one of the most volatile regions of the world.

To ensure a secure energy future, we must not only reduce our dependence on imported oil, but diversify our energy resources. We must develop a diverse portfolio of energy options, including renewable energy sources, to meet our expanding energy needs. Such a portfolio will lessen the impact on the U.S. of volatility in global energy markets while reducing the U.S. trade deficit by cutting energy imports.

Environmental Quality

Air pollution, particularly in urban centers, ranks high among the nation's most pressing environmental concerns. Renewable technologies offer a clean, environmentally responsible option for generating power. By developing technologies that use alternative energy sources and advanced technologies, EERE programs are concurrently finding ways to reduce energy-related air pollutants as well as the cost of environmental compliance. The emphasis is on pollution prevention rather than traditional end-of-process pollution control technologies. Renewable energy technologies offer states and cities attractive options in the development of State Implementation Plans to meet Clean Air Act requirements.

Electric Utility Restructuring

EERE is working with utilities, industry, states, and consumers to ensure that restructuring of the electric industry results in a competitive, cost-effective and consumer-responsive electricity generation industry. Utility restructuring presents an opportunity to reduce energy costs, advance the use of energy efficient and renewable energy technologies, and provide affordable services with reduced environmental impacts.

Restructuring also presents a significant challenge. Where restructuring has occurred, private industry investment in energy technology R&D has virtually disappeared. For example, in the United Kingdom, restructuring of energy industries has resulted in private industry energy R&D declining to essentially zero as companies can no longer assume such financial risks. The same phenomenon has occurred in California. Several large utilities maintained substantial investments in technology R&D, but with the onset of restructuring these investments have dropped to zero. Thus it is imperative that restructuring be done in a way that encourages industry investment in R&D. Further, under a restructured environment, federal government investments in energy technology are critical.

Climate Change

The President's fiscal year 1999 budget request for EERE programs is a major element of his proposal to invest $6.3 billion over five years to reduce greenhouse gas emissions to below 1990 levels by 2008–2012 through enhanced energy research and development and tax incentives. In 1997, a major study conducted by five DOE national laboratories documented the critical role that development and deployment of energy efficiency and renewable energy technologies can play in reducing greenhouse gases. Increased investments in R&D for these technologies and implementation of policies to accelerate their use can substantially cut the cost of reducing greenhouse gas emissions while producing cleaner air and other benefits that exceed the cost of the emissions reductions. It is important to realize that development and deployment of these technologies offer economic benefits now while positioning our nation to reduce greenhouse gas emissions in the future if and when that is required by international treaty. Quite simply, these technologies are of critical importance in meeting the broad array of energy and environmental challenges of the next century.

SOLAR AND RENEWABLE ENERGY TECHNOLOGIES

Our fiscal year 1999 program request for Solar and Renewable Energy Technologies is $389.3 million—an increase of $92.6 million over fiscal year 1998. This request has three central objectives. First, we will maintain U.S. technological superiority by funding, in cooperation with industry and other partners, a balanced portfolio of research and development in renewable energy and supporting electric technologies. Second, we will improve environmental quality through increased use of non-polluting renewable energy technologies and advanced electric power systems. Third, we will expedite the transfer of technology and manufacturing process improvements to U.S. renewable energy and supporting technology industries which will enable them to increase the deployment of their energy systems in the United States and to better compete for expanding export markets for such systems in other countries.

The bulk of the EERE Energy and Water Development Appropriation supports the work of the Office of Utility Technologies. This office works with electric service providers and related industries to advance clean, reliable and affordable power. We

develop renewable energy technologies that use solar, wind, hydropower, geothermal and biomass energy resources and conduct R&D that will enable a hydrogen energy infrastructure in the future. Our program also develops advanced technologies—including high temperature superconducting materials and energy storage—that will improve the energy efficiency and cost-effectiveness of the nation's electric systems. Finally, the program facilitates the export of renewable energy power generation internationally.

The Energy and Water Development Appropriation also funds two other EERE programs: The Office of Transportation Technologies supports R&D on production of biomass-based transportation fuels, and the Office of Industrial Technologies supports the development of advanced turbine technology for cogeneration applications using biomass fuels.

Table I on the following page provides a summary of our fiscal year 1999 budget request, together with the appropriations for fiscal year 1998 and fiscal year 1997. In the following sections, I describe the details of the request. For each major line of the budget, I identify changes relative to fiscal year 1998 appropriations and describe program specifics and reasons for the requested funding change.

SOLAR AND RENEWABLE ENERGY PROGRAM FUNDING

[In millions of dollars]

	Fiscal year			
	1997	1998	1999 request	1998–1999 change
Solar Building Technology Research	2.3	2.7	5.0	+2.3
Photovoltaic Energy Systems	59.2	65.5	78.8	+13.3
Solar Thermal Energy Systems	21.9	16.5	22.5	+6.0
Biopower Energy Systems	27.2	28.2	42.9	+14.7
Wind Energy Systems	28.6	32.5	43.5	+11.0
Renewable Energy Production Incentive	2.0	3.0	4.0	+1.0
Solar Program Support	.....	.....	14.0	+14.0
International Solar Energy Program [1]	0.6	1.4	8.8	+7.4
Geothermal Energy Systems	29.6	29.0	33.0	+4.0
Hydrogen Research and Development	14.8	16.0	24.0	+8.0
Hydropower Development	1.0	0.7	4.0	+3.3
Renewable Indian Energy Resources	4.0	3.9	.....	−3.9
Electric Energy Systems and Storage	31.4	43.8	38.5	−4.3
Federal Buildings Remote Power Initiative	.....	4.9	.....	−4.9
Total Utility Technologies	222.6	247.0	319.0	+72.0
Transportation Technologies: Biofuels Energy Systems	27.2	30.7	46.9	+16.2
Solar Technology Transfer	.....	.....	1.4	+1.4
National Renewable Energy Laboratory	3.3	3.2	5.0	+1.8
Program Direction	13.1	15.7	17.0	+1.3
Subtotal, Solar and Renewable Energy	266.2	296.7	389.3	+92.6
Use of Prior Year Balances	−22.4	−24.4	−17.0	+7.4
Total, Solar and Renewable Energy	243.8	272.2	372.3	+100.0

[1] Excludes funding for international energy efficiency programs under Energy Conservation.

SOLAR BUILDING TECHNOLOGY RESEARCH

The request for Solar Building Technology Research is $5.0 million, an increase of $2.3 million from current levels to help provide economically competitive sources of solar hot water heating in residential, commercial, and industrial buildings. The funding increase will enable the Department to implement a new strategic partnership with builders, developers and utilities based on customer identification of emerging solar water heating requirements. The program is divided into three

areas: Technology Development ($3.5 million), Field Validation ($1.0 million), and Quality Assurance and Customer Information ($0.5 million).

Within Technology Development (up $2.1 million), customer concerns regarding solar water heating systems will be addressed by improved manufacturing process and component R&D. These will lower costs by an estimated 20 percent and provide products that are more visually attractive. New concepts will be solicited that have the potential for reducing costs by 50 percent or that can adapt existing technologies to new markets.

In Field Validation (down $0.1 million), the program will enter into partnerships with builders and utilities in several regions to deploy solar systems. The objective is to demonstrate the capability of solar hot water systems to meet homeowner needs in the new construction market. Evaluation of the operation of these systems, and widespread dissemination of the results, will provide valuable feedback to the research and development of these systems.

Quality Assurance and Customer Information (up $0.3 million) funding will be used to address reliability, a major customer concern. This will be addressed through the establishment of a national rating and certification process in collaboration with industry. Information materials will also be developed to improve customer confidence in solar water heating systems. Overall program goals include reducing the levelized energy costs of heating water from 8¢/kWh electricity equivalent to 6¢/kWh, and extending system life 15 to 20 years.

The Solar Building Program is also a key element of the Million Solar Roofs Initiative discussed below, which has a goal to install one million solar energy systems on U.S. roofs by 2010. It is anticipated that up to half of these systems will be solar hot water systems. The program's efforts, carried out in conjunction with U.S. industry and other initiative partners, will help ensure that the initiative's goal is met.

PHOTOVOLTAIC ENERGY SYSTEMS

The request for Photovoltaic Energy Systems is $78.8 million, an increase of $13.3 million from fiscal year 1998. Industry provides significant resources for cost-shared technology R&D. Based on a multi-year technology plan that has been developed in close partnership with industry, this balanced program focuses on three key activities that industry and other stakeholders have cited as the most critical to maintaining and advancing our lead in PV technology and products: Fundamental Research ($11.0 million), Advanced Materials and Devices ($27.0 million), and Collector Research and Systems Development ($40.8 million).

Today, the U.S. stands as the world leader in photovoltaic technology, with our industry garnering 42 percent of total sales in 1997. This has not always been the case, however. Leadership in photovoltaic technology was lost to Japan in the mid 1980's because of strong government support for PV development. As a result of expanded support for advanced technology research and other DOE-industry partnership programs, the U.S. was able to recapture the lead in global market share for photovoltaic modules in 1993.

Despite its current leadership position, however, the U.S. photovoltaic industry faces intense competition for the rapidly growing world-wide photovoltaics market from Japan and Europe, which are aggressively researching and marketing their PV technology. Although worldwide PV sales grew by 43 percent in 1997, current sales are still only 127 MW per year, a tiny fraction of PV's full potential. To maintain U.S. leadership, and to penetrate new, larger markets in utilities and building applications, the cost of PV systems must be more competitive with other sources of electricity. Critical improvements in conversion efficiency, manufacturing, reliability and system life are essential. The increased funding request will enable the PV program, in cooperation with U.S. industry partners, to continue the research needed to resolve these technical problems.

Funding for Fundamental Research (no change) will continue world-class research at national laboratories and universities on advanced concepts for improved technology in the post-2000 time frame. Activities will include continued research on several photovoltaic semiconductor materials to resolve issues that limit current technology. This work will advance the understanding of new and improved materials, cell structures, deposition processes, semiconductor theory and material characterization methods.

Advanced Materials and Devices (up $3.0 million) will continue collaborative research with industry to improve device efficiency and stability, particularly for large-area, thin-film deposition systems. The budget increase will enhance efforts (four to five new contracts) within the thin-film partnership program to achieve cost-effective thin-film technologies. Photovoltaic devices employing thin-film technology

significantly reduce the amount of semiconductor material required for power generation. Also, because such devices are amenable to mass production, they offer significant potential for cost reduction—which would make possible widespread use of such technologies as PV shingles. Module reliability research will continue to support testing of modules to improve operational lifetime in the field.

Collector Research and Systems Development increases (up $10.3 million) will improve manufacturing processes for thin-film technologies emerging from successful laboratory R&D activities and assist U.S. industry to develop advanced manufacturing technology for higher-performance and lower-cost commercial thin-film modules (fifteen to eighteen new three year contracts). Key to maintaining U.S. competitiveness over the next five to ten years, manufacturing process research and development under the Photovoltaic Manufacturing Technology (PVMaT) partnership will continue cost-shared research with industry to reduce module manufacturing costs, improve module performance, and stimulate investment in new manufacturing production lines. As a result of cost-shared R&D with industry, average manufacturing costs for DOE partners have declined by 50 percent and are expected to decline by another 75 percent by 2000. In addition, funding will be provided to continue collaboration with industry to increase module and balance-of-systems manufacturing efficiency. The objective of this research is to reduce costs by about 35 percent for installed systems in the year 2000 and increase system performance and reliability through improved manufacturing process technology, efficiency, and quality control. In cooperation with the Utility Photovoltaic Group (UPVG), efforts will continue to complete cost-shared utility projects designed to provide utilities with hands-on experience with PV systems, and validate technical and economic performance in specific high-value applications. A portion of the increase will also be used to fully fund 5 to 10 Phase III building integrated contracts under the PV:BONUS program, which supports cost-shared efforts with utilities and others to develop PV products that can be integrated into commercial and residential buildings.

In addition, a part of the increase in Collector Research and Systems Development (up $1.4 million) will be targeted at specific activities that support the President's Million Solar Roofs Initiative. An important goal of this initiative is to help develop a significant domestic market for U.S.-manufactured solar energy systems, to provide a firm base for U.S. industry expansion and market competitiveness. Without such a base, as is being actively pursued in other countries such as Germany and Japan, it is likely that PV systems will be another example of technology developed here but exploited abroad.

In fiscal year 1999, the Million Solar Roofs Initiative will work with at least 25 partners—utilities, builders, solar equipment manufacturers, federal and state agencies, cities, and financial institutions across the nation—to develop action plans to install one million PV and solar water heating systems on the roofs of buildings and homes across the United States by the year 2010. Many of these entities are eager to invest in these technologies for a variety of reasons, including energy supply diversification, restructuring of the electricity industry, development of local clean energy industries and environmental quality. To ensure that the program is responsive to business, customers and to local needs, the DOE regional support offices will help leverage private financing, provide technical assistance and coordinate federal support. As the largest single user of energy in the U.S., the federal government is committed to installing 15,000 to 20,000 rooftop systems on its own facilities by 2010. Additionally. the initiative will also work to ensure that photovoltaic and solar hot water systems meet the requirements of builders and state and local codes and standards.

SOLAR THERMAL ENERGY SYSTEMS

The fiscal year 1999 budget request for Solar Thermal Energy Systems is $22.5 million, an increase of $6.0 million. The funding is divided between Thermal Systems Research ($5.5 million) and Power Applications Research ($17.0 million). The program is working to develop economically competitive solar thermal technologies which convert sunlight into heat and then into electricity. Solar thermal technologies will improve our nation's diversity of energy supply, reduce the environmental impacts of energy production, and create business opportunities for U.S. industry both here and abroad. In concert with U.S. industry, the program is working to provide solar thermal power options that industry can use to serve dispatchable, distributed and remote power needs.

The requested funding for Thermal Systems Research ($0.6 million decrease from fiscal year 1998) will be used to support materials research, including the final year of the five-year outdoor testing program for optical materials, solar concentrator re-

search, dish/engine receiver development, and identification and evaluation of advanced thermal power concepts.

The Power Applications Research funding (up $6.6 million) will support full-power testing and operations at the Solar Two power tower, proving the capability of molten-salt thermal storage and establishing the technical and operational feasibility of power tower systems. It will reduce the cost of drive mechanisms for dishes and heliostats under the Solar Manufacturing Technologies (SolMaT) Initiative. In addition, the request will continue to work with U.S. industry to reduce system O&M costs, and support several cost-shared field validation efforts to improve the reliability of dish/engine systems. The dish/engine industry-led efforts include the Utility-Scale Joint Venture Project, which will demonstrate dish/Stirling systems in various operating environments and configurations; the Dish/Engine Critical Components Initiative, which is investigating alternative dish/engine designs; and the Dish Engine Field Verification Initiative, which will establish long-term system reliability, quantify O&M issues and costs, and develop the manufacturing capability and production capacity necessary to build future systems that will compete economically in the distributed power market.

Full-power testing of Solar Two, the world's leading-edge demonstration of molten-salt thermal storage and power tower technology, is the critical step needed to ensure commercial interest in these technologies. With the ability to dispatch power for many hours after the sun goes down and thus provide power throughout periods of high demand, power tower technology could play an important role in future clean electricity supply at competitive costs. Strong and continued private sector interest and cost-sharing support this conclusion. Full power testing of this research facility will conclude in fiscal year 1999, at which time the facility will be sold or retired.

WIND ENERGY SYSTEMS

The fiscal year 1999 funding request for the Wind Energy Systems program is $43.5 million, an increase of $11.0 million over the fiscal year 1998 appropriation. The Wind Energy Systems program supports R&D activities that help U.S. industry develop wind technology as an economically viable energy supply option and gain a technological edge over international competition. While costs of wind-generated electricity have declined significantly, wind energy is still not widely accepted as a commercial power generation technology in the U.S., and initial domestic sales have occurred only in certain markets. The U.S. wind industry also faces intense competition from foreign companies that offer their manufacturers tied aid and other market support not generally available to U.S. firms. The key to positioning wind as an important U.S. clean energy option is the development of innovative, cost-competitive technology that is being carried out under the Wind Energy program. These efforts are targeted for the post-2000 marketplace, and should help U.S. industry leapfrog its foreign competition.

In fiscal year 1999, the wind program will focus on Applied Research ($10.7 million), Turbine Research ($24.8 million), and Cooperative Research and Testing ($8.0 million).

Applied Research (down $0.8 million) addresses fundamental engineering and technology issues with a broad range of applications and is carried out at national laboratories and numerous universities. The decrease in requested funding reflects completion of the 1.5 MW dynamometer facility for testing turbine drive train performance in a laboratory environment.

Turbine Research (up $11.8 million) is a coordinated effort with industry and utilities to perform cost-shared R&D for the next generation of U.S. manufactured wind turbines. The requested increase for Turbine Research will support both new and continuing partnerships that help U.S. industry design and test state-of-the-art wind turbines. Two next generation turbines are being designed, in a joint effort with industry, that will reduce energy costs from wind systems to as low as 2.5¢/kWh at 15 mph wind sites by 2002. In fiscal year 1999, fabrication of the first prototype of this next generation wind turbine (up to 1 MW size) will be completed and field testing will begin. We will also seek 2–3 partners for utility-scale projects (up to 25 MW in size) tailored to meet the requirements of electric service providers competing in restructured electric power markets. In addition, the program will complete fabrication and begin field testing of small wind turbine prototypes (8–40 kW) ideal for distributed or remote applications.

Cooperative Research and Testing (no change) focuses on near-term R&D and testing at the world-class National Wind Technology Center in Colorado, which features a new user facility that allows U.S. industries to expand testing of new wind energy technologies. Level funding for Cooperative Research and Testing will sup-

port industry testing at the National Wind Technology Center and establishment of a U.S.-based commercial firm as an internationally-recognized certification agent for wind turbine systems. At present, certification is problematic for U.S. companies because they must submit their data to foreign-based certification agents. DOE and the U.S. wind industry agree that a U.S.-based certification organization is essential to the long-term success of the industry, and an aggressive effort is underway to put such an organization in place. Key international standards are being developed with U.S. participation. We are taking steps to achieve International Standards Organization accreditation of tests performed at the National Wind Technology Center, and the National Renewable Energy Laboratory and Underwriters Laboratory are working together to develop U.S. wind turbine certification capability. Our time line indicates that initial certification of wind turbines by a U.S.-based certification organization could take place in early fiscal year 1999.

BIOPOWER/BIOFUELS

We are requesting $89.8 million for Biopower/Biofuels programs in fiscal year 1999, an increase of $30.9 million. The Department's program is an integrated effort spread among three sectors within the Office of Energy and Renewable Energy in partnership with the private sector. The program supports biomass energy projects aimed at three principal markets: electric power; transportation fuels; and biomass cogeneration in industry.

The budget request for the Biopower Energy Systems program within the Office of Utility Technologies is $42.9 million in fiscal year 1999—an increase of $14.7 million over fiscal year 1998. The program focuses on research, development and proof-of-concept activities for thermochemical conversion technologies to produce cost-competitive baseload electricity from biomass. The request includes $2.7 million for Thermochemical Conversion, $37.3 million for Systems Development and $2.9 million for industrial biomass cogeneration.

The increase in Thermochemical Conversion (up $1.2 million) will support basic thermochemical research that will facilitate the continued development of cost-competitive biogasification technologies.

Within the Systems Development activity (up $15.9 million), $20 million is requested for the DOE/USDA Biomass Power for Rural Development Initiative (an increase of $2.2 million), $9.3 million is requested for a new co-firing with coal initiative, and $8.0 million is requested for a significantly expanded modular biopower systems initiative.

The Rural Development Initiative in fiscal year 1999 would support three projects: full power testing of the 35 MW switchgrass co-firing project in Chariton Valley, Iowa, that is scheduled for completion in 2001 ($2.5 million); full power testing for the 30–40 MW willow co-firing project in New York State that is also scheduled for completion in 2001 ($2.5 million), and support for construction of the 75 MW Minnesota Valley Alfalfa Producers integrated gasification combined cycle power plant, which is scheduled to begin delivering power to Northern States Power by the end of 2001 ($15.0 million).

The Co-Firing with Coal Initiative will complete five commercial-scale demonstrations using at least five percent biomass at conventional power plants, provide technical information to interested parties and develop tools to identify low-cost feedstocks. Modular systems development focuses on designing smaller gasification units (5 kW to 5 MW) that are easy to manufacture, install and operate. These flexible systems, which will be usable with a broad range of biomass feedstocks, will have great potential for both distributed and remote applications, will have minimal environmental impact, and represent a potentially important export market for U.S. industry.

The increases in the Systems Development budget will be partially offset by reduced funding (down $2.2 million) for two gasifier projects. No fiscal year 1999 activity is anticipated for the Hawaii bagasse direct gasifier project due to permitting and cost-sharing difficulties. The Vermont wood gasification project will utilize prior year funds and cost-sharing to complete installation of a gas turbine to test the gasifier/gas turbine configuration.

The Industrial Biomass for Cogeneration program within the Office of Industrial Technologies (up $0.3 million), seeks to enable the Advanced Turbine System technology to combust biomass derived fuels. Cogeneration system efficiencies can reach as high as 90 percent, significantly higher than when steam and electricity are produced separately. Use of biomass fuels for cogeneration can significantly lower operating costs and cut emissions—especially for industries that produce biomass waste. The budget request will support continued analysis of the gasification and combustion products of low/medium Btu fuels in highly efficient gas turbines.

The Transportation Biofuels Energy Systems program within the Office of Transportation Technologies has a budget request of $46.9 million in fiscal year 1999—an increase of $16.2 million over fiscal year 1998. This program supports research, development and demonstration activities related to feedstock production systems to develop bioenergy crops and biochemical conversion systems for the production of ethanol for use as transportation fuel. The request will support research, development and demonstration of technologies for the production of liquid transportation biofuels, to provide 0.7 quads of energy by the year 2010 and 1.0 quads by the year 2020. Biofuels produce almost no net carbon on a life cycle basis. Their use in replacing traditional fossil fuels will reduce oil dependence and greenhouse gas emissions. The $46.9 million request includes $36.4 million for Ethanol Production R&D, $1.0 million for Biodeisel Production R&D, $6.0 million for feedstock production and $3.5 million for the Regional Biomass Energy Program.

The major focus of the Biofuels Program is Ethanol Production (up $11.0 million). Today, ethanol can be blended with gasoline in 10 percent ethanol/90 percent gasoline mixtures. It is also used in some flexible-fueled vehicles (up to 85 percent ethanol blend). It is estimated that 500,000 of these vehicles will be produced over the next several years. Ethanol is also being considered for use in fuel cells.

We are also working to demonstrate commercial production of ethanol from "cellulosic" biomass in different regional settings with different feedstocks. We are currently working with three partners who believe that technology risks have been minimized to the point where they are seeking private sector financing to build "first-of-a-kind" commercial demonstration plants using agricultural wastes. Our request of $36.4 million for ethanol production also enables us to pursue opportunities, such as utilizing forest underbrush to produce ethanol to also reduce the risk of catastrophic forest fires in the West. In addition, we are working with the existing starch-based corn-to-ethanol industry to demonstrate cellulose-to-ethanol technology using the corn fiber (kernel) and corn stover (stalks). This will provide a potential market for enzyme companies to develop systems that are critical to the large-scale deployment of cellulosic ethanol.

Core ethanol technology research will continue at National Laboratories to address key cost factors and integrated process efficiencies to reach our ethanol production cost goal of $0.67 per gallon by the year 2010 and achieve at least 3–4 percent displacement of gasoline in the transportation sector.

The biodiesel program (up $0.3 million) will continue research and development of technologies to lower the cost of biodiesel production in order to bring about a cost-competitive bio-based alternative to diesel fuel.

The request for feedstock production R&D (up $3.5 million) and the Regional Biomass Energy Program (up $1.5 million) reflects a consolidation of these programs into the Office of Transportation Technologies. The actual net increase for these programs is $2.3 million over fiscal year 1998. These programs will expand the research and development of low cost biomass feedstocks in the form of dedicated energy crops and continue the regional biomass energy partnerships with state and local governments to develop the capability to produce and use biomass resources.

RENEWABLE ENERGY PRODUCTION INCENTIVE PROGRAM

The request for the Renewable Energy Production Incentive Program is $4.0 million, a $1.0 million increase over fiscal year 1998 funding levels. Annual appropriations provide financial production incentives to stimulate the construction and operation of new, qualified renewable energy facilities owned by state entities, municipal utilities, and electric cooperatives that produce and sell electricity. Although higher than the request for fiscal year 1998, the request for fiscal year 1999 is still considerably below the amount that would be needed for full funding of all electricity generated by qualified facilities. We estimate that fiscal year 1999 payments to qualified Tier I facilities—which use solar, wind, geothermal or dedicated (closed-loop) biomass resources—will require $0.2–0.3 million to pay for electricity generated and sold. For qualified Tier II facilities, which include non-dedicated (open-loop) biomass resources (a much greater number of facilities), $11–13 million would be required to make full payments. In addition, Tier II facilities have approximately $6.7 million in previous electricity production from prior year generation that will be eligible for incentive payments in fiscal year 1999. Thus, full payment in fiscal year 1999 to all eligible facilities would require as much as $20 million. Since full payments are not possible with limited appropriations, partial payments are provided on a prorata basis.

NATIONAL RENEWABLE ENERGY LABORATORY

The fiscal year 1999 request of $5.0 million for the National Renewable Energy Laboratory (NREL), a net increase of $1.8 million, is to provide for facility operations, including general purpose equipment purchases, and for maintaining and upgrading NREL facilities to assure appropriate technological, computational and scientific support for Solar and Renewable Energy R&D activities. The majority of the request will fund upgrading of the data system infrastructure—including cables, telecommunications equipment, servers, other hardware and software—that supports data transmission among all NREL research facilities and sites. The expansion of the Field Test Laboratory Building will be completed in fiscal year 1998 and will therefore require no funding in fiscal year 1999.

GEOTHERMAL ENERGY

The Geothermal Energy request for fiscal year 1999 is $33.0 million, an increase of $4.0 million over fiscal year 1998 levels. The Office of Geothermal Technologies works with U.S. industries and electric utilities to create cost-competitive, environmentally attractive geothermal options. These joint efforts sponsor research and development that leads to advanced technologies to improve reliability, reduce environmental impacts, and lower costs of geothermal energy systems. The budget request is divided between Geothermal Electric R&D and Deployment ($29.5 million) and Geothermal Heat Pump Deployment ($3.5 million).

Within the Geothermal Electric R&D and Deployment (up $6.8 million), cost-shared funding will initiate development of a technology that can map the characteristics of fractures in subsurface geothermal rock formations and complete development of computer techniques to derive critical geothermal reservoir parameters from relatively inexpensive seismic data. The program will continue to work with industry to field test synthetic diamond bits that can drill effectively in hot, hard rock formations. We will also continue development of fiber optic technology capable of transmitting information at high rates from the bottom of geothermal wells.

In fiscal year 1999, we plan to evaluate the performance of a rotary separator-turbine in a cost-shared demonstration of the economic benefits of improved electric generation technology in geothermal applications. The program will also cost-share with industry new field studies to test techniques for recovering geothermal heat at the margins of geothermal fields in the absence of natural fluids. In addition, we will co-fund construction of a bioprocessing unit that can recover commercially-valuable byproducts from geothermal power plant operation, including silica, sulfur, and mineral-rich solid waste.

In fiscal year 1999, the final year of funding for the Geothermal Heat Pump Deployment (down $2.9 million), we will continue to work with the industry consortium to accelerate widespread consumer acceptance of geothermal heat pump technology. This will include continued co-funding of efforts to increase public awareness of geothermal heat pump technologies and benefits and develop advanced design capability to increase market share. Co-funding will also support research on drilling and grouting techniques to improve the efficiency of ground loop heat exchangers and to increase geothermal heat pump reliability.

HYDROGEN

The fiscal year 1999 request for Hydrogen research and development is $24.0 million, an increase of $8.0 million compared to fiscal year 1998. The mission of the Hydrogen Research Program is to support the development of cost-competitive hydrogen systems that will reduce the environmental impacts of energy use and support the increased market penetration of renewable energy systems and hydrogen-powered vehicles. To carry out its mission, the program employs four strategies. First, we work with industrial suppliers of hydrogen to improve the efficiency, lower the emissions, and lower the cost of technologies that produce hydrogen from natural gas or use renewable energy. Second, we work with fuel cell manufacturers to develop storage and reversible fuel cell systems that will facilitate the introduction and penetration of distributed, renewable-based power generation systems. Third, we coordinate with the Department of Defense and DOE's Office of Transportation Technologies to demonstrate safe and cost-effective fueling systems for hydrogen vehicles in non-attainment urban areas. Finally, we work with national laboratories and universities to lower the cost of technologies that produce hydrogen directly from sunlight and water without electrolysis.

The three program components are Core Research and Development ($10.1 million), Technology Validation Program ($11.4 million) and Analysis and Outreach ($2.5 million).

Core Research and Development (up $3.1 million) supports R&D on hydrogen production, storage and utilization. Production research and development is focused on steam and plasma reforming and partial oxidation of natural gas, production of hydrogen from biomass, and photobiological and photoelectro-chemical processes for hydrogen production. In fiscal year 1999, a scaled-up experimental unit demonstrating the integration of a sorbent-enhanced reformer will be operated to verify a 4 percent anticipated increase in process efficiency while eliminating CO_2 emissions. A biomass pyrolytic process development unit for hydrogen production will also be assembled and tested to demonstrate catalysis lifetimes.

Storage research and development is focused on developing materials and systems that exceed 5.5 percent hydrogen by weight for utility and transportation applications. Metal hydrides carbon-based storage, glass microspheres, and polyhydride materials are being explored as possible future storage systems. A proof-of-concept, light weight magnesium-aluminum-copper alloy metal hydride system approaching five percent hydrogen storage will be assembled and demonstrated at an operating temperature below 150° C.

Utilization technology development is focused on developing and demonstrating end-use power systems that are safe, and have near-zero or zero emissions with an overall generation efficiency greater than 45 percent. A low-cost fiber optic hydrogen gas leak detector, developed jointly with industry, will be fully transferred to industry for commercial application. Additionally, an advanced proton exchange membrane fuel cell manufacturing process will be assembled and scaled up using metal plates rather than more expensive graphite plates.

Technology Validation (up $5.1 million) supports cost-shared ventures with industry on hydrogen vehicle fueling stations, vehicle-mounted storage systems reversible fuel cells (i.e., fuel cells that can operate as power sources or electrolyzers), biomass gasifiers for hydrogen production, and small hydrogen fuel cell systems. These efforts include: (1) development of hydrogen reversible fuel cells and electrolysis systems for use with wind, hydra, biomass, solar and other renewable electric power systems for the production of hydrogen and peak or intermediate power, and for remote applications; (2) a solicitation for the demonstration of a 50 kW fuel cell electric generation station that co-produces hydrogen for a fueling station for hydrogen vehicles as part of a "Clean Corridor" activity being supported by the Office of Transportation Technology; and (3) Phase II design and construction of cost-shared ventures with industry for small-scale (3–10 kW) fuel cells for remote applications.

Analysis and Outreach (down $0.2 million) conducts portfolio and technology analyses and works with industry and university partners to determine what steps are required to transition to a hydrogen energy economy. In fiscal year 1999, this activity will support the development of technology roadmaps for hydrogen technology and corridor development.

ELECTRIC ENERGY SYSTEMS AND STORAGE

$38.5 million is requested for the Electric Energy Systems and Storage program in fiscal year 1999, a decrease of $4.3 million from fiscal year 1998. The program is working with partners to develop advanced power systems that will make the delivery of electric power more efficient and cost effective, reduce power sector emissions, facilitate market penetration of renewables, and enhance U.S. industrial competitiveness. The program includes efforts on High Temperature Superconductivity ($32.0 million), Energy Storage ($6.0 million), Electric and Magnetic Fields (no funds requested) and Climate Challenge ($0.5 million).

The High Temperature Superconductivity program (no change) will enable the Department to continue to lead the national effort to capture the energy savings potential of superconductivity—the ability of certain materials to carry electricity without resistance losses. Pre-commercial prototypes of electric transmission cables, transformers, motors and current limiters will be built and tested during the next three years, and commercial versions will become available over the next 15 years—a period when much of the existing power delivery infrastructure will need replacement and new stresses will be placed on the national electrical system due to deregulation and increased competition.

Within the program, funding of $14.0 million will continue support for the innovative and highly successful Superconductivity Partnership Initiative; $8.0 million will be directed to the Second Generation Wire Initiative to transfer breakthroughs in wire technology discovered at Los Alamos and Oak Ridge National Laboratories to industry to develop manufacturing processes for continuous wire lengths and manufacture the world's first high field magnet which operates at liquid nitrogen temperature; and $10.0 million will be used to continue the world class basic research on high temperature superconductivity that is being carried out at our National

Labs. This strategic research is critical to ensure long-term U.S. leadership in an increasingly competitive and growing world market. The Fifth International Superconductivity Industry Summit has estimated that the market for all superconductivity sales in 2020 could be as much as $244 billion. The Japanese government is currently spending at least $99 million in research and development on superconductivity according to a National Science Foundation study entitled "Power Applications of Superconductivity, in Japan and Germany."

The $6.0 million request for the Energy Storage Systems program (up $2.0 million) will fund the Storage 2000 Initiative which will develop systems to enhance power quality and service reliability, increase the value of renewable resources, and enhance technology choices in a competitive utility environment.

Electric and Magnetic Fields (EMF) R&D (down $6.9 million) will complete experiments to identify the biophysical basis for replicable EMF biological effects and relevant EMF exposure parameters in fiscal year 1998. In addition, research begun in fiscal year 1996 to replicate key findings, using advanced EMF exposure at four government laboratories, and risk evaluation of potential human health effects from exposure to EMF, will be completed. The EMF program will complete its work in fiscal year 1998 and transfer the data and analyses prepared to the National Institute of Environmental Health Sciences for that agency to complete its comprehensive risk assessment. Thus, no funds are requested by the Department for this program in fiscal year 1999.

We are also requesting $0.5 million to support the electric utility industry effort on Climate Challenge. This successful effort encourages electric utilities to voluntarily reduce, avoid, or sequester greenhouse gas emissions using currently available, cost-effective means. More than 600 utilities are currently participating in this voluntary program representing 70 percent of U.S. electricity production. The fiscal year 1999 request would support ongoing activities and engage utilities in a dialogue to design a post-2000 voluntary program.

SOLAR PROGRAM SUPPORT

The fiscal year 1999 budget request for Solar Program Support is $14.0 million, the first request under this budget line since fiscal year 1995. It will fund efforts on Utility Restructuring and a Competitive Solicitation to encourage innovative applications and deployment of renewable electric technologies.

Included in the request is $4.0 million for a Utility Restructuring program, with $2.0 million to be spent on research and technical analysis and $2.0 million to be spent on outreach activities. The purpose of these activities is to develop a comprehensive understanding of emerging utility restructuring policies across the nation at both the state and federal levels, and to provide technical assistance to state and federal decision makers. We will conduct research and analysis, and develop and disseminate technical results and information. Outreach activities will communicate research results to state and regional electricity policy officials and other interested parties. Technical analyses and research activities will assist federal, regional, and state decision makers in evaluating electricity policy and market alternatives. Further, this effort will provide tools and information for policy makers to develop legislative and regulatory policies that lead to competitive, reliable electricity markets with a range of energy options including renewable energy technologies.

The fiscal year 1999 request for Solar Program Support also includes $10.0 million for a Competitive Solicitation to speed early deployment of renewable technologies. Technology proposals will be solicited on the best ways to use renewable technologies either singly or in combination with other renewable technologies, or in hybrid configurations with natural gas or energy storage systems.

This effort will be a five-year, cost-shared, highly-leveraged partnership ($10.0 million per year federal investment) for verification of renewable project performance. The Department will offer technical and financial support for new renewable energy projects with 70 percent private sector cost share aimed at project structures appropriate for a restructured electric power industry. These projects would enable new technologies to be demonstrated in the field while their performance is monitored and verified so that the private sector partners can increase their experience with these prototypes and the R&D programs can benefit from field data in a variety of settings. This new competitive solicitation reflects the intent of the Federal Buildings Remote Power Initiative initially funded by the Congress in fiscal year 1998, but is not limited to the federal sector. Of the $10.0 million proposed for fiscal year 1999, up to $3.0 million of the solicitation will be dedicated to projects benefiting Americans.

This program is designed to overcome specific impediments to the use of renewable electricity technologies. Currently, renewable energy projects are hampered by the uncertainties of electric utility restructuring, the current low price and perceived availability of natural gas, and improvements in gas turbine technology. The increasingly competitive restructured electric environment also favors technologies with low first costs over those with higher first costs, but lower life cycle costs. Rather than high project technical or financial risk, the major hurdle often facing renewable energy projects is identification of project structures in the new marketplace that would allow acquisition of long term power purchase contracts and project financing. Such new structures include renewable energy power marketers, hybrid projects with renewables and natural gas, investments in distributed renewable electricity generation, and customer choice.

HYDROPOWER

For fiscal year 1999, the Department is requesting $4.0 million for Hydropower Development, an increase of $3.3 million over fiscal year 1998 funding. With this funding, the program will begin the engineering design of a "fish-friendly" turbine that can replace turbines at existing facilities where environmental concerns may cause a reduction in their capacity allowance when applying for relicensing. Hydropower provides approximately 11 percent of the total U.S. generating capacity today; diminished power production from this clean baseload power resource would have serious environmental and economic impacts on our nation. This cost-shared program with industry would maximize power generation from hydropower facilities and help develop an important export market for U.S. companies.

SOLAR TECHNOLOGY TRANSFER

The funding request for the Solar Technology Transfer Program is $1.4 million. The program did not receive appropriated funds in fiscal year 1998. The Solar Technology Transfer Program will disseminate information and assistance to a variety of organizations to increase knowledge of and experience with renewable energy technologies. The funding will be directed to the Energy Efficiency and Renewable Energy Clearinghouse (EREC) that serves as a one stop shop for public and partner inquiries on renewable energy technologies. In performing such a function, EREC lowers the overall cost of staff resources to provide such information. This service, which is partially funded under the Interior and Related Agencies appropriation to provide information on energy efficiency technologies, responded to about 60,000 requests for information in fiscal year 1997.

INTERNATIONAL SOLAR ENERGY PROGRAM

The fiscal year 1999 budget request for the International Solar Energy Program is $8.8 million, an increase of $7.4 million over fiscal year 1998 funding. The program comprises three elements: CORECT, the Committee on Renewable Energy Commerce and Trade ($2.0 million). America's 21st Century Program ($3.4 million) and the U.S. Initiative on Joint Implementation ($3.4 million).

With electricity demand in developing countries projected to grow sharply over the next four decades and local environmental quality becoming an increasingly severe problem in many of these nations, a significant fraction of this demand could be for clean energy technologies. If even a small fraction of this growth is met by American renewable energy technologies, this would translate into sales of several hundred billion dollars and creation of many high quality jobs. Our International Solar programs are designed to help ensure that U.S. companies are major players in this huge emerging market.

CORECT, the Committee on Renewable Energy Commerce and Trade (up $2.0 million), is the multi-agency coordinating arm of the federal government working with U.S. industry to help counter intense international competition for the rapidly growing global market for renewable technologies. Funding will ensure increased technical collaboration with U.S. companies, multilateral financial institutions, U.S. trade missions and U.S. consulates to deploy U.S. manufactured renewable technologies worldwide. America's 21st Century Program (up $3.4 million) will expand technical assistance to Asian/Pacific countries, Russia, in addition to Latin America for the deployment of renewable energy technology projects through joint ventures with both the public and the private sectors. The U.S. Initiative on Joint Implementation (up $2.0 million) facilitates public/private cooperation on clean technology projects that reduce the emission of greenhouse gases. These projects are critical to bringing developing nations into full participation in international climate agreements because they help these nations understand how clean energy technologies can be used to cut their emissions without reducing economic growth.

SOLAR PROGRAM DIRECTION

In fiscal year 1999 we are requesting $17.0 million for program direction, an increase of $1.3 million. This increase is primarily for corporate planning and analysis activities such as implementation of the Government Performance and Results Act. Program Direction provides the staffing resources and associated funding to support the management and oversight of the Solar and Renewable Energy Programs. It also provides funding for support service activities, as directed in Congressional Appropriations language.

IMPROVED MANAGEMENT

Just as we are committed to undertaking critically important R&D, we are also dedicated to managing these programs effectively and using taxpayer dollars responsibly. To that end, I am implementing a number of management initiatives. We are increasing the level of competition in selecting contractors. We are developing technology roadmaps in collaboration with partners for a greater number of our programs. We are developing both a clearer budget and a more open budgeting process. Finally, we are focusing on program evaluation and terminating programs that don't measure up. To cite a few examples, we are concluding our work with the petroleum refining industry as well as our research on vehicle applications for Stirling engines, flywheels, ultracapacitors, and gas turbines.

CONCLUSION

Thank you again, Mr. Chairman, and members of the Subcommittee for the opportunity to discuss our fiscal year 1999 budget request. I hope you agree that the investments we propose for our programs, coupled with private-sector investments, will enable the nation to respond to the important energy and environmental challenges of the coming century.

NUCLEAR WASTE DISPOSAL

Senator DOMENICI. Thank you very much.

Senator Reid.

Senator REID. Thank you, Mr. Chairman.

Dr. Krebs, your detailed statement identifies clearly the priorities of the Office of Energy Research, but does not include any new methods that I was aware of disposing of nuclear waste. Is there anything in there?

Dr. KREBS. Senator Reid, we do not invest specifically in applications associated with nuclear waste. However, we do make investments in our chemical science programs and in our geological sciences program that are relevant to issues that are involved in nuclear waste. We make investments in laboratories, for example at Berkeley, Los Alamos, and Livermore that are involved in the nuclear waste repository program. So they had the benefit—the colocation, the coinvestment, of our research with their activities associated with nuclear waste. We believe it pays off on behalf of that program.

Senator REID. The reason I mention that, there are some who are addressing the future of nuclear power, and I think that we have to also recognize that cost and social acceptability are the two principal obstacles to nuclear power, and I think the Government should be involved in some form or fashion.

HYDROGEN RESEARCH

In last year's appropriations bill, our bill, the Department of Energy—I am sorry. In last year's appropriation bill for the Department of Energy, $3 million was put within the Office of Energy for hydrogen research. What happened to that money? What was accomplished as a result of that money being set aside?

Dr. KREBS. I am aware of $3 million that we have identified within the Office of Energy Research associated with hydrogen funding. This is the basic science that was funded within the Biological and Environmental Research Program, and also in the Basic Energy Sciences Program. We were requested by the House to identify activities that were related to renewables, and for us that included the hydrogen effort.

A lot of this research is associated with plant science and the investigation of methane-producing plants or methane-metabolyzing plants, and also the use of light to induce the production of hydrogen in chemical processes.

This research was not focused solely on hydrogen, although we identified it as associated with hydrogen, it also has a broader impact on multidisciplinary areas of science than just those associated with hydrogen issues.

Senator REID. I understand.

Dr. KREBS. I would be happy to provide you with that information for the record.

[The information follows:]

HYDROGEN

There is confusion regarding the $3 million identified in the fiscal year 1998 Energy Research budget for hydrogen research. To clarify the main point, at the request of the House Appropriations Committee, the Office of Energy Research (ER) was asked to identify ER funded research in fiscal year 1998 that supported the activities of the Office of Energy Efficiency and Renewable Energy's (EE) programs in solar and renewable energy. Within the $44 million of ongoing ER activities that were identified, $3 million supported the hydrogen program in EE. I would be pleased to provide a listing of current projects supported in fiscal year 1998. It is again noted that these are ongoing activities within the base program of the Department's request and do not represent any added funds by the Congress.

Dr. Mary F. Roberts, Boston College, "Osmoregulation in Methanogens"

Dr. Laurens Mets, University of Chicago, "Molecular genetic analysis of biophotolytic hydrogen production in green algae"

Dr. Michael W.W. Adams, University of Georgia, "The Metabolism of Hydrogen by Extremely Thermophilic Bacteria"

Dr. William B. Whitman, University of Georgia, "Biochemistry and Genetics of Autotrophy in Methanococcus"

Dr. Ralph S. Wolfe, University of Illinois, "Studies on the Microbial Formation of Methane"

Dr. Robert J. Maier, Johns Hopkins University, "Bacterial Nickel Metabolism for Hydrogenase Synthesis"

Dr. Judy Wall, University of Missouri, "Genetics and Molecular Biology of Hydrogen Metabolism in Sulfate Reducing Bacteria"

Dr. John N. Reeve, Ohio State University, "Structure and Regulation of Methanogen Genes"

Dr. Michael J. McInerney, University of Oklahoma, "Energetics and kinetics of syntrophic aromatic degradation"

Dr. Daniel J. Arp, Oregon State University, "Characterization of the Genes Involved in Nitrification"

Dr. Louis Sherman, Purdue University, "A Genetic Analysis of the Lumenal Proteins of the Photosystem II 02-evolving Complex in Cyanobacteria"

R. Eisenberg, University of Rochester, "Photochemistry of Platinum Group Elements: Applications to Energy Conversion and Bond Activation"

E. Greenbaum, Oak Ridge National Laboratory, "Kinetics of Enzyme-Catalyzed Processes"

J.K. Hurst, Washington State University, "Membrane-Organized Chemical Photoredox Systems"

T.E. Mallouk, Pennsylvania State University, "Electron Transfer Reactions in Microporous Solids"

N. Sutin, C. Creutz, Brookhaven National Laboratory, "Thermal, Photo-, and Radiation-Induced Reactions in Condensed Media", "Solar Hydrogen-Related Projects in the Division of Chemical Sciences"

RENEWABLE ENERGY CONTRIBUTION TO ELECTRICITY PRODUCTION

Senator REID. That would be fine.

We have heard testimony here today about 90 percent of the energy of this country comes from fossil fuels; is that right?

Mr. REICHER. Fossil and nuclear together.

Senator REID. And about 80 percent then is fossil fuels, is that not right?

Mr. REICHER. About 80. Well, total energy——

Senator REID. Anyway, a big number, all right?

Mr. REICHER. Electricity is 20 percent nuclear, but with total energy then that ramps down.

Senator REID. My question is this. You talked about solar and you've talked about wind energy, but realistically what can we hope to gain from production of electricity by those means in the next 10 years? It all sounds good and, you know, I have driven through California and watched those windmills whipping around, but, in fact, it does not produce much electricity, does it?

Mr. REICHER. The installed base in the United States today for wind is relatively small.

Senator REID. Less than 1 percent.

Mr. REICHER. Correct.

Let me answer that in terms of the potential that both of those technologies hold. Looking at wind, what we are endeavoring to do through research and development and testing, and, in fact, what other nations are also trying to do as well, is to develop turbines that will bring the cost down for wind so that they can be used in areas of the country with moderate wind speeds, as opposed to simply in the higher wind speed areas.

We are closing in very quickly in the next couple of years to a point where there will be a turbine available that can operate in those moderate wind speeds. This, as I said in my testimony, could open up large expanses of the country, particularly in the upper Midwest, to wind power development.

Senator REID. So would this triple the wind power or double it? What are we talking about?

Mr. REICHER. I think you could see, in terms of new installed capacity, several hundred megawatts of wind being installed this year. You could begin to ramp up into points where you are seeing thousands of megawatts installed per year.

Senator REID. Oh, really.

Mr. REICHER. We are trying to get these costs down from where they are today, which is on the order of 4 to 6 cents, which is almost competitive with other technologies, down into the 2 to 4 cent range. As I said earlier, in broad expanses of the upper Midwest and in other parts of the country there is a very, very large wind resource where you could develop these technologies.

So that is my brief answer on wind.

SOLAR ENERGY POTENTIAL

Senator REID. Now, solar, we know that the potential for solar, especially in the western part of the United States, is significant. What is the drawback to producing large quantities of electricity through solar?

Mr. REICHER. The challenge with solar today, within the United States, is primarily cost. The technology has gotten to a point with both of the major branches of solar technology, which are solar hot water systems to produce hot water for buildings and solar electric systems to produce electricity, have progressed to a point where it is quite a reliable way to produce energy. But solar is still on-the-grid, in many situations, not as cost competitive as it needs to be, and that is, in fact, the primary thrust of our energy R&D work.

I would point out, though, Senator, that off-the-grid, in the United States, solar is quite a competitive technology. And for the 2.5 billion people across the globe who are off-the-grid, it is quite a competitive technology. That is, in fact, one of the reasons why we are seeing this explosive growth—five new plants opened in just the past year in photovoltaic production in the United States. It is fueling this international growth.

We believe that, with the continued, relatively rapid drop in cost and a major deployment push through the million solar roofs initiative and by other means, we can continue to drive down the price of solar and it will be in even greater use over the next several years.

BASIC ENERGY SCIENCES

Senator REID. One last question. I know the chairman is wanting to move this along.

If the Global Climate Change Treaty is not ratified this year, which I think the odds are quite good that that will certainly be the case, I see that there is under Basic Energy Sciences a 25-percent increase, raising that allocation to about $836 million. Will that still be necessary?

Dr. KREBS. The increase in that program is driven by the request for the new spallation neutron source. That is a long-term investment in basic research for a balanced energy R&D portfolio, and it is not driven by the Kyoto meetings.

Senator REID. Thank you, Mr. Chairman.

Senator DOMENICI. Senator Reid, I am just wondering from the standpoint of further inquiries, would you want to stay after? I have to leave for a Republican conference at 3:30. You could stay and ask whatever questions you have.

Senator REID. The only thing that would be better than that is I will attend the Republican conference. [Laughter.]

Senator DOMENICI. The only problem is that they want me to tell them how we are going to do the budget and I am not sure you could do it for Republicans. You might do it just for Democrats.

Senator REID. I will stay however long you need me, sir.

Senator DOMENICI. Do you have a question?

Senator, we are glad to let you do that.

LIGNITE COAL

Senator DORGAN. Mr. Chairman, I would like to ask about lignite coal that is produced in North Dakota, Louisiana, Montana, and Texas, and represents about 9 percent of the coal production of the country. What programs does the Department of Energy sponsor to ensure that lignite remains an important part of our Nation's energy resource base?

Mr. REICHER. The bulk of the work on coal, Senator, is focused in our Fossil Energy Program. Unfortunately, neither of us today could address the details of that. We would be happy to get that information for you rapidly. There are small amounts of work in the Office of Energy Efficiency and Renewable Energy that look at the way one can burn coal along with agricultural crops and agricultural wastes to improve emissions from coal-fired power plants.

[The information follows:]

LIGNITE RESEARCH AND DEVELOPMENT PROJECTS

Fossil Energy is conducting a comprehensive coal program to develop advanced power systems and clean fuels technology that are designed to use a wide variety of coals from lignite to anthracite that will help ensure the full use of the nations coal resource base. Projects more specifically involving lignite include: a detailed kinetic analysis at Sandia investigating the burning behavior of ten strategic U.S. coals ranging in rank from lignite to low-volatile bituminous; a lignite is being evaluated as part of an effort to develop a model that describes toxic metal transformation throughout a utility boiler; under a Jointly Sponsored Research Program Cooperative Agreement, a large number of research tasks utilizing lignite were carried out at the University of North Dakota Energy and Environmental Research Center; the University of Utah is investigating the impact of fuel and combustion changes on ignition stability and flame characteristics to support the development of low-emission, high efficiency pulverized coal power systems; Rust College is investigating the mechanisms involved in the reduction of NO_X during reburning with lignite; and previously Fossil Energy conducted an air toxics emissions characterization program, where one of the plants was a lignite unit located in North Dakota, from which the data was forwarded to EPA for inclusion in its Utility Air Toxics Report to Congress.

In addition to the foregoing R&D projects, there are three Clean Coal Technology Demonstration projects that utilize low rank coals (lignite is considered a low rank coal) as their fuels. These include: the ENCOAL mild coal gasification project that will demonstrate the integrated operation of a number of novel processing steps to produce higher value fuel forms from mild gasification of low rank coal; a Clean Coal Diesel Demonstration Project which uses a coal slurry produced from Alaskan low rank coal; and the Healy Clean Coal Project a 50 MWe facility consisting of two pulverized-coal-fired combustors that burn Alaskan low rank coal.

Senator DORGAN. What I will do is, with the permission of the chairman, I will submit a couple of questions on lignite coal and ask that you respond and ask that they be included as part of the record.

COLD WEATHER CLIMATE BUILDING EFFICIENCY PROGRAMS

One question then on another part of your agenda. What part of the EE program for building efficiency is targeted toward cold weather climates that require the use of disproportionate amounts of energy per capita?

Mr. REICHER. There are a variety of pieces of the energy efficiency budget that address cold climates, and let me give you some examples. First is the weatherization program, which as you know funds weatherization of homes for poor people, and that is on the order of a $150 million a year and is part of the Interior budget.

Second, is in the building technologies area where we are looking at a whole host of ways to tighten up buildings, including insulation and building materials and construction techniques and roofing, that will make homes more comfortable, warmer, and more energy efficient in cold climates.

We also have a remote power initiative that looks at the use of various energy sources in rural areas, including in cold regions, and how to improve energy technologies in those types of places.

So there is a variety of things that we are doing to address colder regions.

Senator DORGAN. Thank you very much.

Mr. Chairman, I will submit some questions and ask that the responses be part of the record.

Let me just make one other observation. I do not quite understand why we have a substantial part of the energy issue in the Interior appropriations bill. I will look into that, I guess. It is curious to me how some of these things get fragmented in tradition over time, and tradition does not seem to be——

Dr. KREBS. I can give you a very quick answer.

Senator REID. Senator Byrd is the biggest answer.

Dr. KREBS. The Department of Energy was created from a variety of agencies.

Senator DORGAN. I understand now. I was just told.

Dr. KREBS. You were just really informed by the expert.

Senator DORGAN. I will share that with the chairman, who already knew it.

Senator DOMENICI. Well, I do not look for any ordinary rationale for any of these allocations of different functions of Government to a subcommittee. I never have understood why water projects should be part of energy. But we have those issues to contend with.

They already understand the President whacked the water program and, frankly, that may end up impacting what we are able to accomplish in these energy programs. Everyone knows the House is not going to cut water, so where are they going to cut? They are probably going to cut energy. That is kind of shameful. But we may have to do the same thing, you know, although we are going to try very hard not to. We will try to be balanced.

I thought I had 2 hours for this hearing and I end up only having an hour because the leadership has set a meeting with all the Senators from my party at one time at 3:30 p.m.

SOLAR AND RENEWABLE ENERGY BUDGET

I have a lot of questions and I am going to submit them in writing. I note, with reference to the solar and renewable energy programs, that we might not be able to provide a 37-percent increase. So what I would ask you to do is to provide me with recommendations of the allocations of funding at a couple of different levels, if you would. Do it at current level, do it at a 10-percent increase, a 20-percent increase, where would you put the money. I think that would be helpful to us.

Mr. REICHER. We would be pleased to do that, Mr. Chairman.

[The information follows:]

BUDGET PRIORITIES

Increased investments in renewable energy technology R&D are of critical importance to the nation. These technologies will improve local environmental quality, improve the diversity and security of our energy supply, reduce greenhouse gas emissions, and improve our long-term competitiveness. They are of critical importance to meeting the energy and environmental challenges of our times and of the next century. However, we do recognize the existence of budget constraints and will work with the committee staff to establish priorities at the current level and at a 10 percent and 20 percent increase.

ELECTRICITY RESTRUCTURING AND RENEWABLE ENERGY

Senator DOMENICI. We also are going to ask you a question about electricity restructuring, because that may very well start moving next year. Sometimes it is called deregulation. I am wondering if the administration has any proposals that they want included in that electric restructuring to encourage the use of renewable energy sources. I think that is very interesting. I think you can almost bid adieu to any successes that you have had for many years if there is not something built into the restructuring, because the purpose is to drive the cost down, which will happen, and you have already restated for the record that the most significant impediment to the use of renewables is that the cost of the alternatives is too cheap or, conversely, the cost of the renewables is too expensive.

[The information follows:]

COMPREHENSIVE ELECTRICITY COMPETITION PLAN: PROVISIONS AFFECTING RENEWABLE ENERGY

The Administration's Comprehensive Electricity Competition Plan will result in lower prices, a cleaner environment, increased innovation and government savings. The Department of Energy estimates that retail competition will save consumers $20 billion a year on their electricity bills. This translates into direct savings to the typical family of four of $104 per year and indirect savings, from the lower costs of other goods and services, of $128 per year. Thus, total savings for a typical family are estimated to be $232 a year.

Competition will also produce significant environmental benefits through both market mechanisms and policies that promote investment in energy efficiency and renewable energy. We expect the Electricity Competition Plan to produce significant environmental benefits through these policies. Provisions of the plan that will facilitate the use of renewable energy include:

—A Public Benefits Fund that will provide matching funds to States of up to 1.0 mill/kWh, ($3 billion a year) to finance energy efficiency, renewable energy and other public benefit programs;

—"Green labeling" provisions to help consumers identify and choose power from environmentally friendly generators including renewable energy;

—A Renewable Portfolio Standard, to require that at least 5.5 percent of electricity sales be generated from non-hydroelectric renewable sources, subject to a cost cap; and

—Trading authority for NO_X emissions, to facilitate cost-effective, market-driven NO_X reductions—which will encourage investment in low- and zero-emissions technologies such as renewable energy.

HIGH FLUX BEAM REACTOR

Senator DOMENICI. Dr. Krebs, I have some really serious problems with the High Flux Beam Reactor at Brookhaven and I ask you some questions about it. I frankly would like to have, as part of this question, a list for the record of all ongoing environmental problems at Brookhaven. I think we have taken some giant steps recently, but there remains some real fear in that area, that some

of that pollution might already have migrated further and deeper than any of us thought.

[The information follows:]

ENVIRONMENTAL PROBLEMS AT BNL

The major environmental challenges at Brookhaven National Laboratory are environmental restoration of contaminated groundwater and soils, and stabilizing the Brookhaven Graphite Research Reactor for decontamination and decommissioning.

Brookhaven National Laboratory is a designated Superfund site. A tri-party Interagency Agreement was executed in 1992 among the Department of Energy, the New York State Department of Environmental Conservation, and the U.S. Environmental Protection Agency that integrates cleanup requirements under the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act, and State regulations. The Interagency Agreement contains a list of 29 Areas of Concern which require assessment and possible remediation, including the tritium plume from the spent fuel pool at the High Flux Beam Reactor. BNL is located above a sole source aquifer and one of the major environmental issues is groundwater contamination with volatile organic compounds and radionuclides (tritium and strontium-90). Other environmental concerns include radiologically contaminated soils and contaminated sediments in the Peconic River.

The final decisions on the cleanups for these problems are expected to be made over the next year with input from the U.S. EPA, the State, and the general public.

Accelerated actions completed to date include the connection of approximately 1,500 residents to public water as a precautionary measure because of off-site volatile organic compound groundwater contamination from BNL, the capping of three landfills, the excavation of fifty-five buried waste pits, the construction and operation of four groundwater treatment systems, and the removal of numerous tanks and cesspools. A fifth groundwater treatment system is scheduled to be built off-site this year.

The Brookhaven Graphite Research Reactor was the first reactor built for the sole purpose of providing neutrons for research, and operated from 1950 to 1968. During a recent facility review, radioactively contaminated water was found in the cooling systems channels. BNL is stabilizing the facility prior to decontamination and decommissioning.

Both the Superfund cleanup and the decontamination and decommissioning of the Graphite Research Reactor are scheduled to be completed in 2006 under DOE's draft Accelerating Cleanup: Paths to Closure Plan.

Attached is a detailed list of environmental concerns associated with BNL.

BROOKHAVEN NATIONAL LABORATORY

ENVIRONMENTAL RESTORATION—LIST OF AREAS OF CONCERN

1. Hazardous Waste Management Area
1b. Groundwater
2a–e. Chemical/Animal/Glass Holes
2f. Ash Pit
3. Current Landfill
4. Sewage Treatment Plant
5. Central Steam Facility
6. Building 650 and Sump Outfall Area
7. Paint Shop
8. Experimental Agricultural Fields
9. Brookhaven Graphite Reactor
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15a. Potable/Supply Wells
15b. Monitoring Well 130–02
16. Aerial RadSurvey Results
17. Area Adjacent to Former Low-Mass Criticality Facility
18. AGS Scrapyard
19. Building T–111 TCE Spill Area
20. Particle Beam Dump, North End of Linear Accelerator
21. Leaking Sewer Pipes

22. Old Firehouse
23. Offsite Tritium Plumes
24a. Process Supply Wells 104, 105
24b. Recharge Basin HP
24c. Recharge Basin HN
24d. Recharge Basin HO
24e. Recharge Basin HS
24f. New Stormwater Runoff Recharge Basin
25. Building 479
26. Building 208
27. Building 464
28. EDB Groundwater Contamination
29. HFBR Spent Fuel Pool and Tritium Groundwater Plume

NUCLEAR ENERGY PROGRAM

Senator DOMENICI. I also, of late, have taken up a strong position in favor of us moving ahead with nuclear power, which may cause some people to shudder. But when you have the problem with greenhouse gases with our friends in Europe so eagerly embracing the Kyoto Accord and ask them why, and two out of three countries can do it so easily, because they have huge nuclear power percentages, take France as an example. France was running around during the treaty deliberations saying America surely does not want to do very much. Well, France does not have to do anything with 87 percent of their power coming from nuclear.

They do not have the problem of waste disposal like we have. They reprocess. Nobody is frightened of it. You walk into a couple of big buildings and you are standing right on top of all their nuclear wastes from all their power plants. And here we are, fussing with Nevada for nigh on 20 years about a tunnel in the ground, and in New Mexico 14 years on WIPP regarding low level radiation.

So one of the things that I have learned is radiation standards are very important in the United States. The protection from radiation is a field that is in desperate need of somebody looking at it and making some reasonable standards. And I ask you some questions about that.

HUMAN GENOME PROGRAM

The human genome program. I guess what I need to know from you all, the split is no longer one-third to two-thirds, as it was when we started this program. NIH gets much, much more.

Dr. KREBS. Right.

Senator DOMENICI. I frankly would like to know whether you are provided the money or not, and know what, if anything, the Department of Energy thinks they should be doing that they are not getting money for in the genome field. If you could go back and look at that, I would be very, very willing to look and see if there are some things that we would be able to provide something for that. That is the greatest research program we have got in America in terms of wellness. I do not think anybody doubts that. It is humankind's wellness program for the future, and we have a few hangups in terms of technology for the final round of sequencing, but the program is going along handsomely, is it not?

Dr. KREBS. We think so. We worry more about the challenges, but the accomplishments have been significant.

Senator DOMENICI. Yes; when you meet with those NIH people you can smile and say that, if it weren't for the Department of Energy you never would have got off the dime and started that program. That is what happened.

Dr. KREBS. That is right.

Senator DOMENICI. Do you know Charlie Delisi?

Dr. KREBS. Yes.

Senator DOMENICI. He is the one that left them and came to you, came to me.

Dr. KREBS. And started, I think, in New Mexico.

Senator DOMENICI. Yes; he came to me and said, we ought to be doing this. So let us do it all in the Department of Energy. And that brought NIH in. It is a great program, doing wonderfully.

[The information follows:]

HUMAN GENOME PROGRAM FUNDING

The U.S. Human Genome Program has now emerged from its earlier emphasis on chromosome mapping, core resource development, and early technology innovation to its current high throughput DNA sequencing phase. To meet the core goal of generating a reference sequence of the human genome in the year 2005, DOE has had to commit a substantial fraction of its fiscal year 1998 genome program resources to initiate factory scale DNA sequencing. This was at the painful cost of reduced investment in important areas still critically needed to bring the human genome program to a timely and increasingly economical fruition.

This commitment has resulted in a reduced investment in three areas of critical need: (1) "hardening" or validating of prototype systems for the production DNA sequencing, (2) prototyping of the next generation of DNA sequencing technology, and (3) implementing "biologist friendly" computer tools and biological resources needed to process and understand the rich information resource of the human genome. Technological research is what DOE does best, but the current genome budget is inadequate to do these tasks properly. Full funding would have a dramatic impact on the ability of DOE to solve the existing technological obstacles to widespread use of genomic tools in medicine and biotechnology. It would also enable the U.S.A. to maintain its technological lead in the face of substantial investments in research into genome technologies in Europe and Asia.

The recently published JASON report on the Human Genome Project made four technology-related recommendations: (1) technology development should be emphasized as a DOE strength; (2) continue work to improve present technologies; (3) enhance long-term technology research; and (4) retain technology flexibility in production sequencing facilities.

There are several new and developing DNA sequencing technologies that cannot yet be used in a DNA sequencing factory. These include systems for handling very small volumes of expensive reagents, genetic engineering to improve critical biochemical reagents, and novel massively parallel capillary electrophoresis systems. These new technologies need to mature and be "hardened" or validated before they can be reliably introduced into production DNA sequencing systems. Their introduction will increase the likelihood that the complete DNA sequence of the first human genome will be determined by 2005. Industry experts have estimated that "hardening" of new technologies for use in a production facility require an investment equal to 10 percent of the overall investment in a given program.

The need for DNA sequencing will not end with the first phase of the human genome project. Knowing the complete DNA sequence of a reference human genome and the identity of all human genes will make DNA sequencing the basis of an increasing number of medical diagnoses in the future. DNA sequencing will also be one tool in the development of therapeutic strategies for a variety of diseases making a broader array of drugs available to many more people than today. However, to be most useful, DNA sequencing in the future will have to be much faster and cheaper than it is today. Therefore, research is needed today to develop the next generation of DNA sequencing technology that will bring genomics into widespread use in the nation's universities and industrial laboratories. This investment will also ensure that scientists and physicians can maximize use the human DNA sequence information determined in the first phase of the human genome project.

The real value of the human genome project still lies buried in the genetic code that is currently being deciphered. Tools and resources are needed for understand-

ing and using the information encoded in the human DNA sequence. This broad area of research is often referred to as "functional genomics." Biologists and medical researchers are accustomed to revealing the functional details of single genes or small numbers of genes in their individual laboratories with a few graduate students and postdocs. Having access to all of the approximately 100,000 genes in the human genome presents biologists with an entirely new challenge.

The challenge of functional genomics at the genomic level requires resources and tools not commonly available in today's single investigator laboratory. It requires a new scale of interaction between human genome biologists, medical scientists, and biologists with expertise in so-called model organisms, such as mouse, fruit fly, round worm, yeast, and others. The genetic similarity between the identity and organization of genes in these model organisms and in humans is remarkable and a feature that can be exploited to rapidly learn about the nature or function of many human genes. The experimental flexibility available to biologists working with model organisms enables key studies to be rapidly done in these other species that address key questions in human biology. National functional genomics resources providing specialized tools, resources, or services will be needed to ensure that tomorrow's biologists and physicians are able to effectively exploit the research and discovery opportunities that exist in the human genome.

The DOE Human Genome Program is well positioned to take advantage of these additional resources. The DOE Joint Genome Institute's Production Sequencing Facility is being built in a modular fashion so that it can serve as a "plug-and-play" type test bed for hardening today's new sequencing technologies. In addition to capabilities at the Joint Genome Institute, the DOE national laboratories can leverage their capabilities in spectroscopy, single molecule detection, engineering, and computation to contribute to the development of tomorrow's sequencing technologies. Finally, DOE laboratories are the best place in the U.S. to transition yesterday's capabilities in high throughput mouse genetics, used to determine the genetic effects of radiation and chemicals, into tomorrow's functional genomics facilities with a wide range of user facility capabilities including the production of mice containing or missing specific pieces of DNA. The long term impacts of these new investments in the DOE Human Genome Program will reach far beyond the basic biological community to include a broad range of medical applications including impacts in molecular nuclear medicine.

With input from our advisory committee, the Biological and Environmental Research Advisory Committee (BERAC), we have determined that the following additional resources would greatly enhance the DOE genome program in the following categories:

[In millions of dollars]

Hardening of prototype production sequencing technologies	10
Long-term research in new sequencing approaches	15
Functional genomics	15

FUSION ENERGY RESEARCH

Senator DOMENICI. I ask you some specific questions regarding fusion energy; generally, which of these technologies are we going to have to get rid of, what are we going to end up with, and where are we really going? We used to all run around thinking this was the energy source for the future, which would be clean and cheap and everybody would have it. Maybe an expectation statement on your part from the standpoint of the science community as to where it is would be very interesting.

We are spending much less than we ever planned 10 years ago, but nonetheless it is, what, $200 million-plus a year?

Dr. KREBS. Correct.

[The information follows:]

FUSION ENERGY SCIENCES

Since fusion is not expected to enter the commercial energy marketplace until the middle to latter part of the next century, projections for the economics of fusion energy are subject to considerable uncertainty. The general conclusion of studies conducted on this subject has been that fusion energy has the potential to be economically competitive with other long-range energy sources for generating electricity.

Given this conclusion, and fusion's potential as a virtually unlimited source of environmentally acceptable energy, we continue to support a vigorous science and technology oriented program to enable us to be in a position to realize this potential in the future.

FOREST WASTE CONVERSION TO ETHANOL

Senator REID. I just have a couple questions and I will quit.

Senator DOMENICI. Sure.

Senator REID. What is the DOE doing to support forest waste conversion to ethanol for fire suppression in the western United States? How much money is in the President's budget to support this effort?

Mr. REICHER. We have an active program that looks at forest and agricultural wastes; generally, looking at making both ethanol and gasifying those wastes to use in power plants. Senator Reid, I do not know the exact expenditures on the program you are talking about. I know there are discussions out West looking at clearing forests and using the resulting forest wastes to produce energy sources.

Senator REID. Could you amplify your answer when you return to the office?

Mr. REICHER. I would be pleased to.

[The information follows:]

FOREST WASTE CONVERSION TO ETHANOL FOR FIRE SUPPRESSION

In fiscal year 1998, the Department is supporting the Western Biomass Consortium, which is made up of 13 western states, including Nevada. The Consortium focuses primarily on forest health and the potential use of biomass for ethanol production and power. Activities relevant to the forest waste conversion to ethanol effort include: (1) the Northeastern California Manufacturing Feasibility Study, completed in cooperation with the Quincy Library Group, the California Energy Commission, the California Institute of Food and Agriculture Research, Plumas Corporation, TSS Consultants, and the National Renewable Energy Laboratory (NREL); (2) a pre-feasibility study, also completed by NREL for southeastern Alaska; and (3) support of the Colorado Forest Health Front Range Partnership.

In fiscal year 1999, the reduction of risk from catastrophic forest fires in the West, through the use of forest thinnings (primarily softwoods), is one of the major partnership opportunities that will be sought under the Ethanol Production budget request. Resources at NREL, including the Alternative Fuels User Facility, will be used to conduct integrated bench-scale studies of softwood thinnings from private and public lands (national forests), in cooperation with industrial partners. Part of the $12 million requested for cellulose-to-ethanol production facilities may be used to support potential opportunities for organizations, such as the Quincy Library Group, that are trying to co-generate ethanol and electricity from softwood thinnings in California.

Most of the longer term core research program, about $12 million in the fiscal year 1999 budget request, will lead to lower costs for producing ethanol from softwoods. This research includes the development of advanced fermentative organisms, advanced cellulases, and pretreatment methods which will lower, and possibly eliminate, the need for cellulase enzymes.

ADDITIONAL COMMITTEE QUESTIONS

Senator REID. We all have some questions to submit in writing and if you would just make that part of your work I would appreciate it.

Senator DOMENICI. Might I say to both of you, in the event in the next couple of weeks that something comes to mind that seems important for us to know, if you would just let our staff know. We will

either arrange to informally communicate with you or we will set up a quick hearing and finish out the rough edges of this.

I am leaving you about 15 questions, and about 6 or 8 for you, if you will answer them at your earliest convenience. We do not have any deadline yet—a month, that is plenty of time.

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

QUESTIONS SUBMITTED BY SENATOR DOMENICI

HIGH FLUX BEAM REACTOR AT BROOKHAVEN

Question. I understand the Basic Energy Sciences Advisory Committee has recommended that the High Flux Beam Reactor at Brookhaven be upgraded and restarted. When will the EIS on the reactor be completed?

Answer. On October 8–9, 1997, the Basic Energy Sciences Advisory Committee (BESAC) met to review the scientific case for the HFBR. In its report, the Committee recommended that the HFBR be restarted "* * * at 30 MW and move up to 60 MW in a timely manner * * *." However, "* * * if the start-up were to be at 30 MW with no clear plan to move to 60 MW, it should not be done * * *." The reason BESAC recommended the 60 MW operation is that 30 MW operation "* * * will not provide a facility that warrants the expenditure of the funds that will be required for the restart." BESAC did not recommend that the HFBR be upgraded at this time; rather, the recommendation was for restart with a clear path to 60 MW operation.

At its meeting in October, 1997, BESAC also recommended a full Environmental Impact Statement before restarting HFBR. The EIS process started with the issuance of the Notice of Intent on November 24, 1997. The Department conducted three scoping meetings, the last of which was held on January 15, 1998. The EIS is scheduled to be completed and the record of decision issued in December 1998.

Question. If the Department decides to pursue an upgrade, how much would that cost?

Answer. A non-preferred alternative is included in the EIS that analyzes upgrading the reactor vessel, beam tubes and beam lines and scientific instruments. The estimated cost of that upgrade is about $150 million.

Question. Have you determined how much tritium has leaked from the spent fuel storage pool and if that tritium will reach a drinking water aquifer?

Answer. The total amount of tritium leaked is not precisely known; DOE has focused its resources on correcting the problem by removing the water from the spent-fuel pool and cleaning up the plume.

All of the water from the spent-fuel pool was pumped out as of December 30, 1997. The project to remove the water was completed ahead of schedule and under budget. All of the tritium released is on the BNL site, and has not reached any off-site drinking water.

In May 1997, BNL started pumping the contaminated groundwater to prevent the tritium from leaving the site boundary in concentrations above the state and federal drinking water standards. Monitoring wells directly south of the recharge basin and of the tritium plume will be sampled routinely to make sure that the groundwater leaving the BNL site meets EPA drinking water standards.

Question. Last week a geologist that used to work at Brookhaven claimed that radioactive material may have leaked into the groundwater at Brookhaven as early as 1959. Could you provide for the record a list of all ongoing environmental problems at Brookhaven?

Answer. The major environmental challenges at Brookhaven National Laboratory are cleanup of contaminated groundwater and soils and stabilizing the Brookhaven Graphite Research Reactor for decontamination and decommissioning.

Brookhaven National Laboratory is a designated Federal and State Superfund site. A tri-party Interagency Agreement was executed in 1992 among the Department of Energy, the New York State Department of Environmental Conservation, and the U.S. Environmental Protection Agency that integrates cleanup requirements under the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation and Liability Act. The Interagency Agreement contains a list of 29 Areas of Concern which require assessment and possible remediation, including the Building 650 Sump Outfall area and the tritium plume from the spent fuel pool at the High Flux Beam Reactor. BNL is located above a

sole source aquifer and one of the major environmental issues is groundwater contamination with volatile organic compounds and radionuclides (tritium and strontium–90). The final decisions on the cleanups for these problems are expected to be made over the next year pursuant to this Interagency Agreement.

Accelerated actions completed to date include the connection of approximately 1,500 residents to public water as a precautionary measure because of off-site volatile organic compound groundwater contamination from BNL, the capping of three landfills, the excavation of fifty five buried waste pits, the construction and operation of four groundwater treatment systems, and the removal of numerous tanks and cesspools. A fifth groundwater treatment system is scheduled to be built off-site this year.

The Brookhaven Graphite Research Reactor was the first reactor built for the sole purpose of providing neutrons for research. It operated from 1950 to 1968. During a recent facility review, radioactively contaminated water was found in the cooling systems channels. BNL is stabilizing the facility prior to decontamination and decommissioning.

Both the Superfund cleanup and the decontamination and decommissioning of the Graphite Research Reactor would be completed in 2006 under the draft planning document, "Accelerating Cleanup: Paths to Closure."

I would be pleased to provide a list of ongoing environmental problems at Brookhaven for the record.

BROOKHAVEN NATIONAL LABORATORY

ENVIRONMENTAL RESTORATION—LIST OF AREAS OF CONCERN

1. Hazardous Waste Management Area.
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24e. Recharge Basin HS.
24f. New Stormwater Runoff Recharge Basin.
25. Building 479.
26. Building 208.
27. Building 464.
28. EDB Groundwater Contamination.
29. HFBR Spent Fuel Pool and Tritium Groundwater Plume.

RADIATION PROTECTION STANDARDS

Question. I am frustrated that we spend billions of dollars each year cleaning up DOE sites and regulating commercial reactor sites to within 5 percent of background radiation. I am interested in the possibility that our current radiation pro-

tection standards, which assume a linear relationship between radiation exposure and cancer, with no minimum level below which radiation might not be harmful, might be wrong. Last year's Act required the Department to develop a multi-year program, including budgets for the next 10 years, to understand the effects of low levels of radiation. Have you completed the plan?

Answer. A general description of the multi-year low dose research program has been included in Dr. Krebs' prepared statement for the record of March 10, 1998, to the Senate Appropriations Committee. That description includes the outline and most of the details of a program plan. An excerpt of this material is being provided to you. A specific program plan will be available by April 15, 1998. (The information follows:)

Low Dose Radiation Exposure Program

In response to guidance in the Conference Report for the fiscal year 1998 Energy and Water Development Appropriation, BER is initiating and carrying out "a rigorous, peer-reviewed research program that will apply the molecular level knowledge gained from the Department's human genome and structural biology research to ascertain the effects on levels ranging from cells to whole organisms that arise from low-dose-rate exposures to energy and defense-related insults (such as radiation and chemicals)."

The BER Health Effects Research Program is currently being restructured. One aspect of this restructured program will be research on the mechanisms of cellular responses to low dose, low dose rate exposures to radiation and chemicals. Solicitations for new research have been made. Preproposals from National Laboratories were received January 16 and preapplications are due from Universities on March 26. Formal proposals and applications will be reviewed in May and June and new research will be funded in fiscal year 1998 and fiscal year 1999. Additional peer reviews will be conducted and new research funded in fiscal year 2000.

The new Low Dose Radiation Exposure Program will include research on: (1) the identification/characterization of genes/gene products that determine/affect cellular responses to low level exposures; (2) individual differences in susceptibility to low level exposures; and (3) methods to relate molecular level information on cellular responses to low level exposures to health risk. Funding for this program will be $3 million in fiscal year 1998, $5 million in fiscal year 1999, and $10 million per year in fiscal year 2000–2007.

The program will leverage the results of previous DOE research on DNA repair, cell cycle regulation, radiation-induced gene expression, tissue effects on regulating cell responses and phenotypes, and susceptibility genes. The program will use resources, information, and technologies developed in the human genome program and information on the structure of critical molecules involved in cellular responses to low level exposures developed in the structural biology program. The program will maintain links with related efforts outside of DOE. These include an international effort to pool cancer risk data from indoor radon exposures, ongoing activities of the National Research Council and the National Academy of Sciences to evaluate risks from low level radiation exposures, and a new low dose radiation risk consortium coordinated by Canadian scientists.

A lead scientist will be selected for this program from applicants who receive funding from the current solicitations for new research. The lead scientist will be an expert on mechanisms of cell responses to low dose exposures, will facilitate collaborations and information exchange among scientists, and will be a critical resource of information on this new program and the broader scientific and regulatory issues associated with low level exposures. Workshops with funded investigators, other experts, regulators, policy makers, and other agencies will be held every 18 months to maximize information exchange and program progress. The first workshop for new program investigators will be held in the fall or early winter of 1998.

As requested in the Conference Report for the fiscal year 1998 Energy and Water Development Appropriation, a ten year program plan, including budgets, will be available by April 15, 1998.

Question. Does your budget include optimum level funding for that program?

Answer. The current program plan calls for $3 million in fiscal year 1998, $5 million in fiscal year 1999, and $10 million for each of the subsequent eight years. This is intended to be, "a rigorous, peer-reviewed research program that will apply the molecular level knowledge gained from the Department's human genome and structural biology research to ascertain the effects on levels ranging from cells to whole organisms that arise from low- dose-rate exposures to energy and defense-related insults." Two factors will determine the scientific success of this program: (1) the quality and progress of the research and (2) the amount of research that can be supported. Scientific progress takes time. In the near term, by redirections in existing

budgets, we will fund this program as best we can. This will require making difficult choices to terminate ongoing excellent scientific work. It is difficult to determine optimum levels under such circumstances. We believe, that a $10 million annual investment over the life of this program is sufficient to address the program goals. Additional funds would allow us to expand the range of research topics and issues addressed by the program.

Question. When will we be able to determine the effects of low-level ionizing radiation?

Answer. The program is a basic science program involving "rigorous, peer-reviewed research." It is our intent that this program will determine the effects from low-dose-rate exposures to energy and defense-related insults, including radiation, within the designated time frame of the program. However, the pace of scientific progress cannot be predicted with precision. The first set of projects funded by this program may provide the critical answers being sought. Equally likely, these same projects may only identify the critical experiments that need to be done. Our strategy for managing this research program is designed to maximize rapid progress through ongoing program reviews and workshops that include principal investigators, other scientists, regulators, policy makers, and other agencies.

HUMAN GENOME PROGRAM

Question. For fiscal year 1999, the Department has requested $85.3 million for the Human Genome program, the NIH has requested $350 million, and I understand industry may spend that much again on its own sequencing. Would you describe the relationship between those three efforts?

Answer. The U.S. Human Genome Project has been jointly coordinated by the Department of Energy (DOE) and the National Institutes of Health (NIH) since 1988. High throughput DNA sequencing is currently the major focus of both the DOE and NIH genome programs. All sequence information supported by DOE and NIH is rapidly submitted to public databases. Sequencing laboratories supported by both agencies participate in an international effort to coordinate human DNA sequencing to minimize overlapping sequencing efforts. The DOE and NIH participate in the peer review of research conducted by both agencies. DOE is an active participant in the sequencing quality tests coordinated by NIH. Both agencies are currently planning a workshop to discuss and plan the current and future needs in data management and analysis for the genome program. DOE and NIH are working together on the next five year plan for the U.S. Human Genome Project for fiscal year 1999–2003. Industry is making a considerable investment in human DNA sequencing; however, for the most part, this sequence data is not submitted to public databases but is used for internal research and development. In addition, the DOE and NIH efforts are focused on determining the complete sequence of long stretches of human DNA; much of industrial sequencing is focused on sequencing short sequences of DNA useful as gene markers that are important in drug development or diagnostics.

Question. Last year was the final year of construction for the Joint Genome Institute at the Lawrence Berkeley Laboratory. How much of the DOE's requested Human Genome budget goes to the operation of that facility?

Answer. DOE funded the construction of the Human Genome Laboratory at Lawrence Berkeley National Laboratory. This new facility is not the Joint Genome Institute (JGI). The JGI is a collaboration or "virtual laboratory" whose work is currently conducted at Lawrence Berkeley, Lawrence Livermore, and Los Alamos National Laboratories. Genome scientists at Lawrence Berkeley National Laboratory conduct their share of JGI activities at the Human Genome Laboratory. Direct funds are provided for research conducted in the Lawrence Berkeley Human Genome Laboratory but not for the operation of the building itself.

In August 1998, the JGI will open a production sequencing facility in Walnut Creek, California. This laboratory will be used as a state-of-the-art robotics factory for the sequencing of DNA and will be the only building or laboratory specifically designated as a JGI facility.

Question. The JASON's committee issued a review of the Human Genome program in January. The Committee concluded that present sequencing technology leaves much to be desired and must be replaced by a new technology if the full potential of the genome is going to be used. Do you concur with that assessment, and, if so, how much is the Department spending in non-EP technology development?

Answer. The present sequencing technology, based upon electrophoresis (EP) technology is considered adequate for the immediate needs of the genome program. However, it is likely to be inadequate to meet the requirements of the program for high throughput sequencing as we approach the year 2005, when the first complete sequence of the human genome is to be completed. The need for DNA sequencing

in the research laboratory or the medical laboratory will not end with the completion of the initial sequencing phase of the human genome program. It is generally agreed that the EP technology cannot meet the needs for determining sequence information for the wide range of applications of genomics beyond the goal for the year 2005. The Department is spending $1,980,000 in fiscal year 1998 for research into technologies that are not based upon electrophoresis (non-EP) technologies. The Department will redirect the genome instrumentation research subprogram during fiscal year 1999. The redirected subprogram will address the points raised in the report by the JASON's committee and will likely contain an increase in the level of funding for research into non-EP technologies for sequencing.

FUSION ENERGY SCIENCES

Question. I would like to commend the Fusion Energy Sciences Advisory Committee for recognizing that the emperor had no clothes by declaring what those of us who do the budgets have known for some time; the international community will not spend $12 billion on the next fusion machine.

The fusion community is now developing low cost alternatives to the International Thermonuclear Experimental Reactor.

Has the Department provided any guidance as to what the United States might contribute to a less expensive international machine?

Answer. I am delighted that we and our ITER partners are now agreeing to focus our efforts on lower-cost options for this major step in fusion research. Within the proposed three-year ITER extension period, we expect to provide decision-makers in the four Parties with a broad range of options that will enhance the probability of moving to joint construction of an attractive, affordable next step. We have not yet stated what the U.S. might contribute to a lower-cost ITER. First we want to see the outcome of the joint efforts to prepare lower-cost designs and assess the level and nature of our fusion budget support from the Congress in the next few years.

Question. This Subcommittee funds two totally separate fusion programs; one in defense and one in non-defense, and at least six different technologies all with the goal of achieving controlled ignition; glass lasers, KrF lasers, heavy ion drivers, light ion drivers, magnetic confinement, and pulsed power.

We are not going to fund all these technologies indefinitely. When are we going to be able to make a down selection?

Answer. The Department does have two separate fusion programs, and, although they are interrelated, they serve quite different missions.

The mission of Energy Research's Fusion Energy Sciences program is to acquire the knowledge base needed for an economically and environmentally attractive fusion energy source. The understanding of ignition, or burning plasma physics, is a key element of that knowledge base. We are depending on international collaboration, in particular through ITER, for experimental exploration of burning plasma physics. While the Fusion Energy Sciences program is predominantly focussed on magnetic fusion research, it also contains a small component focussed on the energy aspects of inertial confinement, especially the physics of heavy ion accelerators. We are depending on the work of the Department's Defense Programs to provide the most important element of inertial fusion energy, namely the target physics.

The mission of Defense Programs' Inertial Confinement Fusion program is to support stockpile stewardship, and the National Ignition Facility is a major element of that program. An intermediate goal of the National Ignition Facility is an ignited target driven by glass laser technology. Within the Inertial Confinement Fusion program, other drivers are supported for near-term research and for possible future applications in the Stockpile Stewardship program. The light ion driver, however, has been dropped and will not be supported after this year. The pulsed power program and the KrF laser program are being funded to provide scientific results now for Stockpile Stewardship and to understand their potential for future capability needed by the Stewardship program.

The restructuring of the Fusion Energy Sciences program, mandated by Congress in 1995, eliminated milestones for the development of fusion energy and resulted in a science driven program with an emphasis on innovation, including increased efforts in plasma science and on alternate concepts. A major issue for the magnetic fusion community had been that we had "down selected" too soon in magnetic fusion. The time to "down select" will be when the science is further developed so that when the country is ready to proceed with the development of fusion energy, a fully informed down select decision can be made.

THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY

Question. Last year's Appropriations Act recommended that the Department provide an additional $3 million for the operation of the accelerator at the Jefferson Lab so the facility could operate for an additional 8 weeks.

Consistently, the conferees provided a $5 million increase for the program and no other direction or earmarks.

Instead of increasing its budget as recommended, you provided the laboratory with $2.3 million less than you said you would in your fiscal year 1998 request.

Why did you reduce the budget, and how did you spend that money on something else without submitting a reprogramming request?

Answer. As described in the fiscal year 1998 columns of the Congressional Budget requests for both fiscal year 1998 and fiscal year 1999, the Nuclear Physics program provided Thomas Jefferson National Accelerator Facility (TJNAF) in fiscal year 1998 $1.25 million more than the budgets requested. Following recommendations by TJNAF, the distribution of these funds between facility operations and research support was optimized for support of the user program. Allocation of undistributed general reductions at the "Science" appropriation total for prior year balances, training for contractor principal investigators, and other departmental and programmatic priorities reduced the total funding available for research and operations objectives. The Nuclear Physics program office is presently reviewing options for distribution of its remaining fiscal year 1998 funds to optimize scientific output for fiscal year 1998.

The following table compares the fiscal year 1998 budget request with the current estimate.

Thomas Jefferson National Accelerator Facility

[Whole Dollars]

Congressional request	$67,350,000
Current estimate	$68,600,000

KYOTO ACCORD

Question. Mr. Reicher, I am uncertain about any correlation between greenhouse gas emissions and global climate change. I am also worried that the restraints the United States will have to impose on its energy choices in order to meet the Kyoto Agreement targets will also restrain our economy. But, if one assumes a causal relationship between greenhouse gas emissions and global warming, isn't it true that capping emissions at 1990 levels still results in a continuing increase in greenhouse gases in the atmosphere?

Answer. The relationship between greenhouse gas emissions and atmospheric concentrations of those gases is complex and is explored below. The simple answer is that capping emissions at 1990 levels—with no further actions—would still result in increased greenhouse gases in the atmosphere. The Kyoto agreement by itself will not decrease concentrations of these gases but rather cut the rate of increase. Reductions in concentrations within a time frame that significantly reduces the threat of increased global warming will require more substantial and widespread emissions reductions than those negotiated at Kyoto. However, the Kyoto agreement is a vital first step for two reasons. First, in order to enable more substantial and widespread emissions reductions in the future, policies must be put in place that accelerate the use of advanced, low-emission technologies available today and new technologies must be developed that can reduce emissions at relatively low cost. The agreement reached in Kyoto is already motivating such actions and investments in several nations. The Climate Change Technology Initiative proposed in the fiscal year 1999 budget request is in fact the Administration plan to develop and accelerate the use of key technologies in the buildings, industry, transportation and power sectors that will play key roles in reducing emissions while simultaneously providing environmental benefits and cost savings in the nearer term. Second, the longer the world remains on the present path of emissions growth, the more difficult it ultimately may be to reduce concentrations to acceptable levels. Even cutting the rate of emissions growth in the near term will make reaching long term targets less difficult.

The atmospheric concentrations of important greenhouse gases have grown significantly from pre-industrial levels to the present day. For example, the concentration of carbon dioxide has increased from a pre-industrial level of 275 parts per million by volume (ppmv) to 360 ppmv in 1992, while methane has increased from 700 parts per billion (ppbv) to 1720 ppbv. Most scientists now agree that these increases are responsible for a human-induced, discernable effect on the Earth's climate sys-

tem. These increases in atmospheric concentrations of these greenhouse gases directly result from increased emissions of these gases from human-related activities. However, concentrations rise much more slowly than emissions and the gases persist in the atmosphere long after they are emitted. Carbon dioxide has an atmospheric lifetime of 50 to 200 years, methane about 12 years, and nitrous oxide about 120 years. This means that there is a significant time lag between the moment that these gases are released into the atmosphere and the time when the gases are cleansed out of the atmosphere through natural processes. Thus, as noted above, taking an initial step is extremely important and increased investments in energy efficient and clean energy technologies are of vital importance to reducing emissions in the future.

Question. If our objective is to stabilize the levels of greenhouse gases in the atmosphere, maybe at two times the pre-industrial level, and support a growing world population with developed economies, don't we need a whole different set of technologies like fission and fusion to meet base-load energy requirements?

Answer. The challenge that global climate change poses requires a comprehensive, multi-year technology approach. There is no single technology—or even a small set of technologies—that is likely to be able to meet this challenge. Rather, a diverse portfolio of technologies that meets our needs in the near to long term is required. It is critical that our nation begin to invest in this portfolio of technologies that can lower the mid- to long-term costs of reducing greenhouse gas emissions—especially since other nations are racing to develop these technologies. Such a portfolio—including energy efficiency, low-carbon energy production and carbon sequestration technologies—will require many years to develop, so it is critical that we begin this work now to minimize costs. In addition, development and widespread use of this technology portfolio will likely provide many other benefits—including reduced energy costs, increased energy security, improved urban air quality, and greater U.S. competitiveness.

This portfolio will include a wide range of technologies that will provide opportunities in the near to mid term, long term and very long term. Several recent studies have examined the potential role technology can play in reducing greenhouse gases. The study "Scenarios of U.S. Carbon Reductions: Potential Impacts of Energy Technologies by 2010 and Beyond," by five leading national laboratories, concluded that accelerated use of energy efficiency and low-carbon technologies and development of new technologies could substantially cut the cost of reducing U.S. greenhouse gas emissions. The report of the President's Committee of Advisors on Science and Technology, "Federal Energy Research and Development for the Challenges of the 21st Century," recommended expansion of a number of national energy R&D programs and targeted energy efficiency and renewable energy programs for the greatest increases in funding. In the development of the Climate Change Technology Initiative, the Administration weighed the potential of various opportunities across technologies and time periods. The budget proposal supports a portfolio that balances nearer term opportunities with longer term investments.

Between the present and 2010, the largest opportunities for emissions reductions are in making more efficient use of fossil and nuclear fuels. These energy sources account for over 90 percent of current energy use and will continue to dominate energy markets for some time. Energy efficiency technologies produce equivalent energy services from less primary energy—thus lowering emissions for those energy services. Technologies such as advanced automobiles and trucks, high efficiency motors, industrial combined heat and power systems, and high efficiency lighting and building equipment can substantially cut the rate of growth in greenhouse gas emissions. Many of these technologies are available today—the opportunity in the near term is to accelerate the use of those available today while developing even more efficient technologies for the future. While some clean energy technologies—including renewable energy and higher capacity factors at current nuclear plants—will also play a role in this time frame, most of the low-cost emission reductions are likely to be due to investments in energy efficiency.

By 2010, a portfolio of clean energy technologies—including an array of low-cost renewable energy, fuel cells, high-efficiency coal power, and improved nuclear power technologies will play an increasingly important role. The restructured electricity environment will also likely favor highly efficient generation technologies, environmentally-friendly energy sources and distributed power. These technologies will enable further emissions reductions that are not economically viable today. After 2020, a new generation of energy technologies—brought about by R&D investments we begin today—will enable even greater emission reductions. These technologies include widespread use of a variety of carbon sequestration methods; advanced nuclear fission; very low cost advanced renewable energy; energy plexes that produce power, clean fuel and chemical products; advanced industrial processes; fusion

power; and others that we cannot foresee. These advanced technologies will be extremely important, but the many components of the overall technology portfolio—both today's technologies and those in the future—will have important roles in meeting the challenge of global warming.

Question. This week's Science magazine includes an article co-written by a Sandia scientist that claims China's demand for oil and coal over the next two decades will offset any gains from the Kyoto Accord. How big a percentage reduction in annual global greenhouse gas emissions will occur because of the Kyoto Accord?

Answer. The goal set at Kyoto is to reduce global greenhouse gas emissions from the Annex I nations 6–8 percent below their emissions in 1990 in the period of 2008 to 2012. From this, one can estimate the percentage reduction in annual global greenhouse gas emissions that will occur because of the Kyoto Accord.

Global emissions of greenhouse gases in 1990 were 6,000 million metric tons of carbon equivalent (MMTCE). Of this, about 5,830 MMTCE were from the use of fossil fuels. Annex I nations emitted about 3,775 MMTCE greenhouse gases in 1990. If all Annex I nations comply with the Kyoto agreement, at the levels prescribed in the treaty, these nations would emit about 3,560 MMTCE per year in the year 2010. This reduction amounts to about 215 MMTCE below their 1990 levels of emission and considerably lower than emissions forecast in the absence of an agreement. This reduction of 215 MMTCE is a 3.6 percent reduction in total annual global greenhouse gas emissions from Annex I and non-Annex I nations relative to the total 1990 level.

RENEWABLE ENERGY

Question. The Energy Information Administration reports that, of total energy consumption in the United States, non-hydroelectric renewable energy was: 3.6 percent in 1991, 3.8 percent in 1992, and 3.7 percent in 1993, 1994, and 1995—the last year for which the Administration has compiled data.

With all the money we have put into this program, why can't renewable energy expand its market share?

Answer. More recent data presented by the Energy Information Administration (EIA) in its 1998 Annual Energy Outlook (Table A17) for non-hydro electric generation (in billion kilowatt-hours) is as follows:

1994	48.4
1995	44.5
1996	45.8
2000	53.6
2010	63.6
2020	74.7

This data shows a reduction in non-hydro renewable generation in the U.S. from 1994 to 1996, due to decreases in geothermal and biomass electric generation associated with the expiration of older, higher-priced power purchase contracts. More generally, the combined impacts of uncertainty from electricity restructuring, lower competing fossil fuel prices, and continued increases in competing gas turbine generation efficiencies have slowed the renewable energy generation in the U.S. last several years.

In other parts of the developed world, where electricity prices are higher, and public policy attention has been placed on non-technical barriers to renewables deployment, market expansion has been considerably greater (e.g., in Japan, where photovoltaic systems are being widely deployed, and in Germany, where the number of wind and photovoltaic systems is growing rapidly). In less developed parts of the world, where many people lack access to grid- supplied electricity, renewable electricity systems are making significant inroads, often being the lowest-cost option for bringing electrification to rural areas. As a result, global sales of photovoltaic systems have grown at more than 20 percent annually over the past seven years, and U.S. market share has climbed to more than 40 percent. This trend should continue in the future as renewable energy costs are further reduced by the Department's joint R&D programs with industry, and public policy concerns increase market demand for clean energy sources. While utility industry restructuring may have temporarily slowed renewable energy in-roads, restructuring will also provide opportunities. The growth in consumer choice over electricity providers will result in significant expansion of "green" supply programs. The number of States that establish renewable energy portfolio standards in concert with restructuring legislation will grow.

RENEWABLE ENERGY

Question. According to the Energy Information Administration, solar technologies now produce 8-one hundredths of a percent of total energy consumption, and wind energy produces 3-one hundredths of a percent of total U.S. energy consumption.

What percentage do you predict they will produce by 2010?

Answer. The Energy Information Administration (EIA) is a semi-independent element of the Department of Energy that collects and analyzes energy data and provides status summaries and outyear forecasts. Their objectivity and avoidance of bias are unquestioned within the Department and, we believe, by many outside as well. However, EIA acknowledges that models used to forecast energy trends and future fuel demand do not account for technology improvements, policy changes, new legislation, or institutional metamorphoses such as utility restructuring. For these reasons, EIA projections of adoption rates for renewable energy systems—a group of energy technologies subject to continuing technical advancements and policy treatment—are traditionally low.

Over the next 10–12 years, the emergence of portfolio standards, "green" programs, new Federal or State legislation on utility restructuring and increasingly stringent clear air standards will influence the penetration rate of renewable systems. The steady stream of technology improvements over the same period will result in more competitive products and systems. The net effect of these changes will be greater renewable energy penetration than the modest in-roads projected by EIA on business-as-usual assumptions.

We believe that wind will contribute approximately 9,600 MW to the nation's new electric capacity needs by 2010. We expect that the solar technologies (photovoltaics, solar thermal electric, wood and non-cogeneration biomass under EIA's definition) will add an additional 7,800 MW during the same time period. The 17,400 total megawatts represents approximately 8 percent of the 200,000+ MW new capacity EIA projects as needed by 2010—a substantial contribution for these two classes of renewables.

RENEWABLE ENERGY

Question. The Energy Information Administration also forecasts that, between now and 2020, coal prices will drop 28 percent while natural gas prices will slightly increase. Do you estimate the United States will burn more or less coal in 2020 than it does today?

Answer. The Reference Case of the Energy Information Administration's Annual Energy Outlook 1998 projects that coal consumption will rise from 20.9 quads in 1996 to 25.6 quads in 2020. By 2020, an estimated 90 percent of this coal will be used to generate electricity at base load power plants. However, this projection is a "business as usual" forecast that explicitly assumes that there are no changes in policy or major changes in technology. In other words, it assumes that the U.S. does little or nothing to change its energy or environmental emissions trajectory. According to several recent studies, changes in policies and technologies could reduce future coal consumption.

The report "Scenarios of U.S. Carbon Reductions: Potential Impacts of Energy Technologies by 2010 and Beyond", quantifies the potential for energy efficient and low-carbon technologies to reduce carbon emissions in the U.S. In this study's "high-efficiency, low-carbon scenario", coal use for electricity generation decreases 24 percent by 2010—resulting in a drop in annual coal consumption of about 5 quads by that year. This translates into essentially no growth or a slight decrease in future coal consumption. This scenario assumes increased end-use efficiency in buildings and industry (decreasing electricity demand), increased use of natural gas for electricity generation and a domestic carbon emissions permit trading system with permits priced at $50 per ton of carbon. Bringing about such a scenario will require aggressive development of advanced technologies and concurrent policies to accelerate their use.

While the potential exists to significantly reduce coal consumption, it is likely that coal consumption will rise at least somewhat over the next 20 years. Under any plausible scenario, coal will continue to be an important part of the U.S. energy mix far into the future. It is therefore vitally important to develop technologies that enable coal to be used with minimal environmental impact. The Department is therefore proposing to expand R&D on high-efficiency coal power generation technologies and carbon sequestration. The new power technologies—such as integrated gasification combined cycle and fuel cells—will produce more power and fewer emissions from a given amount of coal. Sequestration technologies will enable the removal of carbon from fuels, emission streams or the atmosphere directly and the permanent storage of this carbon through a variety of means. The combination of high effi-

ciency power generation and carbon sequestration technologies will enable both our industrialized nations and coal-dependent developing nations such as China to continue to use coal even in a greenhouse gas-constrained future.

FUNDING SHORTFALL

Question. I do not think the Subcommittee will be able to provide a 37 percent increase in Solar and Renewable Energy programs. Would you provide the Committee your recommendations of the allocation of funding at the current level?

Answer. Increased investments in renewable energy technology R&D are of critical importance to the nation. These technologies will improve local environmental quality, improve the diversity and security of our energy supply, reduce greenhouse gas emissions, and improve our long-term competitiveness. These technologies are of critical importance to meeting the energy and environmental challenges of our times and of the next century. However, we also recognize the existence of budget constraints and will work closely with the committee to identify priorities.

ELECTRICITY RESTRUCTURING

Question. The Energy Information Administration predicts in its December Annual Energy Outlook that renewable energy technologies are expected to penetrate markets at a slower pace than previously forecast due to electricity restructuring and increased competition with fossil fuel technologies. Do you agree with the Energy Information Administration assessment?

Answer. While their assessment may be likely in the very short term, I do not agree with the Energy Information Administration's forecast for renewable energy technologies for the medium and long term. It is important to understand that the Annual Energy Outlook (AEO) reference case forecast is a projection of current policies into the future. It is a continuation of "business as usual" into the future. The penetration of renewable energy technologies in the current AEO is lower than in the previous edition primarily because of projected lower generation costs and electricity prices. All else equal, these factors will tend to decrease renewable energy electricity generation. However, there are several factors in restructuring not considered in that forecast that will likely increase the use of renewable energy. These factors include: (1) the ability of retail consumers to choose electricity suppliers and the demonstrated consumer preference for "green power"; (2) the creation of renewable energy portfolio standards that require a minimum percentage of renewable electric power in some states; (3) the creation of state funds to accelerate the development and deployment of renewable energy technologies; (4) the likely increase in distributed power applications; and (5) more stringent environmental requirements.

Retail competition will enable consumers to select their power supplier based on price and other characteristics. Many utility and consumer surveys have suggested that an important selection criterion will be lower levels of emissions from a particular company. Many utilities have established green power programs in which consumers can voluntarily purchase electricity from renewable energy sources such as wind or photovoltaics for a modest price premium. Not only have these programs proved popular, but in some cases the utility offering the program cannot keep up with the consumer demand for this product. Retail competition will likely stimulate similar green power programs across the country—potentially increasing the market share of renewable energy.

Several states have established renewable energy portfolio standards or funds to accelerate the development and deployment of renewable energy as part of their restructuring legislation. These actions have been taken for many reasons, including diversifying the state electricity supply, facilitating the development of the clean energy industry, and increasing a state's options for compliance with environmental regulations. Like consumer choice, these actions are likely to increase the use of renewable energy for electricity generation.

Restructuring is very likely to increase the use of smaller, distributed power generation. Such generation will be close to the consumer and be modular in nature. An example is a combined heat and power system in an industrial plant that will economically produce both electricity and steam—with excess electricity sold to a power company. Other distributed systems likely to be of increased interest include small turbines, fuel cells, biomass combustion, wind and photovoltaics. Currently, major barriers exist that discourage such systems, but many of these barriers will disappear under restructuring.

Finally, the more stringent national air emissions standards for NO_x, ozone and particulates could make renewable energy technology options more attractive in many situations across the country. Since these technologies emit few or no emissions, their attractiveness relative to conventional fossil energy electricity genera-

tion could increase. This change, especially when coupled with the likely increase in distributed generation, could tend to increase the use of renewable energy.

The Comprehensive Electricity Competition Plan just released by the Administration includes several features that will stimulate renewable energy market penetration as described above. These features include: retail competition in electricity markets; consumer information required from all electricity companies on generation sources and emissions; a federal renewable portfolio standard; a $3 billion per year public benefit fund to provide matching funds to States for activities such as development and demonstration of emerging technologies, particularly renewables; net metering for small independently-owned renewable electricity projects to enable electricity sales from those projects; and interstate trading of NO_x credits. Each of these factors, if enacted, will tend to increase the use of renewable energy technologies.

One additional factor not considered in the EIA forecast of renewable penetration is that rapid growth in international sales by U.S. renewable energy manufacturers. While the total production level in, for example, the photovoltaics industry is still modest, the rate of growth is 20–40 percent per year. This is allowing manufacturers to increase production volume and decrease unit costs. Higher production levels, albeit driven to export sales, will drop the domestic costs of these technologies. All else equal, this will also tend to increase the market penetration of renewable energy technologies.

In sum, while the projected lower electricity prices under restructuring will tend to decrease the use of renewable energy technologies, a variety of other factors will tend to increase their use. With so many uncertainties in the future evolution of electricity markets it is difficult to make a prediction, but it is anything but certain that the use of renewable electricity will decline. In fact, renewable energy penetration may increase as electricity markets evolve.

ELECTRICITY RESTRUCTURING

Question. What provisions will the Administration propose be included in an electricity restructuring bill to encourage the use of renewable energy sources?

Answer. The attached provisions affecting renewable energy are excerpted from The Comprehensive Electricity Competition Plan. The Administration's Comprehensive Electricity Competition Plan will result in lower prices, a cleaner environment, increased innovation and government savings. The Department of Energy estimates that retail competition will save consumers $20 billion a year on their electricity bills. This translates into direct savings to the typical family of four of $104 per year and indirect savings, from the lower costs of other goods and services, of $128 per year. Thus, total savings for a typical family are estimated to be $232 a year.

Competition will also produce significant environmental benefits through both market mechanisms and policies that promote investment in energy efficiency and renewable energy. We expect the Electricity Competition Plan to produce significant environmental benefits through these policies. Provisions of the plan that will facilitate the use of renewable energy include:

—A Public Benefits Fund that will provide matching funds to States of up to 1.0 mill/kWh, ($3 billion a year) to finance energy efficiency, renewable energy and other public benefit programs;

—"Green labeling" provisions to help consumers identify and choose power from environmentally friendly generators including renewable energy;

—A Renewable Portfolio Standard, to require that at least 5.5 percent of electricity sales be generated from non-hydroelectric renewable sources, subject to a cost cap; and

—Trading authority for NO_x emissions, to facilitate cost-effective, market-driven NO_x reductions—which will encourage investment in low- and zero-emissions technologies such as renewable energy.

QUESTIONS SUBMITTED BY SENATOR REID

NUCLEAR ENERGY

Question. Dr. Krebs, your submitted statement identifies clearly the priorities of the Office of Energy Research but does not include an effort to find new methods of disposing of nuclear waste. Would any of the $332.6 million requested for Nuclear Physics or $392.6 million requested for Biological and Environmental Research be applied to finding ways to store nuclear waste?

I would note that Senator Domenici has been addressing the question of the future of nuclear power and as I see it, the cost and social acceptability are two prin-

cipal obstacles to nuclear power. Your office, which studies the nature of the nucleus, ought to be examining the disposal question.

Answer. The mission of the Office of Energy Research programs is to develop and provide the knowledge base for the Department of Energy; disposal of nuclear waste is the responsibility of other programs within the Department.

There are, however, a number of activities within the Office of Energy Research that provide fundamental science in support of the disposal of nuclear waste.

In this context, Nuclear Physics (NP) manages the U.S. Nuclear Data Network, which evaluates and makes available the latest data on-line; the Nuclear Physics program also maintains the Oak Ridge Electron Linear Accelerator, which is available to other programs within DOE for the purpose of obtaining specialized nuclear data.

Similarly, Biological and Environmental Research (BER) does not fund research on processing or storage of nuclear waste, but it does support research that might be applicable to storage of civilian nuclear waste, for example research into new instrumentation for characterization and monitoring of radioactive materials in the environment. Such research could result in new instrumentation that would also be useful for monitoring stored nuclear wastes.

Perhaps the largest activity within the Office of Energy Research that focuses directly on nuclear waste disposal is associated with the Environmental Management Science Program. This program is jointly managed by the Office of Energy Research and the Office of Environmental Management (EM) and is funded from EM's appropriation. This program focuses on the cleanup of the former weapons development sites within the DOE complex and includes research associated with the disposal of both high level and mixed radioactive waste. Current support for these areas is about $10.2 million per year.

Within the Basic Energy Sciences program, we support about $10.5 million in broad based fundamental studies of separations, chemistry and spectroscopy of the actinides and their daughter products. These studies provide the fundamental understanding that is necessary in order to ensure their ultimate safe disposal by whatever technology is deployed. In addition, the Basic Energy Sciences program has, within the past three years, sponsored two well publicized workshops that identified fundamental scientific research needs and opportunities with respect to radiation effects in glasses and crystalline ceramics for the immobilization of high-level nuclear waste and the disposal of plutonium. The scientific publication of the findings from these workshops in open scientific literature makes it likely that the Basic Energy Sciences program will be receiving some high scientific quality research proposals that fall within the priority needs that were identified. The Basic Energy Sciences program is currently funding two projects that are concerned with understanding and developing reliable predictive models for the degradation of primary radioactive waste hosts.

We are also working with the Office of Nuclear Energy Science and Technology to establish a new directed science program, the Nuclear Energy Research Initiative (NERI). Planning activities for this program include a workshop to be held April 23–24, 1998, that will include researchers from the physics, chemistry and materials communities supported by the Office of Energy Research and the nuclear engineering community supported by the Office of Nuclear Energy. The workshop will focus on research needs and opportunities that can build on the more fundamental activities within the Office of Energy Research.

HYDROGEN

Question. In last year's appropriation for the Department of Energy, $3 million was put within the Office of Energy Research for hydrogen research. Could you explain what efforts were made with this funding?

Answer. There is confusion regarding the $3 million identified in the fiscal year 1998 Energy Research budget for hydrogen research. To clarify the main point, at the request of the House Appropriations Committee, the Office of Energy Research was asked to identify ER funded research in fiscal year 1998 that supported the activities of the Office of Energy Efficiency and Renewable Energy's (EE) programs in solar and renewable energy. Within the $44 million of ongoing ER activities that were identified, $3 million supported the hydrogen program in EE. I would be pleased to provide a listing of current projects supported in fiscal year 1998. It is again noted that these are ongoing activities within the base program of the Department's request and do not represent any added funds by the Congress.

Dr. Mary F. Roberts, Boston College, "Osmoregulation in Methanogens."

Dr. Laurens Mets, University of Chicago, "Molecular genetic analysis of biophotolytic hydrogen production in green algae."

Dr. Michael W.W. Adams, University of Georgia, "The Metabolism of Hydrogen by Extremely Thermophilic Bacteria."

Dr. William B. Whitman, University of Georgia, "Biochemistry and Genetics of Autotrophy in Methanococcus."

Dr. Ralph S. Wolfe, University of Illinois, "Studies on the Microbial Formation of Methane."

Dr. Robert J. Maier, Johns Hopkins University, "Bacterial Nickel Metabolism for Hydrogenase Synthesis."

Dr. Judy Wall, University of Missouri, "Genetics and Molecular Biology of Hydrogen Metabolism in Sulfate Reducing Bacteria."

Dr. John N. Reeve, Ohio State University, "Structure and Regulation of Methanogen Genes."

Dr. Michael J. McInerney, University of Oklahoma, "Energetics and kinetics of syntrophic aromatic degradation."

Dr. Daniel J. Arp, Oregon State University, "Characterization of the Genes Involved in Nitrification."

Dr. Louis Sherman, Purdue University, "A Genetic Analysis of the Lumenal Proteins of the Photosystem II 02-evolving Complex in Cyanobacteria."

R. Eisenberg, University of Rochester, "Photochemistry of Platinum Group Elements: Applications to Energy Conversion and Bond Activation."

E. Greenbaum, Oak Ridge National Laboratory, "Kinetics of Enzyme-Catalyzed Processes."

J.K. Hurst, Washington State University, "Membrane-Organized Chemical Photoredox Systems."

T.E. Mallouk, Pennsylvania State University, "Electron Transfer Reactions in Microporous Solids."

N. Sutin, C. Creutz, Brookhaven National Laboratory, "Thermal, Photo-, and Radiation-Induced Reactions in Condensed Media", "Solar Hydrogen-Related Projects in the Division of Chemical Sciences."

Question. Assuming general science research still needs to be done with hydrogen, wouldn't funds be used effectively if there is coordination with hydrogen applications and technologies within Energy Efficiency and Renewable Energy office under Assistant Secretary Dan Reicher?

Answer. Coordination through effective communication between basic and applied research programs benefit both offices. Effective communication provides a mechanism to funnel new fundamental discoveries to a focused program in technology research and development while problems that come up in applied programs are often a source of good fundamental questions. The Office of Energy Efficiency and Renewable Energy (EE) and the Office of Energy Research (ER) have acknowledged the need for improved communication. On November 12, 1997, the staff from both offices met to discuss numerous activities currently underway and what future activities were being considered. The development of new mechanisms for encouraging fuller exchanges between the two offices will be a continuing activity. Within the hydrogen area, two technical staff from ER will participate in the annual program review of EE's hydrogen program in April 1998. Discussions have been initiated on establishing a more formal coordination mechanism within the Department similar to the Hydrogen Energy Coordinating Committee.

LOPSIDED BUDGET REQUEST

Question. In a budget request that is lopsided in its increases and decreases, "Basic Energy Sciences" receives a 25 percent increase raising the allocation to $836.1 million. This program would be the link, as I see it, of the sciences to the Climate Change Initiatives of the Administration. Would it be correct to say that if there were no Global Climate Change Treaty this year that you would not need the entire $836 million?

Answer. The Basic Energy Sciences budget request shows an increase of $168.8 million. Three main activities account for this increase, the largest of which is the Spallation Neutron Source (SNS), a project that is independent of our activities related to the Climate Change Technology Initiative (CCTI). The three activities that constitute the main components of the increase to the BES budget are: (1) initiation of Spallation Neutron Source (SNS) construction; (2) Scientific Facilities Utilization; and (3) carbon management science.

Initiation of Spallation Neutron Source (SNS) Construction. Fiscal year 1999 funding of $157.0 million is requested for the SNS Project to begin Title I design activities, initiate subcontracts and long-lead procurements, and continue critical research and development work necessary to reduce technical and schedule risks. The $128.4 million in construction and $28.6 million in research funding in fiscal year

1999 is an increase of $134.0 million over the $23.0 million for SNS research in fiscal year 1998.

Scientific Facilities Utilization. Fiscal year 1999 funding of $317 million is requested to maintain support of the scientific user facilities, an increase of $46.0 million over fiscal year 1998. Research funding for the SNS accounts for $28.6 million of this increase. The remainder, $17.4 million, includes increases for the synchrotron radiation light sources and for the neutron scattering facilities to adjust for increased cost-of-living expenses. In addition, funds are provided to the National Synchrotron Light Source for increased support for users; to the light source community for instrumentation and beamline construction at the light sources; and for increased research activities at the Combustion Research Facility, which will complete construction of Phase II in fiscal year 1999.

Carbon Management Science. A fiscal year 1999 funding increase of $16.0 million is requested for carbon management science. This research will build on the strengths of current Energy Research programs and promises maximum impact in the area of carbon management. Focus areas include: science for efficient technologies; fundamental science underpinning advances in all low/no carbon energy sources; and sequestration science. The research activities will be important in maintaining fossil fuel production and use in an environment more and more attuned to greenhouse gas emissions.

The remaining $1.4 million increase is the result of several offsetting increases and decreases throughout the program.

Question. In the "Computational and Technology Research," which has a $10 million increase, you have written that this Program "builds on the existing capabilities and skills of universities, national laboratories, and industrial research institutions." Would you explain why some of the work done in the "Mathematical, Information and Computational Sciences" Activities is not duplicative of the work done at private firms, and educational institutions?

Answer. The work in Mathematical, Information and Computational Sciences is carefully managed to avoid duplication of efforts.

First, the work funded by this office is focused on providing advanced tools and research in mathematics needed to accomplish the Department of Energy's missions.

Second, the work is also focused at the leading edge of technology to support the Department of Energy's requirements. In this area there is either no significant industrial investment or we form partnerships with industrial researchers to ensure that there is no duplication. In fact, many of the technologies and tools developed in the Mathematical, Information and Computational Sciences program, such as the High Performance Parallel Interface (HiPPI), are adopted as industry standards after our research has provided the scientific and technical basis.

Third, a significant fraction of this research (about 35 percent) is conducted at educational institutions. There are two reasons for this: to make the best use of research funding by taking advantage of the intellectual resources at U.S. universities; and to encourage the education of graduate students in mathematical and computational sciences to fill future national and DOE personnel requirements.

Finally, through meetings of the working groups formed by the Computing, Information, and Communications Research and Development Committee of the National Science and Technology Council there are ongoing discussions with program managers at other Federal agencies to coordinate our research efforts in these areas and avoid duplication.

Question. Dr. Krebs, there is in total a significant increase in your budget, focusing on many activities, like the fragile histidine triad and the Spallation Neutron Source, that few up here in the Congress fully grasp. Yet, you want us to take it on your word, which we often do, that these activities are essential to our national interest. At some point I will venture that our faith will weaken; but will you be able to provide greater evidence that these activities are essential?

Answer. The two activities mentioned in this question—the determination of the structure of the fragile histidine triad and the construction of the Spallation Neutron Source—are very different activities, yet both represent years of strong and enduring support and recommendations from the broad scientific communities. The determination of the structure of the fragile histidine triad represents early results from the Advanced Photon Source. The initiation of construction of the Spallation Neutron Source represents our commitment to fulfill the recommendations of the scientific community put forth since 1984 to construct major scientific user facilities for photon and neutron science studies. Indeed, the Advanced Photon Source was one of the four facilities recommended at that time.

The Advanced Photon Source (APS)—our newest and largest synchrotron radiation light source—was commissioned in May, 1996, and promises significant advances in fields ranging from materials science to biology. The highlight in my budg-

et testimony on the structural determination and biochemical analysis of the human fragile histidine triad (FHIT) protein is one of the recent results from work at the APS. The FHIT protein is a member of the histidine triad family of proteins and derives from a fragile site on human chromosome 3. It is commonly disrupted in association with human cancers, although definitive evidence supporting its role as a tumor suppresser has yet to be elucidated. The new crystal structure shows that FHIT is similar to another histidine triad (HIT) family member that was also solved at APS, which is highly conserved throughout mammalian evolution. The data also show that, contrary to previous studies, FHIT catalysis is not metal dependent. Structural and biochemical analyses of these different HIT proteins using DOE facilities such as APS will better focus the search for their functions in living systems.

The Spallation Neutron Source is a major scientific user facility for neutron scattering that will be used by 1,000–2,000 scientists from academia, industry, and national laboratories annually. We have been working for two decades with the scientific community to envision this next-generation neutron scattering facility for basic and applied research and for technology development in the fields of condensed matter physics, materials sciences, magnetic materials, polymers and complex fluids, chemistry, and biology. The need for the SNS dates to the 1970's and the 1980's when the scientific community became increasingly concerned about the state of neutron sources in the U.S. In 1984, the broad-based National Research Council study "Major Facilities for Materials Research and Related Disciplines" chaired by Frederick Seitz and Dean Eastman recommended the following four facilities: (1) a 6 GeV synchrotron radiation light source, which became the Advanced Photon Source at Argonne National Laboratory; (2) an advanced, high-flux, steady-state neutron source, which became the Advanced Neutron Source, terminated in 1995; (3) a 1–2 GeV synchrotron radiation light source, which became the Advanced Light Source at Lawrence Berkeley National Laboratory; and (4) a high-intensity pulsed neutron facility, which is the Spallation Neutron Source. The Secretary of Energy's Energy Research Advisory Board reviewed the National Research Council's report and recommended to the Secretary in June 1985 that "the prerequisites and scientific priorities set down in the Major Materials Facilities Report are consistent with the needs of the Department and are in the best interest of the Nation." Since that time, many committees impaneled by the National Research Council and the Department of Energy have reaffirmed the recommendations of the Seitz-Eastman report. We anticipate that within a short time after the commissioning of the SNS, we will be reporting results of similar impact to those noted above for the Advanced Photon Source.

Question. Or in the alternative, can you prioritize the activities in which you are engaged?

Answer. As stated in my testimony before you, the highest program priorities in fiscal year 1999 are to move the U.S. toward international leadership in neutron science, provide leading-edge science related to climate change, maintain scientific user facilities utilization, develop DOE applications and technologies for the Next Generation Internet, and renew our commitment to science education to tap the human resources of the National Laboratories to ensure an adequate supply of scientists and engineers for the future.

ECONOMIC COMPETITIVENESS

Question. Your submitted statement points out that partnerships assist America's technological expertise and competitive advantage in the development of clean energy technologies. When we address the marketplace for technologies, some critics suggest that the department's involvement in the marketplace is a crutch for otherwise failing business and pushing technologies that society doesn't want, what's your response to that criticism?

Answer. The Office of Energy Efficiency and Renewable Energy forges partnerships with private and public sector organizations for several reasons. First, these partnerships ensure that our technology R&D is highly relevant to the marketplace. Second, they provide opportunities for cost-sharing. Third, they provide opportunities to field test the resulting technologies in order to provide useful feedback to the R&D effort. Finally, they provide opportunities for pre-commercial deployment that bring down initially high production costs. Technology R&D partnerships are typically established through a competitive solicitation process and only pursued substantial interest is demonstrated in the marketplace. This avoids the problem of "pushing technologies that society doesn't want". In addition, we only pursue R&D for technologies that have clear public benefits—such as emissions reductions, decreased oil use or other broad public benefits. Technologies that would only benefit the manufacturers or a narrow segment of society are not supported.

The competitive process of selecting partners also ensures against providing a "crutch for otherwise failing businesses". Partnerships are generally formed with broad industry representation or a collection of organizations—less often with individual firms. However, when individual firms are chosen, the selection criteria ensure that our partners are strong and will be able to perform the necessary work over the life of the relationship. Further, such partnerships with individual firms require the broader transfer of the particular technology once the R&D effort is completed so that a broad cross-section of industry benefits from the R&D work.

SOLAR AND RENEWABLE ENERGY

Question. Could you walk us through the measurable accomplishments of, and the need for a $72 million increase in, the Utility Technologies program?

Answer. Progress in renewable energy development in the 1990's has opened significant opportunities for these systems to make near term, competitive contributions to the Nation's growing electricity demand—a demand that is outstripping forecasts due to the extended economic growth currently underway. Incremental technical advances coupled with field verification of performance and reliability are the critical steps needed for industry to invest heavily in renewable electricity. The nation benefits to the extent that renewable systems displace new fossil plants and avoid increasing our overall level of emissions while retaining price stability in the electric sector.

The Office of Utility Technologies (OUT) has increased its efforts at tracking accomplishments and program progress for the past several years, as the Office prepares for the mandated fiscal year 1999 reporting requirements under the Government Performance and Results Act. For fiscal year 1997 and fiscal year 1998, our accomplishments include:

Photovoltaics.—Advances have occurred in the underlying technology base, in the applications served, and in the cost of delivered energy; the following examples are representative.

Thin film PV cells are lower cost and more easily manufactured in larger sizes than traditional single crystal cells but are less efficient (usually single digits); the program recently achieved 12 percent sunlight-to-electricity efficiency on thin film amorphous silicon laboratory cells, a world record for this type of silicon.

Transition from small laboratory PV cells to large area PV modules usually causes efficiency loss of 3 or 4 percentage points due to wire contacts and framing, often resulting in thin film modules in the 5–7 percent efficiency range; a DOE contractor has commercialized a cadmium-indium-selenide think film module that achieves 9.5 percent efficiency.

DOE developments have led to commercialization of a photovoltaic roofing shingle which won awards for best new product of the year from both Popular Science and Discover magazines.

Delivered energy costs from NASA's PV arrays were in the $5.00/kWh range at the start of DOE's R&D program; today's output energy is under $0.20/kWh and $0.12/kWh or lower appears to be only a year or two away.

Wind Energy Systems.—For certain applications in selected locations, wind turbines offer a competitive alternative to conventional systems. This results from DOE supported technical and economic advancements.

A new airfoil optimized by the National Renewable Energy Laboratory (NREL) for the wind turbine environment has increased energy capture by 20–30 percent over the helicopter blade or aircraft wing airfoils previously used; this is achieved at no increase in rotor cost and testing indicates that rotor life is longer.

Current delivered energy costs are less than $0.05/kWh at good wind sites, compared to over $0.30/kWh in the early 1980's.

Solar Thermal Energy Systems.—Both power tower and dish/engine designs continue to make significant gains.

In November 1997, the Solar Two Power Tower Project located in Barstow, CA, plant achieved a peak power output of 11 MW (the tower's nominal full power output is 10 MW). Solar Two demonstrated its unique ability to collect, deliver, and store solar energy during the day and to continue to generate power for several hours after sundown. Successful completion of the Solar Two Project will position power tower technology, with its ability to provide "solar energy on demand," as a leading candidate for providing dispatchable renewable energy both here and abroad. Solar Two recently received the "Best of What's New" award from Popular Science and the Technology Innovation award from Discover Magazine, and was featured in United Airlines' Hemispheres magazine in February 1998.

On December 17, 1996, Arizona Public Service Company (APS) joined Science Applications International Corporation (SAIC) and Stirling Thermal Motors (STM) in

the development of dish/engine systems as part of the Utility-Scale Joint Venture Project (USJVP). The addition of a utility to the team opens the door for "real world" testing.

Biopower Energy Systems.—In the Biomass Power for Rural Development (BPRD) initiative, construction of over 150 MW of renewable biomass power is beginning this year. The Minnesota Valley Alfalfa Producers (MnVAP) project, which at 75 MW is the largest of the BPRD projects, will leverage a $188M (75 percent) private-sector investment. This venture will stimulate rural economic development by creating a new market for up to 180,000 acres of alfalfa crops and by generating new employment opportunities in the transportation and processing of alfalfa as well as in the generation of electric power and other valuable co-products. MnVAP has secured a long-term energy sales contract from Northern States Power Company.

Hydropower.—The hydropower program has completed conceptual designs of advanced environmentally-friendly turbines in partnership with industry. This work by Alden Research Laboratory and Voith Hydro, Inc. includes features that are expected to substantially reduce fish injury and mortality, without extracting an efficiency penalty. This turbine development activity is complemented by a state-by-state hydropower resource assessment that is scheduled for completion in fiscal year 1998.

Energy Storage.—Progress continues in both bulk storage and power quality applications.

In August 1997, Senator Ted Stevens dedicated a 1.4 MWh battery energy storage system at the remote Metlakatla island in southeastern Alaska. This state-of-the art system is charged by hydropower and is expected to pay for itself within three years. The hybrid system eliminates the use of a noisy, polluting 3 MW diesel engine and handles large load spikes caused by the lumber mill that is also the main employer on the Indian reservation. Prior to installation of the new system, power "brownouts" were a frequent occurrence. The Energy Storage program provided technical assistance throughout the project and is supplying a data acquisition system to monitor battery operation (the entire system was built with private funding). This type of installation is a direct outgrowth of the technology base developed by the storage program and is expected to lead to similar facilities in other remote Alaskan communities.

In August 1997, the Energy Storage program, along with the AC Battery Corporation and Pacific Gas & Electric, received the prestigious R&D 100 Award for the PQ2000 power quality system. PQ2000, developed under a cooperative agreement, is a 2 MW/10 second factory-assembled battery storage system expected to meet a large market demand for devices that protect against power quality disturbances in industrial and utility applications. The first commercial PQ2000 was installed in late 1996 in Homerville, GA to meet the power quality needs of a lithography plant. During the first six months of operation, the PQ2000 corrected over 90 percent of all power quality events (e.g., voltage spikes which disrupt or halt plant operations). This project is the first U.S. installation of a complete integrated power quality protection system with master control by the electric utility and is a commercial manifestation of early 1990's program developments.

High Temperature Superconductivity.—As a result of OUT's superconductivity research, a whole new class of technological opportunities is becoming available to the electric power industry. "Superefficient" electric transmission cables, transformers, motors and current limiters are being developed that will be half the size of conventional alternatives and have only half or fewer energy losses. Because of their high rate of energy savings, the higher initial cost of these systems, relative to conventional systems, can be recovered in 2–4 years. These technologies are expected to be introduced commercially in the next 2–4 years and become widely available over the next 15 years—a period when much of the existing power infrastructure will need replacement and new demands from deregulation and increased competition will be placed on the nation's electrical system. The Superconductivity Program's success has been recognized with many patents, several R&D 100 awards, and internal DOE and national laboratory awards.

Hydrogen.—In 1998, Air Products and Chemicals, Inc. developed materials that selectively adsorb carbon dioxide in a hydrothermal environment. Analysis of a Sorbent Enhanced Reformer process using these materials indicates a reduction of 20 to 30 percent in the costs to produce hydrogen, in addition to the benefit of separating the carbon dioxide and hydrogen. This opens the door to near-term uses of hydrogen in transportation experiments and in utility dispersed fuel cell applications.

Electric and Magnetic Fields.—Fiscal year 1998 is the final year for the EMF program. The program has completed a portfolio of health effects research, exposure assessments and analyses that will enable the National Institute of Environmental

Health Sciences (NIEHS) to complete a comprehensive risk assessment of health effects.

Geothermal.—Progress continues with both power generation and heat pump technologies.

The Geothermal Technology Program has developed a new high-performance cement for use in geothermal and oil wells and for soil remediation. The formula for the cement includes fly ash, calcium aluminate, sodium polyphosphate and water. Since these materials are abundant and inexpensive and no technical training is required to make the compound, the cement is economical compared to conventional alternatives. This new cement resists chemical degradation and will result in greatly enhanced geothermal well life times. In July 1997, large-scale field testing began in a geothermal well at Unocal's project in Indonesia. Based on the initial successes with this material, Unocal plans to use it and similar versions in all of its remaining wells on this project.

At Fort Polk, Louisiana, 4,003 Geothermal Heat Pumps installed in U.S. Army housing are saving over 26 million kWh annually (32.5 percent) and shaving summer peak load by 7.5 MW (43.5 percent) based on statistically-valid data collected by Oak Ridge National Laboratory. In 1997, the Fort Polk project received Vice President Al Gore's Hammer award for "hammering away at building a better government"—in this case, one that works better and costs less.

The $72 million increase proposed for fiscal year 1999 represents an additional level of effort that is founded on accomplishments such as were just described. This enhanced effort will allow us to capitalize on program progress and provide critical technical advances and field verification that leads to the larger (than R&D cost sharing) industry investment in product commercialization. It also allows more prototype testing in actual application environments.

Such increases are generally in concert with recommendations made by the President's Committee of Advisors on Science and Technology. The renewable systems rely entirely on domestic energy sources and their increased use contributes toward an enhanced national energy security. Renewable systems are domestically manufactured for the most part and growth in the level of installed capacity translates into growth in U.S. economic activity and jobs. Availability of economic renewable energy systems is an important component of a restructured utility environment since renewables offer choices for consumers wishing to reduce dependence on fossil fuels or seeking "green" options. Increased renewable energy use clearly qualifies as one of the "prudent actions independently justified" often cited as the first steps for the nation to take in response to global climate change concerns.

The budget request contains numerous details regarding fiscal year 1999 activities. In summary, the proposed program increases will support the following:

Photovoltaics and Solar Buildings.—Fiscal year 1999 activities will result in the private sector installation of at least 15,000 photovoltaic and/or solar thermal roof top systems roofs in 1999. Through the President's Million Solar Roofs Initiative, increased outreach activities will establish 25 partnerships with energy companies, builders, Federal, State, and local agencies, corporations, and financial institutions across the nation. We will increase training for builders and solar equipment installers and increase efforts to develop the technology to ensure that PV systems meet requirements of builders and codes and standards.

We will fund 15–18 new three-year Phase 5 PVMaT contracts (Phase 4 involved 12 contracts) which will accelerate industry investment in process improvements and capacity additions to achieve manufacturing cost reductions of 50 percent from 1996 levels.

Wind Energy Systems.—Our efforts will help assure that 12 percent of the 1999 international wind energy market is secured by U.S. industry. We will provide testing, design review, analysis, and management for 11 industry subcontract projects and begin evaluation of distributed wind generation projects initiated in fiscal year 1997 under the cost shared Turbine Verification Program (TVP). In fiscal year 1999, we will also select two to three partners under a new TVP solicitation for projects up to 25 MW in size that are tailored to the requirements of the restructured electric power market of the state or region the project serves. The projects would be based on the TVP model and selected through a competitive solicitation with a targeted 90 percent industry cost share. These projects become regional "door openers" for increased commercial activity by wind manufacturers.

Solar Thermal Energy Systems.—In fiscal year 1999, we will complete Solar 2 testing and will make significant progress toward demonstrating the technological viability of 25-kW dish/engine solar thermal systems for distributed generation. We will accomplish this objective by installing up to 20 manufacturing prototypes and four advanced prototypes at utility/field sites through the Utility Scale Joint Venture Program. These programs are expected to result in achievement of the interim

goal of 2000 hours mean time between failure (MBTF) for a 5 dish/engine system in unattended operation. Achievement of 2000 hours MBTF is expected to lead to the first commercial sale of dish/engine technology.

Biopower Energy Systems.—Fiscal year 1999 activities under the Biomass Power for Rural Development Initiative will involve three projects, totaling 157 MW, in Minnesota, New York, and Iowa. Ultimately, these heavily cost shared efforts will demonstrate full operation, full capacity testing and technology verification of these rural economic development ventures. The alfalfa project in Minnesota is expected to generate a new market for up to 180,000 acres of crop.

Fiscal year 1999 efforts in co-firing (minimum 5 percent biomass) with coal will lead to 5 major power plant evaluations to help establish this technology nationwide as a means of reducing carbon and other power plant emissions (regional factors are important). Operational data will be provided to the stakeholder community to assist in their assessment of this attractive—and readily implemented—technology option.

Hydropower.—The fiscal year 1999 increase provides for the design of instrumentation for real-time visualization and accurate simulation of fish passage through turbines. This capability provides needed reassurance to industry investors that the emerging hydroturbine technology can achieve design goals. The new "fish-friendly" turbine under development will help reverse the decline in hydropower generation (over 9 percent of total U.S. generation) due to environmental barriers and regulatory limitations.

Energy Storage.—The Energy Storage program's fiscal year 1999 activities will support a Storage 2000 joint DOE/industry initiative to conduct field evaluations of renewable/storage systems, distributed storage, transmission support, customer service projects and control systems. Improved energy storage technology will enhance utility system asset utilization and system stability, and help address concerns about the maintenance of power quality and system reliability associated with a deregulated utility industry. Storage can have a major role in forestalling network problems expected to accompany increased wheeling and other operational changes under deregulation.

High Temperature Superconductivity.—Superconductive materials can reduce by half the huge amount of energy (up to 10 percent of the electricity generated) that is now lost through transmission, distribution, consumer applications, and other factors. The fiscal year 1999 program will take the next step in helping industry realize the potential of this technology through continued support for the Superconductivity Partnership Initiative and the Second Generation Wire Initiative. These activities will help move major superconductivity breakthroughs recently achieved in the laboratory into the nation's electric system years sooner than would otherwise occur.

Hydrogen.—Hydrogen produced using renewable energy can be stored and transported to U.S. energy end-use markets (utility, transportation, industrial) and converted cleanly and efficiently to electricity in fuel cells, or can be combusted to provide for thermal energy. The fiscal year 1999 program continues the implementation of the Department's Hydrogen Multiyear Plan. The proposed activities support fuel cell development and evaluation and tests of vehicle use of hydrogen in city driving.

Electric and Magnetic Fields.—The program activities in this area will be terminated in fiscal year 1999, as continuing responsibilities will be assumed by the National Institute for Environmental and Health Sciences.

Geothermal.—The fiscal year 1999 program will be targeted toward increasing the amount of economically recoverable geothermal reserves. This will be accomplished through advanced drilling and reservoir engineering technology development. The program will initiate field tests of revolutionary drilling technology that will reduce costs by an additional 20 percent over previous work. This will be focused on imaging of fractured reservoirs using new 3D-seismic techniques, and development of interpretation methods to characterize hot, fluid-filled fractures using borehole electromagnetics. In addition, the program will conduct industry-recommended research into methods of enhanced heat recovery from "hot dry rock." Cost of energy reductions achieved through this work can result in 15,000 MW of new U.S.-installed capacity worldwide in the next decade.

Concerted efforts will continue in fiscal year 1999 to encourage greater consideration of geothermal heat pumps by builders, utilities, municipalities, and others who influence building sector policies and investment. This program will be terminated after fiscal year 1999 commitments are satisfied.

SOLAR ENERGY PROGRAM

Question. I have some concern about the International Solar Energy Program, which in your description sounds a lot like the function of the commerce and state departments. Are other federal agencies and departments working with foreign nations to sustain clean energy technologies, engaging in joint ventures to develop renewable energy projects and supporting international agreements?

Answer. The Office of Energy Efficiency and Renewable Energy's Solar International programs are specifically designed not to duplicate efforts ongoing elsewhere with the Federal Government. These programs closely coordinate with other relevant agencies and, in fact, often lead key multi-agency programs and/or activities. Solar International Energy Programs include the Committee on Renewable Energy Commerce and Trade (CORECT), the Americas' 21st Century Program (A21), and the U.S. International Joint Implementation Program (USIJI). CORECT and A21 are designed and function to coordinate and facilitate export assistance to U.S. companies. USIJI helps identify joint project opportunities with other countries that reduce greenhouse gas emissions and offer opportunities for sale of U.S. equipment.

CORECT, established in 1984, is an interagency working group comprised of fourteen Federal agencies that coordinates Federal activities relating to the export of renewable technologies. Both the State and the Commerce Departments are active members of CORECT. CORECT is the only Federal program that facilities the sharing of information regarding ongoing renewable energy export activities within each agency. CORECT is instrumental in assuring that Federal agency efforts are complementary to each other and not duplicative. CORECT has also been selected by the Commerce Department's Trade Promotion Coordinating Committee as the designated reporting entity for renewable energy export activities.

A21 implements the export strategies developed by CORECT for Latin America, Asia and Africa. In past years, A21 has worked closely with the U.S. Agency for International Development (U.S. AID) and the Environmental Protection Agency (EPA) on developing cost-shared joint ventures in these developing regions. These deployment efforts have resulted in significant replication by local governments, particularly with regard to rural electrification efforts in Brazil using U.S. manufactured photovoltaic systems.

USIJI, established in 1992 following the U.N. global climate change conference in Rio de Janerio, coordinates closely with the State Department and EPA in implementing projects and activities to promote the voluntary reduction of greenhouse gas emission in accordance with international agreements. USIJI is the program designated within the Federal Government to lead these efforts.

INCREASED BUDGET REQUEST

Question. While I support your office, generally, I do have some concern, specifically, that given some of the larger increases sought by the Administration, whether the funds will be efficiently managed as the activities multiply. What assurances can you give this subcommittee regarding the use of funds in actual production of alternative and renewable energy?

Answer. The Office of Energy Efficiency and Renewable Energy is proposing a number of expanded activities for fiscal year 1999. The management resources needed for each of these were carefully considered prior to the request. We routinely consult with our industry partners and other stakeholders to ensure that our proposed projects are carefully targeted toward activities that will provide maximum benefits while remaining within the bounds of program capabilities. Some of the increases proposed are to implement follow-on or expansion activities for projects already underway. Others are for new initiatives that are expected to speed the rate at which the technologies become proven, viable options for the 21st century.

Examples of increased activity levels for existing programs include expanding the photovoltaic manufacturing technology program (PVMaT) to further reduce costs and increase module performance and reliability, expanding the modular system development activity in the biopower program to increase possibilities for export of U.S. manufactured equipment, increasing advanced reservoir drilling and mapping activities in geothermal to expand the resource base for power generation, expanded wind turbine verification programs with utilities, and demonstrating remote uses of hydrogen-powered fuel cell generators and advanced hydrogen storage systems. As part of continuing efforts, each of these activities will be managed from within the existing staff structure using improved procurement and management procedures implemented over the past several years. Continued emphasis will also be placed on cost-shared efforts with the private sector to leverage public funds.

Among the more innovative initiatives are the Million Solar Roofs Initiative (MSRI) and a technology-neutral competitive solicitation, both designed to speed de-

ployment of renewable energy systems. MSRI is aimed at developing expanded domestic markets for photovoltaic and solar hot water heating systems, to enable U.S. manufacturers of such systems to expand their plant capacities and remain competitive in domestic and international markets. Recognizing that to be successful MSRI must have strong grass roots support, $6.4 million has been requested in fiscal year 1999 to support partnerships with builders, financial institutions, other Federal agencies, and a broad range of local organizations. We have also requested $10 million for a competitive solicitation to identify and support innovative ways to deploy renewable energy technologies, whether singly, in combination with other renewables, or in hybrid configurations with storage and natural gas systems. It is designed to be highly leveraged (up to 70 percent non-DOE cost sharing) and is expected to result in $30 million of private sector investment.

Increased attention is also being paid to improved management procedures for all Energy Efficiency and Renewable Energy (EERE) programs through several new initiatives aimed at managing EERE programs more effectively and using taxpayer dollars more responsibly. First, EERE is developing both a clearer, more easily understood budget and a more open budgeting process. Second, EERE is increasing the level of competition in selecting contractors. Third, the Office is putting increased emphasis on developing technology roadmaps in collaboration with partners for a greater number of our programs. These roadmaps will specify with clarity long-term goals and related program activities. Finally, EERE is increasing the use of regional support offices to implement programs closer to our customers.

To complement the foregoing program related activities, EERE is increasing attention to, and limiting the overall dependence on, crosscutting activities. Where such activities are considered necessary, participation by individual program staff will be increased to ensure program benefits are realized. EERE will share more information about these activities with committee staff. The objective is to maximize the direct return for each program's appropriation.

INCREASED BUDGET

Question. You state that you are "focusing on program evaluation and terminating programs that don't measure up." Could you share that criteria with us and any projects, activities, or programs that have not measured up?

Answer. I would be happy to discuss program termination criteria and share some illustrative example projects with you. First, however, since programs and projects can end for both "good" and "bad" reasons, I would like to offer a few definitions used within the Office of Energy Efficiency and Renewable Energy to ensure clarity.

Termination.—The ending of a program due to failure to achieve objectives, a shift in marketplace/industry conditions necessitating a refocussing of efforts, or insufficient funding available to meet all priorities.

Closeout.—The ending of a program whose DOE mission and/or planned objectives have been successfully completed.

As I am sure you know, programs and projects may successfully conclude or they may be ended prior to completion. Each project or program has its own unique set of characteristics or factors that must be considered both in establishing the effort and with regard to its potential termination. With terminations, however, there are some general criteria which we do apply. These include:

—Failure of a program/project to meet its goals, objectives, and performance measures (even given reasonable adjustments and flexibility on changes of approach, time frames, etc.);
—New information or early results that would indicate the impracticality or unfeasibility of a program or project even prior to full completion of all originally planned efforts;
—Emergence of new, more promising technology developments or opportunities that replace an ongoing program (either due to priorities and funding limitations or because of the potential for the new technology to better address the goals and objectives than the program/project it replaces); and
—Reduced program funding or the emergence of higher priorities. Sometimes hard choices are required, with lower priority efforts being delayed, postponed indefinitely, or terminated.

Mitigating factors that have bearing upon any decision for termination include:

—Will termination of this program/project create undue harm to other ongoing or planned efforts dependent upon its results?
—Will termination cause undue harm to the partners involved—States, other Federal Agencies, industry, etc.?
—Impacts upon communities, non-governmental organizations, and other stakeholders.

Additionally, sometimes we may fold two or more programs/projects into more cost-effective or broader-impact efforts. For example, in the fiscal year 1999 Budget Request we have recommended folding the Renewable Indian Energy Resources line item and the Federal Buildings/Remote Power Initiative into a single Renewable Energy Competitive Solicitation. The intent of this proposed programmatic vehicle is to solicit innovative proposals to demonstrate the efficacy of renewables for providing power, either alone or in hybridized format, that would be appropriate for operation within a restructured electric power market. Proposals would not be restricted to specific applications or geographic regions, and high levels of cost-sharing (up to 70 percent) would substantially leverage the Federal investment. This new approach would still meet the primary objectives of the former programs (i.e., clean, reliable power at a reasonable price).

Below are several examples of programs that have been terminated and the rationale for ending the efforts:

Magma R&D Program.—The Magma Program was terminated to allow the geothermal program to concentrate on nearer-term, less costly R&D. The commercial exploitation of the magma resource is believed to be the most expensive option for generating geothermal power (assuming the use of existing technology).

Geopressured-Geothermal Program.—The Geopressured-Geothermal Program was terminated following extensive flow testing of the resource. It was determined that, although the resource itself was quite large, the ability to further reduce technology costs to where this resource would be economically viable was not possible in the foreseeable future. The program was terminated to allow refocussing of efforts on higher-potential geothermal R&D.

7-kW Dish/Engine Program.—Market conditions, and thus industry partner interest and priorities, have shifted to larger-scale dish/engine systems having greater marketplace utility (less costly power production). Dish/engine R&D efforts have been refocussed on larger-scale (up to 25MW) systems.

SUBCOMMITTEE RECESS

Senator DOMENICI. We will stand in recess until the call of the chair. Thank you very much.

[Whereupon, at 3:30 p.m., Tuesday, March 10, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 1999

THURSDAY, MARCH 26, 1998

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

The subcommittee met at 9:40 a.m., in room SD–138, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

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

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

STATEMENTS OF DR. JOHN ZIRSCHKY, ACTING ASSISTANT SECRETARY OF THE ARMY FOR CIVIL WORKS

ACCOMPANIED BY:

LT. GEN. JOE N. BALLARD, CHIEF OF ENGINEERS
MAJ. GEN. RUSSELL L. FUHRMAN, DIRECTOR OF CIVIL WORKS
THOMAS F. CAVER, JR., CHIEF, PROGRAMS MANAGEMENT DIVISION, DIRECTORATE OF CIVIL WORKS

OPENING STATEMENT

Senator DOMENICI. Thank you everyone for coming.

Fellow Senators, I am apologetic for being 10 minutes late. I had an emergency in New Mexico.

I do think the witnesses know that this is going to be a very, very serious meeting, because something is wrong with the President's budget, something that cannot be allowed to stand. But it will not be so easy to fix, because there isn't enough money given the dramatic cut of the Corps of Engineers' budget. Clearly, we have to put some of that money back.

So, this morning the subcommittee will first hear the testimony on the fiscal year 1999 budget request of the Corps of Engineers. We will hear from Dr. John Zirschky, the Acting Assistant Secretary of the Army for Civil Works; along with Lieutenant General Ballard, Chief of the Engineers; and Maj. Gen. Russell Fuhrman, Director of Civil Works.

It is nice to have you all here.

Following testimony on the Corps' budget, we will hear from Patricia Beneke, Assistant Secretary for Water and Science, Depart-

ment of Interior, and Eluid Martinez, Commissioner of the Bureau of Reclamation.

FISCAL YEAR 1999 BUDGET REQUEST

I wish I could say that it was a pleasure to have you here today. You come before this committee to support a budget request which is totally unrealistic and unacceptable. The President has presented a budget for water resource infrastructure for this Nation which is, arguably, $800 million to $1.3 billion short of the amount necessary to carry out the programs intended by Congress in the 1998 Energy and Water Appropriations Act.

One can only speculate on the reasons for the President's and OMB's action in devastating the Corps' budget the way they have. But this is just another example of the shell games the administration's budget put forth for consideration here. Cutting the Corps' water resource development program in order to provide hundreds of millions of dollars to undertake measures in support of the Kyoto Agreement and Global Warming is one possibility.

But in my view—and I must say it is also the view of a number of my Senate colleagues—this budget proposal for the Corps is counter productive to the interests of this country.

First, if approved in its present form, this request will add hundreds of millions of dollars in increased costs to these projects—costs that will be borne by the American taxpayers. That is, by waiting, and waiting, and waiting, the costs of delaying these projects becomes greater and greater.

Second, this budget proposal will significantly delay local communities realizing billions of dollars in economic benefits.

I am going to depart a bit from my usual assessment of water projects and talk 1 minute here about the nature of the benefits these kinds of projects provide to the local areas and the Nation.

WATER RESOURCE PROJECT BENEFITS

For flood control projects, the 1997 value of damages prevented is $45.5 billion—that is damages prevented by these kinds of projects in 1997. The value of the damages prevented was $45.5 billion.

To highlight the impact of the administration's budget and what it will have on the highest priority flood protection projects in the country, let me just tick off a few.

The Santa Ana project in California: the President's funding request is $20 million to continue this project which has been under construction for nearly 10 years. The budget request represents a 2 1/2-year delay and results in an estimated $40 million increase in the project costs and $30 million in increased flood protection insurance premiums for those living and working in flood plains. It also is estimated that if a major flood were to happen along the Santa Ana River, it would result in $2.7 billion in damages.

We would be on the floor with an emergency request that would be for more money than we are arguing over here in the President's budget versus a realistic level of 1999 appropriations.

Similarly, in the Los Angeles County drainage area, flood protection in this area is budgeted as $11 million, and it needs $60 million to remain on schedule. The budget proposal represents a 5-

year delay, $200 million in lost flood control benefits and $130 million in increased flood insurance to the citizens in the surrounding area.

In the area of navigation, in which some of the Senators here are interested. U.S. ports and harbors annually handle $600 billion in international cargo, generating over $150 billion in tax revenues, nearly $520 billion in personal income, contributing $783 billion to the Nation's gross domestic product.

Now what happens to these navigation projects in the President's budget for fiscal year 1999? For the Port of Los Angeles, one of the Nation's biggest and busiest, the budget provides $12 million, which represents a 13-month delay in the completion schedule. The committee understands that the Corps could use $64 million to do its work on that biggest and most important of American seaports.

When completed, this project will generate $1 billion in customs revenues annually, $1.5 billion in Federal taxes, and 250,000 jobs nationally.

So this budget, as simply as I can put it, is not logical, especially since the President found other programs to fund with the savings from this that do not come close to standing the test of benefits that I have just described that would be forthcoming to the American people and people around these areas.

It ignores the economic benefits that are going to happen and accrue to our Nation, and it ignores the fact that many of these projects are the underpinning, the economic underpinning which supports and generates resources which fund the rest of the Federal budget.

Having said that, I realize that you are in a difficult position having to defend this budget which was thrust upon you by the OMB. You are merely messengers for the administration. But I hope that you will deliver the message back to those who have formulated this proposal that it is, from what I can tell, totally unacceptable.

I do not believe Congress will concur with the budget as presented. But we have a hard time ahead of us, because if we are to limit the impact that this budget represents—and there is pretty good evidence of the magnitude—we will have to squeeze other programs in this subcommittee.

It is a danger to our people from potential flood possibilities and lost economic benefits to many, many Americans.

Now I am sorry to have to deliver that message. Frankly, I don't know that I have delivered one as harsh as this since I have been a Senator. But I truly believe we have been fooled.

Now we are going to proceed unless the Senators have something to say.

Senator REID. Mr. Chairman.

Senator COCHRAN. Mr. Chairman.

Senator DOMENICI. I will yield first to my ranking member.

STATEMENT OF SENATOR REID

Senator REID. Mr. Chairman, I also want to say that I consider myself a good Democrat. I know you are a good Republican. But I want everyone within the sound of my voice to understand that I agree wholeheartedly with the chairman on this issue. This sub-

committee does not act on a partisan basis. Senator Domenici and I are going arm and arm to come out with a good budget, a good mark on this appropriations bill.

We are very proud of being able to work with this subcommittee, that we think is the most important of all the subcommittees in the appropriations process.

This reminds me of when I worked in the Military Construction Subcommittee. There, every year the administration would give us a budget that had nothing in the budget for Guard and Reserve. We always had to do something to take care of the Guard and Reserve, because they are such an integral part of the security of this country. We were left to do it because the administration never gave us any money for the Guard and Reserve.

This is kind of what I see here today. Everyone knows we have to take care of these very essential water programs. They are going to be taken care of in the House. But House members do not represent States, except in rare occasions where there are single member districts. But these water projects in these House districts are essential. If they cannot take care of the water projects that are so important to their congressional district, they, in effect, have failed. They are not going to fail. They are going to have to make sure that these water projects are forthcoming.

IMPORTANCE OF FLOOD CONTROL PROJECTS

I know there are people who are going to say well, I know that all you guys are trying to do is protect the pork. I would like for someone to come and see the devastation that took place in southern Nevada with a flood a few years ago. It washed cars away. People died in those floods.

Flood control is extremely important to the rapidly growing southern Nevada area. The Corps of Engineers is where we look for help. We have no place else to look. That is the way it is.

We can hold back some of the money on some of these major flood control projects. But it winds up costing my constituents, the taxpayers all over this country, more money. That is why it is important that we go forward on some logical basis.

We fully understand that the witnesses are loyal soldiers. You did not come up with this mark that we have in this appropriations bill. We understand that. So I express my appreciation to the Acting Assistant Secretary of the Army, Dr. Zirschky—and any name that begins with "Z" is always hard to get out and pronounce—to Lieutenant General Ballard and Major General Fuhrman for their testimony here today.

Your contributions, expertise and judgment are vital to the business of this committee. You need to work with us. We have told you what we want to do. You have to help us get where we need to go.

The work of the Corps of Engineers, as we have all said, is very vital to the Nation's water resources, flood damage reduction and regulation of wetlands. It is exactly because of this critical role of the Corps that this causes me such concern, as I have already outlined.

Those of us in western States understand that water management is essential for sustainable growth and development. And, of course, Nevada is the fastest growing State in the country. We de-

pend on the work of the Corps to insure not only an adequate water supply in many instances, but also to protect and control water resources, flood hazards, and flood mitigation which provide security and peace of mind for residents throughout the State of Nevada.

We have projects currently under development to provide for flood control, as I have already said, in Las Vegas and water quality improvement at Lake Tahoe. This is something that is also of concern to me.

The President, Vice President, and five Cabinet officers came to Lake Tahoe saying they were going to do everything they can to help Lake Tahoe. Well, we have to focus a little more attention on Lake Tahoe with the Corps of Engineers, which is an integral part of saving that lake, which belongs to the States of California and Nevada.

There is also work in there for restoration of the Truckee River and flood warning enhancement in Reno, among others.

So, we have to maintain these programs and the others that Senator Domenici has talked about.

Mr. Chairman, I have a bill, an amendment, that is pending and I have to leave to speak at 10:00. I am going to get back just as quickly as I can.

I am not going to take the time of the committee in that I am not going to be here for the direct testimony. So I will submit my questions to the Corps in writing and will hopefully get back in time so that I can ask questions to Secretary Beneke.

Senator DOMENICI. Thank you, Senator.

Thank you, Senator. Thank you for your remarks, especially those that have to do with your confidence in the chairman. You and I have great confidence and faith in one another.

It might be noted, for those wondering about parochialism, that I did not mention a single project when I gave you the benefits and the risks, a single one in my State. Those that I mentioned were not in my State. They were in the States of other Senators.

Senator REID. But if we were to look closely, we would find a project or two in there.

Senator DOMENICI. Oh, we will get to those in the questioning. We don't have very many. [Laughter.]

Senator BYRD. You don't have to apologize for that, Mr. Chairman. Mention those projects in your State. That is why you are sent here. You don't owe anyone an apology for that.

Senator DOMENICI. Senator, nobody is going to accuse me of shirking my responsibility to get these projects. [Laughter.]

I just have a different idea this morning about how we are going to handle this.

Senator, did you want to comment now? You are welcome to do so, Senator Cochran.

STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Thank you, Mr. Chairman.

Mr. Chairman, I come to the hearing this morning as we begin the hearing to make a couple of observations about the Corps' budget request. I am unable, because of commitments to other ap-

propriations subcommittees to remain to ask questions during the question and answer period.

To emphasize the practical results of your observations about having to delay and postpone completion of important flood control projects that have long since been authorized and construction has begun, just to cite three projects in the Yazoo Basin, which is a major tributary of the Mississippi River in my State, to complete those projects now with the kind of incremental funding request that we see presented to our committee by the administration will take about 10 years longer, 10 years of delay. The practical consequences in terms of the budget are that the cost will be $54 million greater to complete just those three projects that are under construction and underway now.

This is an example of what is happening and what this administration is putting before the taxpayers. It is a shame; it is a disgrace.

Flood control is not politically appealing right now. There is a lot of controversy about some of these projects—not the ones in my State, but others. [Laughter.]

The fact is these projects are going to save lives. They are going to save the opportunity to earn a livelihood for people who have lived in this region all of their lives, or for generations. Their whole family over a period of time has invested everything they have in their homes, their businesses, and their farms. Now, because of a political decision that you are not going to be rewarded by the taxpayers throughout the country if you propose to spend what you ought to be spending to complete these projects as promised and authorized and as planned, but you would rather assume new responsibilities for the Federal Government that traditionally have not been Federal responsibilities and put a lot of money in those programs—they are new, they are exciting, they are daring.

These are projects that only the Federal Government can complete. State and local governments do not have the resources. They do not have the expertise. The private sector cannot come in and make money building these projects.

There is no other alternative but for the Federal Government to keep its commitment. It is shirking its responsibilities, turning its back on the people—the people who live along these tributaries, in these basins, where flood control projects are needed desperately and have been promised. Cost sharing has been allocated in many cases and new tax burdens assumed by local sponsors. And the Federal Government says well, not yet. Let's wait a while before we do what we ought to do this year on that.

We are going to cut this budget, for example, in this one Yazoo Basin area by 36 percent from last year's fiscal year funding level. That is outrageous.

I hope, Mr. Chairman, that with your leadership we will reverse these decisions and make allowances for the needs and provide funding for the projects.

REGULATORY PERMITS

I want to make one other comment. The Corps has undertaken to assume zoning responsibilities in league with other agencies of the Federal Government on the Mississippi gulf coast.

There is a letter that I just read yesterday saying that permits for coastal casino development will be withheld until there can be an advanced planning process put in place.

We have a commission authorized by the Congress that has been appointed to review casinos, whether they are good or bad, everything about them. We are going to find out what these commissioners think about casinos.

In the meantime, because of the permit authority and the responsibility the Corps has, somebody has decided that this commercial activity is going to be subjected to some long-range planning process in concert with other Federal agencies and, it says, the State. There is nothing in there about local governments.

In our State, the law is that local governments are the zoning authorities. I mean, are you going to decide whether a shopping center should be built in one place or another, or that there ought to be a long-range planning process for shopping centers, or housing, or ship building, or other commercial activities?

Singling out casino development—is this the hotels, or the hotels that don't have casinos? Are they exempted? If you are going to build a hotel that does not have a casino, you are not a part of the planning process. But if you are going to build a hotel that has a casino in it, or a parking garage that maybe is used by a casino, then are you going to be involved or not?

I have a letter from a fellow who, when he found out about this memorandum—it is a memorandum for the Director of Civil Works, entitled Mississippi Coastal Area Casino Permit Applications, dated March 4, 1998—one counsel to one of the largest resort enterprises on the Mississippi gulf coast that has been there the longest in continuing operation, I think, of any indicates they are considering an expansion of golf courses, marinas, all of the other things that are attendant to this large resort complex.

When they see this, they are talking about a 300-plus acre renovation project. Where does this leave them? They are beginning to get commitments for financing. They are beginning to make plans, having designs done, and now they are going to wait until the Corps of Engineers, the EPA, and whoever else in Washington or Atlanta decides what kind of long-range planning there ought to be for projects that involve casinos on the Mississippi gulf coast.

Are there going to be any in Atlantic City undertaken, or in the State of Nevada that involve gaming operations? What about other States and other kinds of commercial activity? Are they all now going to be suspended in terms of their zoning processes until the people in Washington decide what kind of commercial enterprises are appropriate in these areas and which ones are not?

This is outrageous. This is absolutely unbelievable.

So I hope that you will go back, take another look at what you are undertaking and whether you have the legal authority to do that which has been given to you by the Congress, or for the people of the country to decide that we do need zoning authorities in Washington like this. Think about what you are doing and develop some kind of new approach.

I suggest this ought to be done immediately, because you have put in jeopardy the economy and the prerogatives that are vested now in State and local governments, local governments particu-

larly, that already have planning commissions, that already have zoning requirements, that already are subject to the most careful scrutiny of all.

You have a 401 permit process and you have other specific duties. I am not saying you should not undertake to carry those out as carefully and as thoughtfully as you can. But your authority is limited under the law. It is not broad and sweeping and encompassing every whim or notion that might be developed by somebody who thinks that they know best, that Washington knows best.

I hope you will take a look at that. I apologize to the committee for taking longer than I intended. I appreciate your recognizing me, Mr. Chairman.

Senator DOMENICI. Senator, I welcome your remarks, as long as they take. I am very pleased that so many Senators showed up. We have a lot of subcommittee hearings where we don't have this many Senators, including the largest budget of all, that for Health and Human Services. That is run by just a couple of people and nobody even shows up.

So, it is great that so many subcommittee members are here. You said under my leadership let's get this done. But let me add that I will need all of your help. What this amounts to is how much do we get allocated for Corps projects when our wonderful friend, Ted Stevens, does the subcommittee allocations.

Senator Byrd.

STATEMENT OF SENATOR BYRD

Senator BYRD. Mr. Chairman, I fully support what you have said and I support what has been said by others.

Their thinking is in accordance with mine in this matter. As one who has been appropriating money for water resources projects for 46 years, I am somewhat surprised at this budget.

I shall support the efforts, Mr. Chairman, to put it right.

It might be well for the administration to go back and look and see what happened when President Carter sought to make cuts in the water resources budget. It might look at Mr. Reagan's problems when he sought to go against the tidal wave of the people's elected representatives here in Congress.

It seems to me that the administration would prefer that it be the only voice in deciding which projects to fund. Many of the projects supported by Congress have received funding well below the identified needs, while some of the administration initiatives are increased significantly.

For example, the Columbia River fish mitigation project increases by $22 million, 23 percent; central and southern Florida increases $13.4 million, 49 percent; Everglades South Florida Ecosystem increases by $10 million, 50 percent; and the Kissimmee River, Florida, increases by $24.3 million, 810 percent. Meanwhile, other projects—and I will be a little provincial now—God forgive me—[Laughter.]

Other projects such as Marmet Lock and Dam could use additional funds. You see, I am not bashful about being parochial. I know who sent me here and I have been living in West Virginia. I have seen the floods come and I have seen the destruction that follows in the wake of those terrible floods.

I have seen those coal miners go back into their homes and shovel out the black muck after a flood. I have seen their furniture sitting all over the lot which has been pulled out of the mud. Their furniture is ruined. And there they stand, hosing out the muck. Mud, muck, and misery, that is the story.

So why should I be backward or bashful about standing up for some projects that might benefit my people?

I am sorry that you have to take this guff, gentlemen. You did not devise this budget. We know who your bosses are, but they are not ours. That is no disrespect toward you. It is no disrespect toward them. They just have the wrong idea.

They like to say where it will be spent. They like to disregard, apparently, what the elected representatives of the people are saying with respect to the people who send us here.

We are directly elected by the people. Nobody downtown is directly elected by the people. They are indirectly elected. They are elected by the electors who, in turn, are elected by the people.

So Marmet Lock and Dam could use additional funds, $7.5 million more—just a drop in the bucket. It is chicken feed. Others also need much more. Charleston Harbor in South Carolina needs $27 million; Los Angeles Harbor, California, $57 million; Montgomery Point Lock and Dam, Arkansas, $41 million; and we could go on.

So I am looking forward to the return of the President. I don't know what programs he will come back recommending for Africa after his trip. I expect he will recommend some programs that will cost right much. I don't know. But I have a pretty good idea. I will be pleasantly surprised if he does not.

Mr. Chairman, I want to take this moment not to ask any questions, though I do have some questions. But I want to thank the witnesses who are here.

I do not envy you your positions. You are just trying to do your jobs and I commend you for that.

That is all I have at the moment.

Senator DOMENICI. Thank you very much, Senator Byrd.

It just dawned on me that, through an oversight, as I was giving my opening remarks I welcomed the two generals and did not verbally welcome you, Dr. Zirschky. I should have welcomed you. This is belated, but I do welcome you, Dr. Zirschky as well.

Senator Craig.

STATEMENT OF SENATOR CRAIG

Senator CRAIG. Mr. Chairman, thank you. I think the gentlemen on the panel this morning can see that there is great concern about the budget we have before us.

I must tell you that Idaho is very fortunate this year. We have not caught the wrath of El Niño like California and other States have.

But last year, it was an entirely different story, as you know. Many of our rivers flooded, causing thousands of Idahoans' property to be destroyed, and now we are trying to straighten up our rivers. Many of our rivers lost 20, 30, to 40 percent capacity because of the movement of gravel and the shifting of aggregates within those river beds. Today we are having a phenomenally difficult time trying to resolve that in a timely way. Thank goodness

we did not get the high water this year that we got last year or the damages would have been much worse.

Now, John, you and the Corps have worked with us very closely and we do appreciate that. However, the kind of restrictions the administration is placing on working rivers to somehow return them to a pre-European-man existence simply cannot be tolerated. These waterways are working rivers, and we all understand what that means. And yet, the administration appears determined to ignore this fact.

There is only one thing I will accept about the Army Corps being green and that is your uniforms. The rest of you and your programs ought to be balanced and right down the middle of the road. And yet, this administration attempts to green-you-up more than I have ever seen. This effort is not constructive in the long term for the whole of our country and for the whole of our people.

You are in the business of managing certain things and you ought to manage them in ways that are fair and balanced. We are going to hold you to that, and many of the new projects we have talked about have a very clear and decided slant that we don't think serves the public in general very well. When the rivers' gravels are not removed or rearranged and communities lose their economic wellbeing, it does not make a lot of sense. And yet, that is the game that seems to be played today.

Consider Dworshak Dam, a major facility in north Idaho. The Corps is 19 positions short of fully staffed. It is a dam that was going to be a key recreational center for that community. The citizens of that community can no longer cut trees in one of the most productive forests in the country, because this administration has put a stop to cutting trees. So, we want to recreate and fulfill the promises that the original Congress that authorized the construction of that project.

And yet we are 19 positions short. It is becoming less a recreational facility and more a mechanism for environmental measures, as you know,. The project is now caught up in the business of flush, and other downstream uses of water. By late summer, it no longer serves the recreational needs of the public.

A lot of frustration exists in the communities surrounding the project. I could go on and express that, Mr. Chairman. I will submit my questions for the record as I have to leave also.

The one thing that I found most fascinating last year in my State of Idaho was a palpable media slant against existing dams. We appear to be developing a generation of citizens who wonder why all those dams are there. Some of those citizens have expressed their views that we ought to remove dams to save fish and promote more natural flows in the rivers. Then along came the 100-year and 200-year floods. Communities were saved and hundreds of millions of dollars of property were saved because our forefathers had the wisdom to put those dams in place.

I hate to say this but, tragically enough, every so often a good flood reminds a generation of why we did what we did after the last flood.

So, I would hope that we can resolve this budget and that the Army Corps of Engineers will play the role that it has historically played as a neutral agent, serving the needs of the country at the

direction of Congress, the appropriators, and the authorizing committees that provide the kind of direction that I think has been tremendously beneficial for public health and safety as well as providing enormous economic benefits for this country over the years.

Our citizens sustain a wellbeing not in spite of Mother Nature, but because we have been able to help shape Mother Nature's unpredictable events. You have been those public agents who have been allowed to help in that regard.

I would hope we would continue to do so.

Thank you, Mr. Chairman. I would ask unanimous consent that my full statement be made a part of the record as well as some questions that I ask be included in the record for response.

I would say, gentlemen, that we have had a marvelous working relationship, and I look forward to continuing that.

Thank you.

Senator DOMENICI. We will do both of those for you, Senator.

[The statement follows:]

PREPARED STATEMENT OF SENATOR LARRY E. CRAIG

Thank you Mr. Chairman, for giving me the opportunity this morning to comment on the U.S. Army Corps of Engineers' proposed Budget.

At the outset, I will state for the record my concern about the pressure being applied to the Corps to remove dams in the northwest region of our country. Last year's floods should have been a sharp reminder to dam removal advocates why this country invested the time, man-power, and funds to construct those dams—to save lives and protect the economic well-being of Pacific Northwest citizens. Without those dams, the floods would have claimed many more lives and inflicted much more economic misery on the people living and earning their livelihood in the northwest.

Another concern I have is with the reduction of services at Corps' projects throughout the northwest and, in particular, Idaho. For example, at the Corps' Dworshak Project in Idaho, nineteen positions have been lost in that project's resource department. Moreover, the resource manager position at that project has been vacant for some time and I understand the position will be filled only temporarily.

Several Idaho communities depend on the operations at the Dworshak Project for their economic survival and when services at this facility change, the citizens of these communities get anxious. The City of Orofino in Clearwater County, Idaho, is terribly concerned about the reductions in force at Dworshak, and about any future change in operations that could interrupt electric power, adversely impact recreation, and result in excessive inflow that would cause the reservoir to overfill. I have several questions that I will send to the Corps that cover these concerns.

The last point I will make today concerns the progress of the Corps' Lower Snake River Juvenile Salmon Migration Feasibility Study.

Over twenty million dollars will be spent by the American taxpayer for the Corps to complete the Lower Snake Feasibility Study. I have grave concerns about the way this large expenditure of taxpayer money is being used by the Corps, as well as concerns about the usefulness of the final product.

First, I want to underscore the concern I expressed last week to members of the Corps' North Pacific District, about a recreation survey that was mailed to 150 citizens in the northwest. I have a good deal of experience with surveys and polls and believe the recreation survey mailed to these 150 citizens to be terribly flawed. Indeed, the very title of this survey—"Removing Dams from the Lower Snake River to Increase Salmon"—exhibits bias inasmuch as science does not suggest that dam removal increases salmon. There are many other similar problems with this survey which I and my staff have communicated to employees at the Corps' North Pacific Division. I was relieved to hear from my staff that further thought is being given by the Corps to the manner in which this survey "objectively" pursues the facts, and I hope that swift action will be taken to correct the problems with the current recreation survey.

My other concern about the Feasibility Study is with its usefulness when it is timely delivered by the Corps in mid-1999.

In Section 1.2.1 of the Corps' "Interim Status Report" of the Feasibility Study, the Corps states that the study will accomplish several listed goals. By far, the most

important one from my perspective is the goal listed as number (3)—"to provide a sound and documented basis with which both federal and regional decision makers can judge the recommended solutions."

I am very interested in whether the Corps still stands behind this promise, and whether the Corps will deliver the final product on time. It is essential that important scientific questions be answered as definitively as possible and included in the Corps' final report. Two of these important scientific questions that must be answered are: (1) how many wild, natural spawners will each salmon recovery alternative produce? and (2) how will each of the recovery alternatives impact salmon survival? When the answers to these questions are definitively stated, then policymakers can begin to weigh the tradeoffs by matching the cost (capital construction, power impacts, economic mitigation) with the number of wild, adult fish produced by each recommended alternative.

I realize fully that getting the answers to the trenchant scientific questions presented is, primarily, the responsibility of the group of Northwest fisheries scientists know as "PATH"—Plan for Analyzing and Testing Hypotheses. Mr. Chairman, PATH receives about $1.7 million annually in BPA funds, and has been operating for nearly two years. The scientists in this group receive direction from the National Marine and Fisheries Service's "Implementation Team," which is responsible for implementing the 1995 Biological Opinion. PATH's mission Mr. Chairman, is to inform policymakers about what is already known regarding salmon survival in the mainstem and where research should be focused.

Mr. Chairman, what concerns me today in March, 1998, a little over a year away from the Corps' expected delivery date of the Feasibility Study, are reports that PATH may not be able to deliver on the science. Scientists in the PATH group are, reportedly, unable to resolve their differences with respect to the proper weight to be given evidence supporting alternatives.

Without clear information on what are the best alternatives to pursue, the Corps' study will be almost useless. No matter how good the economic and engineering analysis is, without sound biological analysis, decision makers will be unable to make the necessary political, social, and scientific determinations that will effect salmon survival in the northwest.

Mr. Chairman, if the Corps fails to deliver on this most important goal, legitimate criticism will abound. Once again, a large amount of money will have been spent on salmon recovery with little to show for the taxpayers expense. That, Mr. Chairman, is unacceptable.

Thank you, Mr. Chairman, and I look forward to the Corps' responses to the questions that I will submit for the record.

STATEMENT OF SENATOR DORGAN

Senator DOMENICI. Senator Dorgan.

Senator DORGAN. Mr. Chairman, thank you.

I would ask that a statement of mine be put in the record.

FISCAL YEAR 1999 BUDGET REQUEST

Before I came to the Congress, I used to testify from time to time before committees of Congress. I remember that after the testimony I used to think that Congress seemed to me to be permanently indignant about things. Then I came to Congress and I realized there was plenty of reasons to be indignant.

So this morning, when I hear what is being said, I must tell you that I share almost all of what I have heard about priorities. I am very concerned that we are shortchanging the Corps of Engineers and shortchanging our investments in these areas.

In my judgment, we ought to have pride in making the right investments. These are, in fact, important and good investments for the country. We ought to be ashamed if we don't make these investments.

Having said that, I also want to say to the Corps of Engineers that you are, I think, some of the best flood fighters in the world. Many parts of this country owe you an enormous debt of gratitude.

We had nearly 10 percent of the population of North Dakota evacuated in a major flood last year. Ninety-five percent of one of our largest cities was evacuated. The Corps waged a flood fight the likes of which I have never seen.

They won parts of that fight and lost parts when the dikes broke. But we could call at midnight or at 3 o'clock in the morning and we would find the Corps in the middle of that flood fight.

I just want to say at the start that I have enormous respect for what the Corps does. But it makes it even more important that we make the right investments and that we allow you to make the right investments.

DEVILS LAKE, ND

Mr. Chairman, I am concerned about a wide range of issues and support the general tone of your comments. We have an enormous problem with Devils Lake, which all of you know. I have some charts which I will not go through at the moment.

Devils Lake has risen again. We are in the middle of a huge flood problem. I have a picture of a man's house burning down, a quadriplegic. Just like all the rest of the houses engulfed by this lake, in a basin that has no inlet and no outlet, you could not do anything but burn the house and leave.

Here is a picture of the house that was burned. That is a fire that is set on purpose because the lake envelops not just that house but hundreds of others. And the lake continues to rise.

We must make the investment to try to do something about it. That investment is a relatively small outlet to try to reduce the pressure on that lake.

So that is one of the issues. There are some funds requested in this budget. Members of this subcommittee have been very helpful in this area.

The second area is the Garrison Diversion Project. This has been ongoing for a third of a century. We did not come asking for anything. The Federal Government came to us and said if you'll take a flood that comes and stays the size of the State of Rhode Island in your State, if you accept a permanent flood the size of Rhode Island, if you do that, North Dakotans, we will give you the benefit of moving the water around the State.

That was a third of a century ago. We got the flood, so we got all of the costs. We have yet to collect on all of the benefits.

The members of this subcommittee have been very helpful in trying to move us down the road to finish that project.

PREPARED STATEMENT

So, Mr. Chairman, those are a couple of the specific items that I will be asking questions about. Thank you for your patience and I thank the subcommittee for its help.

Senator DOMENICI. Thank you.

[The statement follows:]

PREPARED STATEMENT OF SENATOR BYRON DORGAN

DEVIL'S LAKE FLOODING

Much of the work of the U.S. Army Corps of Engineers deals with flood protection and prevention. I want to focus today on one crucial aspect of this work. What I want to talk about is an emergency. It is not the kind of emergency that strikes without warning. It is not the kind of emergency that can be swiftly dealt with by mobilizing disaster forces. It is an emergency that a large group of North Dakota's citizens have lived with for the past 5 years and will continue to live with for the foreseeable future. The emergency is chronic flooding in the Devil's Lake Basin in my state.

Since 1993, Devils Lake has risen over 20 feet, doubling its size and tripling its volume. The lake's incredible growth is a direct result of its unique geological status as a closed basin, with no natural outlet under normal conditions, and a continuing trend towards wet weather in the Upper Midwest. The expanding lake has inexorably consumed homes and businesses, submerged roads, and inundated farm and pasture land. During the last five years, this flood has caused hundreds of millions of dollars in economic damages and triggered over $200 million in federal disaster assistance. None of this has happened overnight. This is not an acute emergency, it is a chronic one.

In response to this emergency, an Interagency Task Force recommended a comprehensive flood-fighting strategy which includes relocation of structures, upper basin water storage, raising the levee protecting the City of Devil's Lake, raising essential roads, and constructing an emergency outlet from the lake. No single one of these approaches will be sufficient to address the problem.

Although federal, state, and local governments are aggressively implementing this strategy, a critical part of the plan, construction of an emergency outlet, remains undone. The U.S. Army Corps of Engineers has designed a 13-mile emergency outlet from Devils Lake to the Sheyenne River. This outlet has the potential to reduce the lake level by one foot a year, preventing millions of dollars in damages to the City of Devils Lake, the Spirit Lake Nation reservation, farms, and pasture lands.

Congress provided $5 million in the fiscal year 97 Disaster Supplemental Appropriation Bill for project planning and design, and another $5 million in fiscal year 1998 for additional design and initial construction. For fiscal year 1999, the Administration has requested $16 million for construction.

That's the technical side of this emergency, now let me share some of its human face. Like a chronic disease, Devils Lake has slowly but inexorably taken its toll on those who live around it.

Dwayne Howard is typical of hundreds of farmers and ranchers who live near Devils Lake. Dwayne, a proud former rodeo champion, has watched helplessly as the lake swallows his farm. The flood waters are now just feet from his home. Like so many others, he has been forced to abandon his farm, with no hope of compensation from any government authority. Mark Kreklau, an agricultural financial consultant predicts that "Between now and May 1 we will lose more farmers in the area than in recent memory. It's the worst I've ever seen." Kreklau expects to see a 60 percent increase in farm bankruptcy rates this year.

On the Spirit Lake Nation Reservation many of the reservation's 4,000 enrolled members are affected. Tribal Elder Pauline Graywater recently told of her plight at a public meeting. Her home is threatened by the rising waters and she fears she may have to move as early as this summer. The Spirit Lake Nation casino, a major tribal business, now stands isolated on an island. With revenues slashed by 60 percent, more than half of the casino's 325 employees have been laid-off.

Joe Belford, County Commissioner, described it best when he said that, at Devils Lake "Our house is burning." I'll leave you with the image of the burning house of quadriplegic Lakewood resident Randy Myers. Unable to have his house moved as floodwaters advanced, Joe was forced to have his house burned.

In the absence of an emergency outlet to Devils Lake, the chronic emergency takes its relentless toll. To confront the advance of this vast body of water, we must implement all aspects of the total flood-fighting strategy. With the water rising right now, it is time to proceed with an emergency outlet.

GARRISON DIVERSION PROJECT

My principal concern in the Bureau of Reclamation budget is funding for the Garrison Diversion Project. This is the key to water development in North Dakota, just as water development in general is the key to economic development in our state.

I am requesting $31 million for the Garrison Diversion Project pursuant to the currently authorized project. This amount is $7 million over the President's request.

Two million dollars of that amount would be made available for the needs of North Dakota's Indian tribes which have already reached their funding ceilings under existing authority. This amount is just a small fraction of the over $200 million in critical unmet Indian needs identified by the Bureau of Reclamation.

The remaining $5 million would fund water systems in the southeast, northwest, and west central regions of the state as well as the continued operation of the Oakes Test Area. Funding will allow the continuation of numerous projects under way in these regions. Providing adequate funding for these projects is a federal responsibility under the Garrison Reformulation Act. That Act promises North Dakota compensation in the form of water development for the inundation of 500,000 acres of prime farm land and two Indian reservations in North Dakota.

However, the project is being recast to emphasize the most pressing water needs in North Dakota—safe, abundant water for municipal, rural and industrial use. As a result, on November 10, 1997, the North Dakota delegation introduced S. 1515, the Dakota Water Resources Act, a major reformulation of the project. I expect this bill, which is critical to the development of North Dakota, to be the subject of hearings soon before the Senate Committee on Energy and Natural Resources.

Meanwhile, semi-arid North Dakota has several unmet water development needs. We get just 15 to 17 inches of water in a typical year. Lack of clean and abundant water for drinking, industry and agriculture limits our economic development and imposes undue hardship on our citizens. Clean, abundant water is also required for agriculture, recreation and environmental quality.

Not only is water scarce in North Dakota, but it is also often of poor quality. I'm sure not many of my colleagues would want their constituents to drink the dark brown water that is often all that is available in northwestern North Dakota.

While lack of good quality water harms our economy, clean water can make all the difference. For example, the Antelope Creek Bison Ranch connected up to the Garrison project's Southwest Pipeline in the fall of 1995. This small business now receives clean, dependable supplies of water for its bison herd. Clean water enables the ranch to remain in business. In fact, the business is so successful that it was named 1997 Producer of the Year by the Dakota Territory Buffalo Association.

The Taylor Nursery is another Southwest Pipeline success story. Once the company connected to the pipeline, its owners estimated that their business increased by 15–20 percent.

Other Garrison benefits have enabled North Dakota companies to cut down on maintenance costs and improve quality control in a variety of industrial processes and to stretch out our limited aquifer supplies.

Mr. Chairman, the people of North Dakota are patient. They have to be since they have been waiting for over 40 years to receive the full benefits of the promised Garrison project. These are benefits that they were promised when they sacrificed half a million acres of farmland to benefit down stream states. We were told that if we accepted a permanent flood on these lands, in return we would receive water for irrigation, drinking and industrial uses. North Dakotans thought this was a good deal. But we are still waiting for the federal government to fulfill its side of the bargain.

While the pipeline projects I have mentioned are real rays of hope for North Dakota, they are not enough. We need to finish the job, repay the debt to my state and complete a reformulated Garrison project with adequate annual appropriations.

STATEMENT OF SENATOR BENNETT

Senator Bennett.

Senator BENNETT. Thank you, Mr. Chairman. There seems to be a discernible pattern about the opening statements here. I will continue the pattern.

BUREAU OF RECLAMATION PROGRAMS

But I will break the pattern a little bit in that I am not talking about the Army Corps of Engineers. I am talking about the Bureau of Reclamation.

I want to commend Assistant Secretary Patty Beneke who is here and from whom you will hear on the second panel for the work she is doing to help us with the Central Utah Project.

My concerns are about the unfair treatment and micromanagement of these projects by OMB. I think OMB should let the Department of Interior do its job.

I have contacted Erskine Bowles about this. I have sent a letter to the White House. I want Secretary Beneke to know that I will do everything I can to assist her, and trust that she will help assist me in getting a response from the White House about our concerns.

CENTRAL UTAH PROJECT

It is very similar to what we have heard here already. There is an historic compromise agreement passed by the Congress in 1992 called the Central Utah Project Completion Act. It created a very delicate balance between the people who wanted to build the dams and preserve the water and the environmental concerns about mitigation of the environmental impact of these dams. It was put together carefully by Congress after literally decades of negotiation.

The fiscal year 1999 budget request does not keep the agreement. It acts as if there were no commitment made in the previous agreement and moves to cut both the requests from the district relating to the Central Utah Project and, interestingly enough, the administration has cut the Environmental Mitigation Commission as well.

It troubles me that OMB has cut the district moneys by a significantly greater percentage than that of the commission. This is a fundamental break with the spirit of the 1992 Competition Act Agreement.

I sincerely hope the actions of OMB do not signal a change in the policy of this administration to follow the intent of that act. It is important that the funding proceed on schedule and not suffer delays while adequately funding the fish and wildlife activities of the commission.

This committee has been very supportive in the past for the Central Utah Project. I am grateful to the chairman for his personal attention. I hope we can quickly get to the bottom of this.

Now, Mr. Chairman, I will submit some written questions for the record, addressing such Utah issues as the Tooele Wastewater Project.

I also have some questions for the Army Corps regarding some other projects. But let me join in thanking the Corps for their tremendous assistance in the past on a number of Utah projects and warning them that I will be coming back to them often for activities relating to the 2002 Winter Olympics.

Salt Lake City technically won the bid for the Olympics, but we are fast recognizing that the Olympics cannot be held and sponsored by a single city or a single State. These are America's games every bit as much as they are Utah's games or Salt Lake City's games. A good portion of them will take place on public lands.

PREPARED STATEMENT

I am grateful for the preliminary cooperation we have had from the Corps as we have had discussions about this issue. I want to join with Senator Dorgan—we have not had a disaster in Utah, but we will have a different kind of disaster if we don't have the cooperation. We have every reason to expect that based on your past

performance and I want the record to show that we recognize that and are grateful for it.

Thank you, Mr. Chairman.

Senator DOMENICI. Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF SENATOR ROBERT F. BENNETT

Mr. Chairman, I want to take this opportunity to thank and commend Assistant Secretary Patty Beneke for the work she is doing on the Central Utah Project. We have met privately to discuss my concerns about some unfair treatment and micro management of this project by OMB. They should let the Department of the Interior do their job. I have sent a letter to the White House about these concerns several weeks ago and have received no response. I want to ask Secretary Beneke if she will assist me in getting a response from the White House about my concerns.

The historic compromise agreement known as the Central Utah Project Completion Act Congress enacted in 1992 provides a delicate balance between the activities of the Central Utah Water Conservancy District in constructing the project and the implementing environmental programs of the Utah Reclamation Mitigation and Conservation Commission. I want to express concern that the fiscal year 1999 Budget Request has not dealt fairly with the Central Utah Project. In assembling the budget, OMB cut the original requests from the District and the Commission.

Mr. Chairman, while I would prefer that the funding was a little higher for CUP, what really troubles me is that OMB cut the District's money by a significantly greater percentage than that of the Commission. This is a fundamental break in the spirit of the 1992 agreement.

I sincerely hope the actions of OMB do not signal a change in the policy of this Administration to follow the intent of the delegation from Utah when it passed the CUP Completion Act. It is important for the funding of the project to proceed on schedule and not suffer from delays while adequately funding the fish and wildlife activities of the Commission.

I appreciate the Committee's past support for the Central Utah Project as well as the Chairman's personal attention that he has given this project. I hope that we can quickly get to the bottom of this issue.

Mr. Chairman, I will submit a few questions for the Record that I would like the Bureau to address regarding a few Utah issues such as the Tooele Wastewater Project, the Privatization of Dutch John and, of course, the proposal to drain Lake Powell. I also have some questions for the Army Corps regarding some other projects. Let me briefly thank the Corp for their tremendous assistance in the past on a number of Utah projects and I look forward to working closely with them in the coming months as we prepare for the 2002 Winter Olympics.

STATEMENT OF SENATOR BURNS

Senator Burns.

Senator BURNS. Thank you, Mr. Chairman. I have a statement that I will put into the record. I know that you want to get to the witnesses. So, I will put my statement in the record.

Senator DOMENICI. It will be incorporated for the record.

Senator BURNS. I just want to say one little thing. I have been looking at the map here. We are at the headwaters of the greatest river system is in this country. The area that we cover—I don't know if you thought you were collecting combat pay here this morning, didn't you?

Dr. ZIRSCHKY. Yes, sir.

Senator BURNS. Well, you can forget about that.

The area that in our district it covers is an area that lengthwise runs from the Utah-Colorado border to Norfolk, VA, and even the North-South runs from Chicago to Washington, DC. That is how big an area it is that you have out there.

We only get 4 percent of the funds. Maybe we are lucky. I don't know. But we have some problems out there and we will submit those questions to you.

PREPARED STATEMENT

I want to direct them mostly to the Bureau of Reclamation.

I thank the chairman for this opportunity.

Senator DOMENICI. You are welcome.

[The statement follows:]

PREPARED STATEMENT OF SENATOR CONRAD BURNS

Thank you, Mr. Chairman. I appreciate you calling this hearing this morning. As I have looked over the budget justifications for the agencies funded by this committee one glaring point has been clear. There is not enough money available in the Administration's budget for the projects overseen by the people we have here today. A point which has been made clear to me in the past couple of days, by people in my state of Montana.

I appreciate the work that the agencies, appearing before the committee are tasked to do for the good of the nation. But I am also concerned by the course that they appear to be taking when addressing the issues on the ground in the states. They appear to be headed down the same road that many agencies have, into the regulatory role. Instead they should be continuing in the area of providing assistance to the many people out there that really need and desire their technical expertise.

In recent days it has come to my attention that the Bureau of Reclamation has some very real problems developing in the area of public confidence. This it appears has also affected the manner in which they deal with the public and the numerous irrigation districts and their governing bodies across this nation. The people in these irrigation districts pay their income taxes, and in addition pay fees to be provided water for their crops. However, the Bureau of Reclamation finds them either unworthy or unable to work within order to develop budgets and management plans for the same districts.

I find this all very troublesome, for it leads to the premise that this government does not care to listen or work with the people. In this year alone we have seen more of this than we need to, and in the past six years more than many people can tolerate. Gentlemen, there's problems arising out there on the ground, and if you looked closely you would find that you are a major portion of the problem itself. Instead, you and the Bureau should be the solution.

In these times, when the Administration is seeking to develop a clean water initiative and strategy, spending millions of dollars to provide clean water to the nation to the country. They are spending less and less on the construction of clean drinking water systems in many of our states. As the Chairman mentioned last year there are just more projects than there is money to go around. This creates a dilemma of its own making, but piled on top of this is the money that the President and Vice President are seeking for their clean water initiative.

I am sorry to inform the administration that the people in rural America do not drink water from the streams and rivers in the country, they get their water supply the same way you and I do, Mr. Chairman, out of a local water supply system. Unfortunately the Administration is more concerned about making the water clean in streams than it does about the water that this minority group of American rural residents use for drinking, cooking and cleaning.

A couple of weeks ago in an Agriculture Appropriations hearing the Department of Agriculture provided the committee with numerous projects they would like to undertake to clean up watersheds and streams. A few of the plans had no real parameters for implementation or development.

This is a problem that scares me, when I have to fight tooth and nail to get funding to provide a safe and secure water system both for Indian tribes and rural Montana's. Due to the numbers presented I will once again have to fight to get the funding necessary to get the construction started on projects that will provide safe and clean drinking water for an area of high growth potential. This project, that will provide a safe and reliable water supply, is adjacent to one of the largest man made reservoirs in the world. Yet these people have to truck in clean and safe drinking water.

I will also have to fight the Administration to get funding for a regional water supply system for a group of communities in north central Montana. Even though they have been working with a local tribe who is in the process of finishing a water compact with the state of Montana and the Department of the Interior. To complicate matters even further in this case the Environmental Protection Agency is threatening these communities with noncompliance of safe drinking water requirements. All the while the Vice President is running around the country promoting an initiative he has developed to make sure we have clean water in our rivers and streams across the nation.

This just puzzles me to no end, as does the lack of concern for Joe citizen in relation to his drinking water this Administration has displayed. We need funding and we need some solid leadership for guidance for the local water district communities. The people will develop the plans and work to build a coalition to address all the concerns. But you need to work with them and not against them as this group in power seems to want to provide.

Another issue of great concern I have recently learned about is the plans and contracts that the Department of the Interior and the Bureau of Reclamation are preparing which have water districts in Texas and your state of New Mexico, Mr. Chairman, signing agreements that will allow them to supply water to smaller communities. The concern here is that they want these districts and the states to sign away and acknowledge the federal government as owners of the water rights. From the beginnings of this country the federal government has stated that the states have primacy in the area of water rights ownership and adjudication. But our friends in the Department of the Interior are seeking any way they can to gain control over the states, especially in the west. Where as I have stated "Whiskey is for drinkin', water is for fightin'".

I am aware that the Governor of Texas, and the Governor of Montana will not agree with you and will fight to continue to preserve their primacy in water rights ownership. This is not going to play out well at all in states like Montana, New Mexico, Texas, Idaho and Washington, as well as Nevada.

Now as for the Army Corps of Engineers, I wonder where exactly you are today. In the past several months I have heard numerous complaints about the Corps and the work, or maybe a better term would be lack of work, they are suppose to be providing. In Montana, Mr. Chairman, I can tell you that the reputation of the Corps is gaining on that of three highly ridiculed land management agencies are in the west. The Bureau of Land Management, the National Park Service and the U.S. Fish and Wildlife Service. The three agencies I have just mentioned have probably the lowest combined trust factor in the United States, and especially in my state of Montana.

In recent years we have seen the Corps change from a practice and a mission which is to provide for navigation on our nations waterways and for the construction of water storage on our rivers. Recent direction from up above appears to be moving the Corps away from their mission and instead we are finding a group which seeks to regulate people on the ground.

Earlier this year on the Yellowstone River in Montana we had a situation develop where people, who had for years done all the work required to provide for stream bank wash outs and flood prevention were caught in a position of being unable to do any work at all. Fortunately in recent days the Corps has made moves to correct this problem, but a few days on this side of the decision time would have been too short and would have created a real problem. Spring runoffs would have made it next to impossible to make any repairs or provided any maintenance to provide for safety and soil erosion on the river banks.

We see this continue to happen and develop up and down the entire length of the Yellowstone River. Crisis like this are avoidable if the federal government works with the general public, and more importantly places themselves in the position of being able to work with other federal agencies on the ground.

When it comes to wetlands the Corps now has a position of being a regulatory authority instead of working with and providing technical assistance for the public. The 404 permits and the process involved has become a nightmare for the public and they are sick of this growth of work. If I remember right, was it not this President and Vice President who told us they were seeking to streamline government making it more responsive to the needs of the public. Smoke N mirrors is all I am seeing.

Mr. Chairman, you'll notice I have yet to even mention the funding that the Administration the Office of Management of Budget have provided for the Corps in the fiscal year 1999 budget. I wonder what and how the Administration arrived at the number they did, but it is clearly unacceptable to this Senator. Again in this case

it makes me wonder what the real role and mission of the Army Corps of Engineers really is in this world.

I just can't imagine there is a way that this Administration thinks they can have an agency with the requirements that the Army Corps has, perform a meaningful and realistic job. I am very interested in hearing exactly what it will be and what the function and future of the Army Corps will be.

I could continue on here, and we would accomplish nothing and I am very interested in what the panel has to present us to accept their numbers. I offer my commitment to the Chairman and the Ranking member to work to find a way to provide for the public. I will therefore close and wait to hear the testimony of the panel. I will have several questions later in the hearing.

Thank you Mr. Chairman.

Senator DOMENICI. We are going to proceed quickly to our witnesses. I will ask them to be as brief as they can so that we can ask questions.

NATIONAL WATER RESOURCE DEVELOPMENT EFFORT

But I wanted to make one further observation. You know, about 15 years ago I was vilified as the opponent of the inland waterways of this country because I proposed, and won, my first legislative victory in making the commercial barges pay a user fee on their diesel fuel for system improvements.

I can remember what prompted me to take on this issue. It was a hearing like this when a group of inland waterway interests contested whether a Senator from New Mexico ought to have any interest in the inland waterways of the United States. I succeeded in assuring them that I indeed had an interest. But I think some who heard me then might not have believed my statements here today.

Essentially, I have come to the realization that in budgeting in the United States, there is one giant thing wrong and I don't know how to fix it. My staff is not big enough.

Senator Byrd and fellow Senators, we are so busy creating new programs that we think our Government ought to be in and pay for, partially or otherwise, that we do not know the extent of our responsibility to do things that only the Federal Government's can manage that we have already committed to. Highways is one example.

This massive infrastructure investment is not going to get done without Federal support. State and local governments alone are not able to do it.

I would like to find out just how many billions of dollars of infrastructure investment we are responsible for in those items which are clearly a Federal responsibility. Then there is this whole discussion about whether you should cut the investment in water resources development, our port and harbors, to find room for $100 billion in new programs and initiatives that are being requested in the President's fiscal year 1999 budget. I think this brings into focus just what I am talking about.

I know it is not your fault that these new programs and initiatives have been chosen over these needed water resource investments. But I'll tell you that we are confronted with that every year in the budget of the United States and it is a very, very serious problem.

Having said that, how do you wish to proceed? Mr. Secretary, do you want to proceed first?

STATEMENT OF JOHN ZIRSCHKY

Dr. ZIRSCHKY. Yes, sir, and I will be very brief.

First, I would like to thank the committee for their kind remarks and their understanding of the predicament that the four of us face.

It was not too many years ago that we would not have had so many Senators show up and say such kind things about us. After the Midwest floods of 1993, we were blamed for all kinds of things we had absolutely nothing to do with. I am very pleased with the support of the members here for our program.

I am going to submit my statement for the record so that we have plenty of time for questions. I believe that our budget request is adequate in every program but Construction General. Not all of the programs are great. We don't have all the money we need, but we can work within those amounts.

The primary problem that we face is in the Construction General Program. The uncertainty associated with where we lie in the future is causing a great deal of difficulty for our commanders to address. It is tough to plan for next year's program with such a wide difference between views. It has put a great deal of pressure on General Ballard and his staff and all of us to try to keep working together to get through this problem.

There are some who do not seem to want us to work through this problem. But I am very proud of the support that I have gotten from the Chief of Engineers and his staff in this process.

With that said, I would like to make one last comment. If you would, please pass this on to Senator Cochran.

PREPARED STATEMENT

I am responsible for that memo to which he referred. Two weeks ago, I met with General Fuhrman and his staff, and we are reconsidering and trying to come up with a new means of addressing the situation in Mississippi. So we are addressing that problem.

Thank you, sir.

[The statement follows:]

PREPARED STATEMENT OF JOHN H. ZIRSCHKY

Mr. Chairman and Members of the Subcommittee: Thank you for the opportunity to testify today on the President's fiscal year 1999 budget for the Civil Works program of the Army Corps of Engineers. Accompanying me are Lieutenant General Joe N. Ballard, the Chief of Engineers; Major General Russell L. Fuhrman, the Director of Civil Works; and Mr. Thomas F. (Fred) Caver, the Chief of the Civil Works Programs Management Division.

On February 2nd, the President transmitted to Congress his budget for fiscal year 1999, along with planning targets for the out-years. This budget is part of the President's plan to balance the budget as early as possible.

My statement will cover the following subjects:

—The Civil Works strategic plan and annual performance plan under the Government Performance and Results Act (GPRA), along with a summary of the Corps' recent performance,

—The President's recent Emergency Supplemental Appropriations request for Civil Works,

—An overview of the fiscal year 1999 Army Civil Works budget, and

—The fiscal year 1999 Civil Works program highlights by business program.

GOVERNMENT PERFORMANCE AND RESULTS ACT

The Civil Works Strategic Plan, being prepared in response to the Government Performance and Results Act, is currently under discussion within the Administration. Our plan will describe how the Corps of Engineers will continue to fulfill its Civil Works missions within available resources.

The Corps is preparing program performance goals and performance measures for each of its eight business programs: flood and coastal storm damage reduction, navigation, environment, hydropower generation, recreation activities, regulatory, emergency preparedness and disaster response, and support for others. We will consult with this Subcommittee and others on the Strategic Plan and the fiscal year 1999 performance plan as soon as we have completed our consultations within the Administration.

I would like to discuss briefly our ongoing efforts to improve the performance of the Civil Works program. It is important that we effectively execute the programs and projects for which you provide the funds. Let me also stress that we are committed to working with this Subcommittee in improving our performance.

Improving Performance in the Civil Works Program

At the end of fiscal year 1994, the Corps had an unexpended funding balance of $1.4 billion, more than 25 percent of the funding available for that year. Partly because of that performance, the Army has been pursuing reforms in the Civil Works program which would allow the Corps to reduce the cost and time required to implement projects and to meet agreed upon implementation schedules. By the end of fiscal year 1996, the Corps had reduced its unexpended balance to $0.5 billion, 12 percent of its available funding, and expended 98 percent of the scheduled program. In fiscal year 1997, the Corps expended 99 percent of the funds it scheduled; however, the unexpended balance grew to $0.8 billion, about 17 percent of its available funding. This increase was due in part to the Emergency Supplemental Appropriations Act, which provided an additional $585 million late in the year.

Figure 1 shows the performance of the program across its entire spectrum. The left side of the figure represents outputs of the program and the right side shows appropriation accounts.

Reconnaissance Studies.—In fiscal year 1997, we initiated the Expedited Reconnaissance Study process. In that year, we completed 36 expedited reports with a median completion time of 6 months. During the same year, we also completed 45 regular reconnaissance reports started the prior year, with a median completion time of 12 months. As you can see our performance in this area has been improving.

Feasibility Studies.—In fiscal year 1997, we completed 16 of 18 studies scheduled to be completed. In addition, since fiscal year 1993 we have reduced completion times from a median of 5.6 years to 3.5 years.

Design Completions for Construction Contracts.—Completion of designs is a major element in maintaining Construction schedules. In fiscal year 1997, we completed only 126 of 154 designs, 81 percent of the scheduled number.

Award of Construction Contracts.—This is another measure important to maintaining project schedules. In fiscal year 1997, we completed only 101 of 144 scheduled awards, 70 percent of the scheduled number.

Continuing Authority Construction Contracts.—This measures the number of construction contracts awarded on projects not specifically authorized by Congress (Section 14, 103, 107, 111, 205, and 208). In fiscal year 1997, we completed only 75 percent of the number scheduled, 35 out of 47.

General Investigations.—In this account we expended only 80 percent of the available funds. We were scheduled to expend 94 percent.

Construction General.—In fiscal year 1997, we expended 95 percent of the scheduled funds; however, that was only 77 percent of the available funding.

Flood Control, MR&T.—In fiscal year 1997, we expended 98 percent of the scheduled and available funds.

Operation and Maintenance, General.—In fiscal year 1997, we expended 92 percent of the available funding.

In summary, we accomplished 99 percent of the scheduled expenditures for the year; but, as the Total Program bar shows, we expended only 83 percent of the funds available in fiscal year 1997. The significant difference is largely the result of the Emergency Supplemental Appropriations Act which was passed late in the year and provided little time for us to expend the funds.

Performance Goals for Fiscal Year 1998

Although the current schedules for fiscal year 1998 would provide for the Corps to increase expenditures to almost $4 billion, a ten percent increase over previous years, the Corps is still expected to carry over about 16 percent of its available

funds. Through the first quarter, expenditures are slightly ahead of schedule. However, because of the significant increases in expenditures which will be required in the remainder of the fiscal year, significant management effort will be required to meet the current schedules.

EMERGENCY SUPPLEMENTAL APPROPRIATIONS REQUEST

The President's Request for Civil Works

The President has proposed a fiscal year 1998 contingent emergency supplemental appropriation of $30 million for the Operation and Maintenance, General, appropriation account. This funding is contingent upon a more detailed assessment of requirements, which we are currently developing. These emergency supplemental funds are needed to address recent and continuing damage to Civil Works projects from ongoing severe and unusual weather patterns. These significant damages to Federal navigation channels and harbors, reservoir facilities and flood control channels are caused by the continuous El Niño related flooding and wave action in California, the Pacific Northwest and Florida. These funds would allow for the additional work necessary to restore project services, including dredging, snagging, drift and debris removal, scour protection, and access road repairs. As discussed above, a large emergency supplemental appropriation for the Flood Control and Coastal Emergencies account was received late in fiscal year 1997, much of which remains uncommitted for past emergencies. The Administration's proposal is to transfer a small portion of this uncommitted balance to the Operation and Maintenance, General, appropriation account, where it would fund the repairs to projects other than commercial navigation channels and harbors. Funding to address damages to commercial navigation channels and harbors would be derived from the Harbor Maintenance Trust Fund.

Annual Flood Damage Report to Congress

A few days ago I transmitted to this Subcommittee a copy of the Annual Flood Damage Report for Fiscal Year 1997. In the past year, the Corps' estimate of the value of the flood damages prevented within the United States by water projects controlled by the Corps and emergency activities totaled $45.5 billion. This set a new annual record and is well above the ten-year average. These record damages prevented resulted from major storms hitting eight major river basins that together cover more than half of the Nation. Flood damages actually suffered amounted to approximately $8.9 billion in value, also well above the ten-year average.

THE ARMY CIVIL WORKS BUDGET

Multi-year Funding Levels for Civil Works

In November 1997, the President exercised his line-item veto authority by removing funding for several projects in the Energy and Water Development Appropriations Act for fiscal year 1998. At the time, the White House press release announced that the Administration wished to work with Congress to agree on an appropriate, predictable level of annual funding for the Civil Works program. Such an agreement would enable the Corps to more efficiently manage its program and maintain commitments to project sponsors. Attached to this statement is a copy of the chart used at the White House press conference to demonstrate the disparity between the budgeted and appropriated funding levels (Figure 2). This continuing disparity prevents the Corps from establishing and maintaining project schedules, contributes to inefficiency, defers realization of project benefits and, ultimately, increases project costs to both the sponsor and the Government. The attached graph displaying the level of Civil Works appropriations, in constant dollars, over time puts this discussion in an historical funding context (Figure 3).

Fiscal Year 1999 Civil Works Budget

The President's fiscal year 1999 budget includes $3.215 billion in new discretionary Energy and Water Development appropriations for the Army Civil Works program. This is about 95 percent of the funding level budgeted by the President for the Civil Works program for fiscal year 1998 and is about 80 percent of the fiscal year 1998 level of appropriations for Civil Works, including funding for the Formerly Utilized Sites Remedial Action Program (FUSRAP) transferred from the Department of Energy to the Army. This level of funding is the maximum that could be accommodated by the Administration within the overall outlay target for domestic discretionary programs. Because of the importance of staying within the outlay target and the large amount of carryover from fiscal year 1998 that will be spent during fiscal year 1999, the budgeted level of new funding for fiscal year 1999 was reduced accordingly.

In addition to the discretionary appropriations, the fiscal year 1999 program reflects $14.7 million in mandatory permanent appropriations; $144 million in non-Federal cash contributions from project cost sharing sponsors, through the Rivers and Harbors Contributed Funds account; and the transfer of $48.3 million from the Coastal Wetlands Restoration Trust Fund. Moreover, for the first time, the costs of operating and maintaining Pacific Northwest hydropower facilities will be financed directly by Bonneville Power Administration, whose fiscal year 1999 program includes approximately $98 million for this purpose. Over 24 percent of the overall fiscal year 1999 Civil Works program would be derived from user fees or non-Federal contributions.

The new appropriations request is distributed among accounts as follows: $150 million for General Investigations; $784 million for Construction, General; $1.603 billion for Operation and Maintenance, General; $110 million for the Regulatory Program; $280 million for Flood Control, Mississippi River and Tributaries; and $288 million for other accounts. Figure 4 presents a geographical distribution of the budget by region.

Advance Appropriations for New Investments and Near-term Completions

Like the President's amended budget for fiscal year 1998, this budget proposes appropriation during fiscal year 1999 of amounts required in each year from fiscal year 2000 through fiscal year 2003 to advance fund the Federal share of completing 60 continuing projects scheduled for completion during that time frame. These advance appropriations would become available for obligation in the year specified, which would provide the Corps and sponsors of these projects greater predictability in managing the schedules and costs to complete them and bring their benefits online.

Continuing projects with completion dates of 2004 or beyond, including 95 projects in the Construction, General, account and all projects in the Flood Control, Mississippi River and Tributaries (MR&T), account continue to be budgeted incrementally, based on estimated annual requirements to complete the projects. For these projects in the Construction, General, account, the remaining Federal cost of construction after fiscal year 1999 is $14 billion. For similarly funded projects in the MR&T account, the remaining Federal cost of construction after fiscal year 1999 is $4.155 billion.

Environmental Resources Fund for America

As part of the President's overall plan to support increases for many of the Nation's key environmental programs, the Administration has proposed the Environmental Resources Fund for America. The Fund, which includes two components under the purview of the Army, is a deficit neutral plan for financing and carrying out environmental initiatives.

Challenge 21—Riverine Ecosystem Restoration and Flood Hazard Mitigation.—The fiscal year 1999 request includes funds in the amount of $25 million for the Challenge 21 initiative, the Corps' Flood Hazard Mitigation and Riverine Ecosystem Restoration Program. As proposed for inclusion in this year's Water Resources Development Act, this initiative expands the use of non-structural flood hazard mitigation options to achieve the dual purposes of flood damage reduction and restoration of the functions and values of riverine ecosystems. Projects might include the relocations of threatened homes or businesses, conservation or restoration of wetlands and natural floodwater storage areas and planning for responses and solutions to potential future floods. Although focused on non-structural alternatives to flood protection, a Challenge 21 project could, where appropriate, include structural pieces. Challenge 21 builds on existing programs and initiatives, uses a watershed approach and initiates and expands partnerships with other Federal agencies (particularly FEMA, NRCS and USFWS) and non-Federal public entities. Candidate projects might be areas where frequent or severe flooding has occurred, emergency assistance has been necessary, flood hazards have increased due to changes in hydrologic and hydraulic regimes, development is encroaching on and altering flood plains and important floodplain functions and values need maintenance or restoration. Cost sharing will be 50 percent Federal and 50 percent non-Federal for studies and 65 percent Federal and 35 percent non-Federal for design and implementation.

Special Area Management Plans.—The Environmental Resources Fund for America also provides $5 million in the Regulatory Program account to enable the Corps to carry out Special Area Management Plans (SAMP's) to address comprehensive watershed development issues in selected sensitive ecosystems. These SAMP's are valuable tools that can be used by state and local agencies to decide development in environmentally sensitive areas, while helping to ensure consistency among

Corps regulatory, planning and operations actions and facilitating coordination with other Federal and State agencies.

Budget Allocations for New Investments

The Administration supports a regular program of new investments in the Civil Works program. This would enable the Corps to maintain and improve its technical capabilities and to continue its historical role as a problem solver for the Nation. This year, the budget includes an affordable program of nine new starts, most of which are oriented toward prudent stewardship of existing Federal resources.

In the fiscal year 1999 budget, the Administration has addressed the need to construct projects on an efficient schedule by providing full funding, through advanced appropriations, under the Administration's Fixed Assets Initiative, and by making reasonable trade-offs, in the near term, among priorities for the ongoing program. We are hopeful that the Administration and Congress will engage in discussions on the future priorities and funding levels that are appropriate for the Civil Works program, in the context of the current budgetary constraints.

The continuing disparity between the level of funding budgeted for the Civil Works program and the level appropriated has real impacts on real people across the country. The Los Angeles County Drainage Area Project (LACDA), which cannot be completed until 2006, is an example of how unpredictable future funding levels and the need to delay completion dates in order to accommodate unprogrammed work in the short run are affecting one of the Nation's major metropolitan areas.

The LACDA project will restore 100-year flood protection for an urbanized area with a population of over 9 million. This area currently is partially protected by an urban flood control system which includes a combination of Federal, state and local structures consisting of 5 major reservoirs, 22 debris basins, and 470 miles of channel improvements. As urbanization of the basin has occurred over the past 40 years, the ability of the existing systems to provide design levels of protection to the Nation's second largest metropolitan area has diminished.

Because of multi-year funding constraints necessary to balance the budget, the funding available for LACDA has necessarily been well below that which could have been used by the Corps in fiscal year 1998 and fiscal year 1999. Meanwhile our sister agency, the Federal Emergency Management Agency, has deferred changes in flood insurance requirements as long as possible and, beginning in July 1998, the low and moderate income residents within the project area will be required to begin paying mandatory flood insurance premiums in the amount of $130 million annually. These out-of-pocket costs associated with delaying the completion of LACDA are in addition to an increased risk of flooding.

Although, every effort will be made to maintain as many of the original project schedules as possible, there are certainly other areas that will suffer similar impacts due to unavoidable project delays. It is imperative that Congress and the Administration reach an accommodation on a justified predictable funding level for the program.

Acceptance of Non-Federal Funds

We recognize there is a growing problem regarding the funding implications associated with several authorities under which non-Federal sponsors can plan and construct water resource projects, or advance funds to the Corps of Engineers for such efforts, with subsequent reimbursement of the Federal share. Our current analysis indicates there is a potential demand for reimbursement agreements that total almost $900 million. Under the current constrained budget ceilings for the Corps of Engineers construction program, implementation of these authorities can create expectations of large future payments that cannot be fulfilled. We also share the Subcommittee's concerns about entering into reimbursement agreements expressed in the conference report that accompanied the fiscal year 1998 appropriation act. Therefore, we plan to enter into future reimbursement agreements only for those projects we believe will be budgeted within available future funds to provide timely reimbursement.

SUMMARY OF THE FISCAL YEAR 1999 CIVIL WORKS PROGRAM

NEW CIVIL WORKS INVESTMENTS

New Starts and Other New Work

The budget provides for initiation of specifically authorized new Civil Works investments with a total cost of $531.4 and a Federal construction cost of $410 million. Of this amount, $21 million will be repaid by power users and $121 million will be paid by non-Federal sponsors. The fiscal year 1999 budget includes $28.5 million to initiate nine new surveys; three regular construction new starts; four

major rehabilitation new starts; one deficiency correction; and one dam safety assurance new start. In addition, the budget includes $47 million for ongoing and new activities under the Continuing Authorities Program. Attached to this statement is a table listing the new construction work funded in the fiscal year 1999 budget (see Table A).

Seamless Funding for Preconstruction Engineering and Design Activities

Under the "seamless funding" practice followed in recent years, the budget also includes funding to proceed into the PED phase on 18 projects for which cost-shared feasibility studies currently are underway. To reduce the budgetary impact of PED efforts and to better assure sponsor commitments, the Administration proposed to jointly finance new PED's in fiscal year 1997. For equity reasons, the fiscal year 1998 budget proposed to extend this joint-financing policy to include all new PED-like activities which might be added by Congress in other accounts, such as Construction, General or Operation and Maintenance, as well. We have now developed draft model Design Agreements to cover such situations and will continue to apply this policy to all applicable projects in fiscal year 1999 and beyond.

O&M Cost Reduction Initiative

Prudent management of the Nation's investment in water resources projects is an important part of our program. Half of the Army's $3.22 billion Civil Works budget—$1.6 billion in the Operation and Maintenance, General, appropriation account—finances the stewardship of the existing infrastructure. This budget request will help ensure that the Army Corps of Engineers can continue to deliver justified levels of service at the least cost to the taxpayer.

We are exploring various cost saving measures in the O&M program. Aligning operation and maintenance levels at projects with the demand for services is one avenue. For example, where utilization of locks is relatively low, perhaps the same service could be provided for our customers at something less than 24 hours a day. Another example would be to align the length of the recreation season with visitation rates at Corps lakes. Support activities, such as condition and operation studies, master planning, water control management and real estate management are potential cost saving areas. Prudent stewardship requires that we will need to examine all our facilities critically to ensure that available resources are devoted to the highest priority maintenance requirements.

The above examples are conceptual and will be analyzed further, coordinated with our customers and refined as necessary in an informed and open forum to achieve the cost savings. Also, the individual project amounts included in the fiscal year 1999 budget represent our best estimates of what will be required next year. Undoubtedly, intervening events will change these requirements. The Corps will closely monitor project conditions and will apply the flexibility the Subcommittee has afforded the Civil Works program to make adjustments among projects to ensure that the most urgent O&M requirements are met.

CIVIL WORKS BUSINESS PROGRAMS

In keeping with the government-wide focus on managing to achieve program results and improve the efficiency and effectiveness of service delivery to customers, the balance of my statement will discuss the fiscal year 1999 Civil Works program by business program, since it is through these results oriented business programs that the Army serves its Civil Works customers. Discussing the President's budget for the Civil Works program in this light also puts into perspective the important economic and environmental benefits derived from investments in this program. Table B, attached to this statement, shows the relationship between Civil Works appropriation accounts and business programs. The funding for General Expenses, which provides executive direction and management for the Civil Works program at the Corps Headquarters and division offices, is distributed proportionately across business purposes in Table B.

Flood and Coastal Storm Damage Reduction.—The total funding in the fiscal year 1999 Civil Works budget to reduce damages caused by floods and coastal storms across the country is $874 million. This includes $583.9 million to invest in new and continuing surveys and investigations, design project solutions, research and development, and construct projects devoted to reducing flood damages. We also are requesting $365 million to operate and maintain completed projects. About $119 million of that budget request is for operating and maintaining completed flood protection features along the Mississippi River and its tributaries. The remaining balance will operate and maintain Federal projects which were authorized and constructed prior to the Water Resources Development Act of 1986. Prior to 1986, flood protec-

tion projects were often retained in Federal ownership for Corps operation and maintenance.

Navigation.—The budget provides $1,255 million for navigation activities. This includes $252 million to plan, design and construct improvements to our Nation's system of coastal harbors and inland waterways. Within this total, $47 million is included to maintain shallow draft harbors, including both inland waterway ports and coastal harbors, where the economies of the communities are dependent on commercial fishing and related purposes. A total of $957 million is requested to operate and maintain our extensive system of coastal ports and inland waterways that provide for safe and efficient movement of waterborne commerce.

Environment.—The environmental activities—including both environment related costs of projects pursued for other purposes as well as projects fully dedicated to the environment—make up $439 million of the Corps fiscal year 1999 Civil Works budget. Within this amount, we are requesting $225 million for new investments in environmental mitigation, restoration, and protection activities. The total also includes $140 million to continue the Formerly Utilized Sites Remedial Action Program (FUSRAP) transferred to the Corps last year by Congress. In addition to the above budgeted amounts, $48 million will be transferred to the Army from receipts to the Department of the Interior for the continuing Coastal Wetlands Restoration Fund.

Within the environmental programs, the fiscal year 1999 budget continues several major investments to which the Army is committed. Principal among these are $98 million in new investments, within the total funding for associated projects, for ongoing South Florida Ecosystem Restoration for the purpose of restoring, preserving, and protecting the Everglades and the surrounding ecosystem. This amount includes $27 million to continue the Kissimmee River Restoration project. The enactment of WRDA 1996 was an important milestone in the restoration of the Everglades and South Florida ecosystem. That legislation specifies responsibilities, time frames and cost sharing for the Corps and for the non-Federal sponsor for the restoration, preservation and protection of the ecosystem in the vicinity of the Central and Southern Florida project. The Act also codifies in Federal law the South Florida Ecosystem Restoration Task Force, which has been so effective in bringing Federal and State agencies and private interests together in the development of a restoration plan.

The fiscal year 1999 budget includes $144 million for the Columbia River Salmon Program. These funds will pay for mitigation, restoration, and protection of salmon species indigenous to the Columbia River Basin, including operation and maintenance of fish passage facilities in place. The amount requested is consistent with the Memorandum of Agreement executed in September 1996 among the Departments of the Army, Commerce, Energy and the Interior, concerning the financial commitment of the Bonneville Power Administration for Columbia River Basin fish and wildlife costs. The largest item in this program is the Columbia River Fish Mitigation project, for which $117 million is budgeted to continue the construction of fish bypass improvements at eight Corps dams on the Columbia and Snake Rivers and to continue the mitigation analysis, which evaluates additional measures to increase fish survival at those dams. This includes more than $41 million for Bonneville Dam surface bypass and outfall monitoring facilities, $15 million for extended length screens at John Day Dam, and more than $5 million for surface bypass facilities at Lower Granite Dam.

The Army recognized that there will be further decisions during 1999 on Lower Granite and other Lower Snake River dams. In the interim, the budget supports making the operation of these projects as compatible as possible with improved fish survival. This project is and has been responsive to the National Marine Fisheries Service's (NMFS) March 1995 Biological Opinion for operation of the Federal Columbia River Power System. An Independent Scientific Review Board is, at the request of the Northwest Power Planning Council, continuing to review the effectiveness and risk associated with alternative management measures, including some of the components of this program. The Army will work closely with NMFS in responding to any changes in that Biological Opinion.

Other investments dedicated solely to the environmental program are $7.5 million for the Section 204, 206, and 1135 environmental restoration continuing authority programs. In addition, the budget provides $67.4 million within the total for operation and maintenance of Civil Works facilities and management of associated lands for continued management in an environmentally responsible manner, fully in compliance with applicable environmental statutes and regulations.

The Army has given priority to ensuring that the transition of program administration and execution responsibilities for the FUSRAP program would not result in slippages at any site. Once a site by site assessment of the program is completed, the Corps will validate schedules and funding requirements in order to maximize

savings and accelerate project completion. The Army's budgeted amount in fiscal year 1999 for FUSRAP continues the cleanup at the same funding level that Congress provided in fiscal year 1998.

Hydropower.—The significant role played by the Corps in meeting the Nation's electric power generation needs is reflected in the budgeted amount of $177 million for this purpose. This includes $47 million for continuing and new investments in major rehabilitation and improvement of existing facilities and $123 million for the operation and maintenance of generating capabilities for the production of reliable and cost effective electricity from a renewable source of power. As discussed above, in addition to these funds, operation and maintenance of hydropower facilities in the Pacific Northwest would be directly financed by a transfer of approximately $98 million from Bonneville Power Administration revenues.

Recreation.—The Corps is one of the Federal government's largest providers of outdoor recreation opportunities. The budget includes $219 million to provide this service at multipurpose reservoirs, of which an estimated $34 million would be derived from recreation user fees collected at Civil Works projects.

Regulatory.—The President's 1999 budget includes $117 million for the Corps Regulatory Program account to maintain fair and effective regulation of the Nation's wetlands and other aquatic resources. This is an increase of $4 million over the amount appropriated for fiscal year 1998. The increase is necessary to implement important initiatives that make the regulatory program more responsive, more equitable, and more efficient.

Five million dollars of the Regulatory Program total is for the Clean Water Action Plan in the President's Environmental Resources Fund for America. This $5 million is to be used to develop Special Area Management Plans, which are tools to help guide local entities in the development of environmentally sensitive areas.

The Administration is again proposing legislation to establish a more rational system of permit application fees for the Corps regulatory program. In the current system, most permit fees do not cover the cost of collection, let alone the cost of administering the program. Under this proposal, the fees for individual landowners would be eliminated, and fees for commercial applicants would be increased to cover the costs of evaluating and processing the permits, using a sliding scale based on the complexity of the application. These fees, estimated to produce receipts of $7 million in fiscal year 1999, would offset an equal amount in new appropriations for this program.

Emergency Preparedness and Disaster Response.—The Corps prepares for and responds to natural and national emergencies in peacetime and war in support of the Army and the Nation. The President's budget does not request any new appropriations for emergency preparedness activities in fiscal year 1999 because carryover funds from the 1997 Emergency Supplemental Appropriations Act and other legislation, estimated at this time to be about $330 million at the start of fiscal year 1999, are expected to be sufficient to meet operational requirements.

Support for Others.—In fiscal year 1999, the Corps will provide reimbursable technical support to other Federal agencies, state and local governments, other countries and international organizations. This support covers the complete range of planning, engineering, design and construction management, environmental services and technical assistance related to water, natural resources and infrastructure. Assistance can vary from providing technical advice to complete project management services. The Support for Others program enhances the Corps' ability to maintain and improve technical competence, while allowing other agencies to focus their in-house resources, particularly personnel, on their own primary areas of expertise. The estimated dollar value of the Corps efforts on behalf of other agencies in fiscal year 1999 is $814 million.

CONCLUSION

The President's fiscal year 1999 Civil Works budget is consistent with the need to balance the Federal budget and the President's overall domestic priorities. The funds available for the Civil Works program have been applied to give balance among numerous Civil Works priorities: responsible stewardship of existing infrastructure, meeting commitments for ongoing construction to the extent possible, and reducing future emergency requirements through investments that achieve both ecosystem restoration and flood hazard mitigation.

In conclusion, I would emphasize the Administration's commitment to work with this Subcommittee, others in Congress and the non-Federal partners of Civil Works projects to ensure that the policies and priorities for the Army Civil Works program of the Corps of Engineers continue to serve the vital interests of the Nation by providing efficient priority investments in public infrastructure while protecting and re-

storing the Nation's environment. Moreover, this must be achieved in a way that supports and contributes to the President's commitment to balance the Federal budget. I ask for your support as we move forward to meet these challenges.

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

FIGURE 1

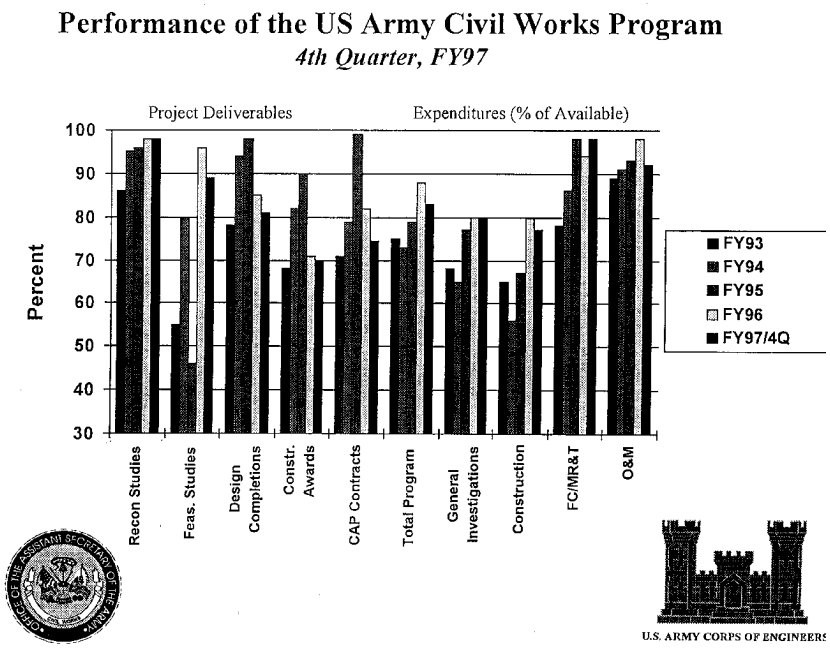


FIGURE 2

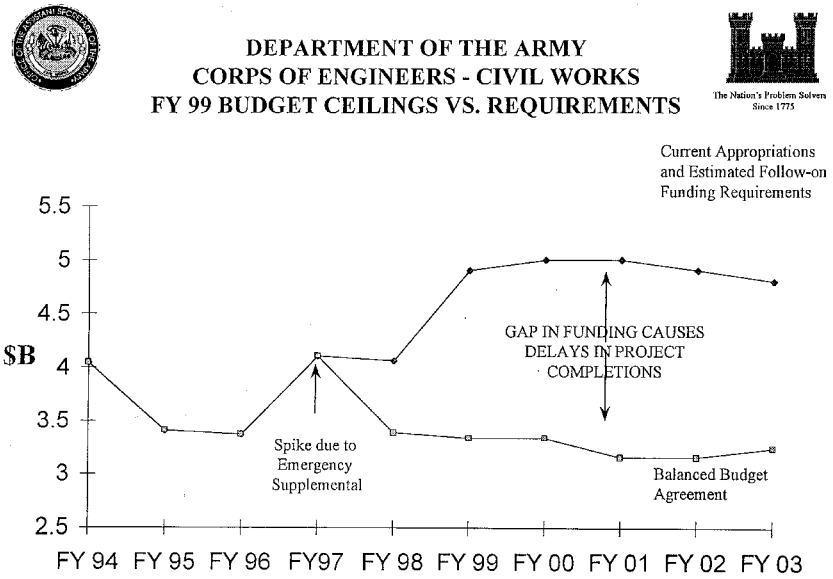


FIGURE 3

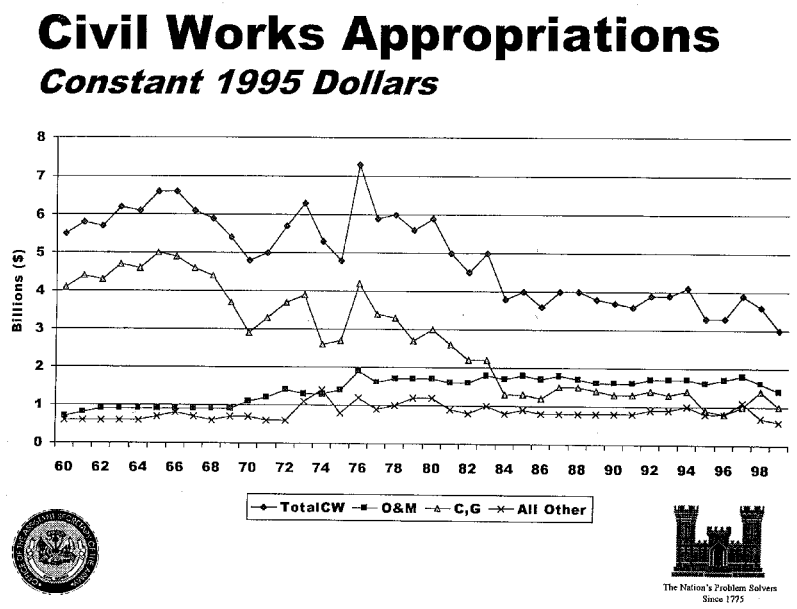


FIGURE 4

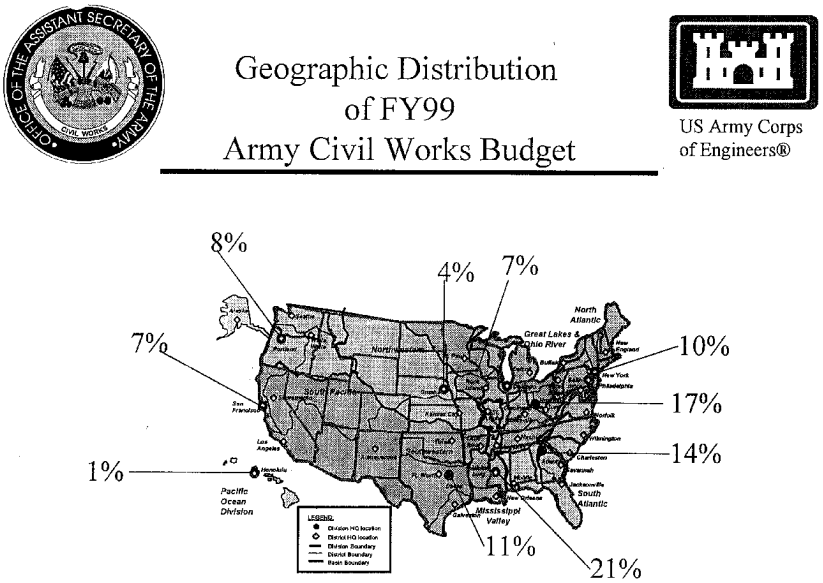


TABLE A.—DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS—CIVIL WORKS—FISCAL YEAR 1999 NEW CONSTRUCTION

[Funding]

Category/project	Fiscal year 1999 budget	Cost		
		Total project	Federal	Non-Federal
New Construction Starts:				
Big Sioux Falls, SD	$2,200,000	$37,100,000	$27,800,000	$9,300,000
Assateague Island, MD	4,000,000	17,200,000	[1] 17,200,000	.....
Grand Prairie, AR	11,500,000	342,000,000	229,800,000	112,200,000
Major Rehabilitation:				
Walter F. George Powerhouse and Dam, AL and GA	1,000,000	37,000,000	37,000,000	.....
Lock and Dam 24 Part 2, Mississippi River, IL and MO	2,400,000	38,370,000	[2] 38,370,000	.....
Patoka Lake, IN	3,600,000	7,200,000	7,200,000	.....
London Locks and Dam, Kanawha River, WV	1,700,000	20,200,000	[3] 20,200,000	.....
Dam Safety Assurance: Skiatook Lake, OK	500,000	9,500,000	9,500,000	.....
Deficiency Correction: Chain of Rocks, Canal, Mississippi River, IL	700,000	22,270,000	22,270,000	.....
All	27,600,000	530,840,000	409,340,000	121,500,000

[1] $300,000 will be provided by UPS.
[2] $19,185,000 will be derived from the IWTF.
[3] $10,100,000 will be derived from the IWTF.

TABLE B.—DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS—CIVIL WORKS—FISCAL YEAR 1999 BUDGET BY BUSINESS PROGRAM

[In thousands of dollars]

Account	Navigation	Flood and storm damage prevention	Hydropower	Regulatory	Environment	Emergency manage-ment	Recreation	Water supply	Support for others	All
General Investigations	62,000	64,000	1,000		42,000		1,000			160,000
Construction General	200,073	367,387	46,320		173,210		7,010			784,000
Operation and Maintenance, General	956,993	246,544	122,769		67,422	6,000	203,273			1,603,000
FC, Mississippi River and Tributaries		280,000								280,000
Regulatory Program				117,000						117,000
General Expenses	46,000	36,700	6,600	4,400	16,300	300	8,000		30,800	148,000
Flood Control and Coastal Emergencies										
FUSRAP					140,000					140,000
Total Direct Appropriations	1,266,066	973,631	176,689	121,400	438,932	6,300	219,283		30,800	3,222,000
Other Civil Works (Coastal Wetlands Restoration)					48,300					48,300
Support for Others									814,000	814,000
Total	1,266,066	973,631	176,689	121,400	487,232	6,300	219,283		844,800	4,084,300

STATEMENT OF JOE BALLARD

Senator DOMENICI. Thank you. We are going to move on with our witnesses before we move to questions.

General Ballard.

General BALLARD. Yes, sir; I am also pleased to be testifying before this committee. I am honored to be appearing before you again for the second time as Chief of Engineers.

I want to thank the members of the subcommittee, and you personally, for the very kind remarks that you have made about the Corps. I would say, thanks to your efforts, the Civil Works Program has been in the past very strong. It has been a balanced program and has been highly productive.

I look forward to our continuing partnership in this essential program that is so beneficial to our Nation, as has been pointed out several times this morning.

PREPARED STATEMENT

Sir, with your permission I will submit my statement for the record and we are prepared to take your questions.

[The statement follows:]

PREPARED STATEMENT OF JOE N. BALLARD

Mr. Chairman and Members of the subcommittee: I am pleased to be testifying on the President's fiscal year 1999 Budget for the Civil Works Program, and am honored to be appearing before you again as Chief of Engineers.

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

My statement covers seven topics: Restructuring, Headquarters Relocation Planning, Fiscal year 1999 Civil Works Program Budget, Improvement of Business Processes, Corps of Engineers Financial Management System, Civil Works Program Execution and Outlook, and Corps Vision and Strategic Plan.

RESTRUCTURING

I would like to take a moment to review the progress of division restructuring.

Beginning in April 1997, the Corps began to implement the restructuring, which reduced the number of division headquarters from 11 to 8. I approved most of the division commanders' implementation plans in May 1997, and since that time, the new organizations have been up and running.

I am convinced that the division restructuring provides a more efficient organizational structure that will result in greater efficiencies in the future. We expect that the staffing level for the eight divisions will be about 8 percent less in fiscal year 1999 than division usage in fiscal year 1997, and about 18 percent less by fiscal year 2002.

I have also targeted the Corps Civil Works Headquarters activities for achievement of comparable manpower savings.

HEADQUARTERS RELOCATION PLANNING

The Corps proposes to relocate its headquarters, in August 2000, to underutilized space in the headquarters building of the General Accounting Office (GAO) at 441 G St. NW, Washington, D.C. By relocating from the Pulaski Building, the Corps will leave commercially leased space to make more efficient use of government owned space. The close proximity of the GAO headquarters to the Pulaski Building will minimize the impact of the relocation on Corps employees. Additionally, our headquarters will not be disrupted by reconfiguration/modernization of space which would be required if the Corps were to remain in the Pulaski building.

FISCAL YEAR 1999 CIVIL WORKS PROGRAM BUDGET

INTRODUCTION

New fiscal year 1999 funding for the Civil Works Program, including the Direct and Reimbursed programs, is expected to approach $4.29 billion.

The Direct Program is formulated by the federal government and funded through appropriations of discretionary and mandatory amounts directly to the Corps. Funding for this program totals $3.48 billion. Discretionary amounts include defense and domestic program components of $140 million and $3.08 billion, respectively. The defense component is for the newly assigned Formerly Utilized Sites Remedial Action Program (FUSRAP), transferred from the Department of Energy to the Corps by Congress in the Energy and Water Appropriations Act, 1998.

The Reimbursed Program is formulated, under provisions of law, by the Corps in collaboration with other federal agencies, State and local governments, and other nations. It is funded in either of two ways: from discretionary amounts of the Direct Program, initially, and, ultimately, through reimbursement by the ordering agencies, governments, and nations; or by advance payments by the agencies, governments, and nations. Funding for this program totals $814 million.

DIRECT PROGRAM

Overview

The proposed fiscal year 1999 Civil Works Direct Program budget provides for continued funding of nearly all studies and projects underway, including many started in fiscal year 1998. It also provides for funding of new starts under the General Investigations (GI), Construction, General, (CG), and Flood Control, Mississippi River and Tributaries (FC,MR&T) programs.

Funding includes "traditional" and "advance" incremental funding. Under traditional funding, appropriations are made for the budget year of amounts needed during that year, based on estimates in the justification statements for that year. All programs, except the CG Program, are funded in the traditional way. Under advance funding, appropriation is made "upfront," in the budget year, of amounts needed for each outyear until completion of the projects, based on estimates made in the budget year for all years until completion. Each advance funding amount becomes available in the year of need and, therefore, is "scored" in that year. This promotes full consideration of all costs and benefits of projects during resource decision making, and allows the Corps and local sponsor to proceed with construction.

The CG Program is funded both ways. Ongoing projects not completing in outyears of the 5-year program, fiscal year 2000–03, are traditionally funded, whereas projects completing in the outyears, including new starts, are advance funded in amounts needed during each year until completion, based on outyear estimates in the budget year justification statements. Four of the fiscal year 1999 new start projects are advance funded in outyears for completion.

The new start program includes 9 new reconnaissance studies and 18 preconstruction engineering and design studies, following cost-shared feasibility studies, being funded for the first time. The new start program also includes new construction projects, including 9 specifically authorized by Congress, and an undetermined number generally authorized under the CAP. The specifically authorized projects include 3 regular construction projects, 4 major rehabilitation projects, 1 dam safety assurance project, and 1 deficiency correction project.

New Funding

As shown in the table at the end of this statement, the fiscal year 1999 budget provides for $3.48 billion in new direct funding. This includes $3.22 billion in discretionary funding being requested through the fiscal year 1999 Energy and Water Development Appropriations Act, and $266 million in mandatory funding to be made available under existing law.

Mandatory funding includes $15 million from three permanent appropriations—one for maintenance of mine debris reservoirs used for other purposes in California; one for construction, operation and maintenance of federal water management facilities nationwide; and one for payments to states to compensate for loss of tax base owing to federal projects nationwide. Mandatory funding also includes $10 million from the Coastal Wetlands Restoration Trust Fund (CWRTF) for the Corps' part in interagency protection and restoration of wetlands in Louisiana. Additionally, it includes $144 million in nonfederal contributions from the Rivers and Harbors Contributions Trust Fund (R&HCTF), representing costsharing paid under five programs (the GI; CG; Operation and Maintenance, General (O&M); and Coastal Wetlands Restoration programs) and one project (the FC,MR&T Project). Mandatory

funding also includes $98 million to be transferred from the Bonneville Power Administration (BPA) for operation of the Corps' hydropower generation facilities in the Pacific Northwest.

Additionally, the budget provides for $22 million in mandatory borrowing authority for capital improvements for the Washington Aqueduct. However, unlike other mandatory authority, this is authority to obligate against and make payment from money borrowed from the Treasury.

Comparison with Fiscal Year 1998 Funding

As shown in the table, new funding for the fiscal year 1999 budget, including discretionary and mandatory funding, is $923 million less than the total of appropriations for fiscal year 1998. The discretionary part is $836 million less than last year's total, largely reflecting a $685 million reduction in the CG Program. Of the $784 million in discretionary appropriations for the CG Program, $16 million, or 2.0 percent, is provided to fund new construction starts.

Outlays of discretionary funding for fiscal year 1999 are expected to be about $828 million less than for fiscal year 1998, commensurate with the reduction in funding.

Net New Funding

Of the $3.48 billion in total new direct funding, $820 million, or 24 percent, would come from nine sources other than Treasury's General Fund, yielding net new funding not specifically collected for the program of $2.66 billion. These sources—eight existing and one proposed—include five Special and four Trust Funds. The largest amounts would come from the Harbor Maintenance Trust Fund (HMTF) ($462 million, including $2 million for the CG and $460 million for the O&M programs), R&HCTF ($144 million), Inland Waterways Trust Fund (IWTF) ($50 million), Special Recreation User Fees (SRUF) Fund ($34 million), and CWRTF ($10 million). As discussed later, under Program Execution and Outlook, the one proposed source would be a special fund for the Regulatory Program, with collections estimated to amount to $7 million in fiscal year 1999 and increase to $14 million, annually, thereafter.

Significance of Budget for Corps

Owing principally to appropriation of $411 million for 359 studies and projects not included in the President's Program for fiscal year 1998, we project a large funding carryover from fiscal year 1998 into fiscal year 1999, most of which—$490 million—would occur for the CG Program. However, since much of the carryover is earmarked for specific work, it is unavailable for reprogramming to cover shortages in other work.

The budget provides for annual funding in outyears of the 5-year program averaging roughly $210 million more than in fiscal year 1999. Coupled with this follow-on funding, fiscal year 1999 funding is expected to provide adequate amounts for planning and design missions, enabling continuing, with few exceptions, ongoing efforts. However, schedules for many ongoing construction projects will be stretched out, resulting in later completion dates than presented in the fiscal year 1998 Budget.

Ever-increasing needs and constrained resources challenge us to become even more efficient and innovative in producing for our customers. As discussed later, we have been working hard at this, and have met with many successes already. However, much more is needed. The Corps' strategy, discussed under the Corps Vision and Strategic Plan, commits us to achieve "dramatic improvement in performance and customer satisfaction." Our goal is to "revolutionize" our effectiveness in problem-solving—continually maximizing the actual and potential values of our organization to Civil Works Program customers and the Army, and, thereby, the Nation. This budget promotes implementation of this strategy, not only confirming its necessity, but also providing adequate funding to facilitate its diligent pursuit.

Advance funding for acquisition of fixed assets will allow us to coordinate far more intensively, quickly, and effectively with local sponsors in determining optimum work and funding schedules based on capabilities and constraints of both parties. Both parties should benefit significantly—the Corps, because of more efficient work schedules; and the customer, because of greater certainty of financial obligation and faster delivery of needed facilities and expected benefits.

REIMBURSED PROGRAM

Through the Interagency and Intergovernmental Support Program we help other agencies and governments with timely, cost-effective implementation of their programs, while maintaining and enhancing capabilities for execution of our Civil Works Direct Program and Military Program missions. Other agencies look to us for

help with engineering and construction management because of our vast experience and capabilities, enabling us to do the work better, faster, and cheaper.

We provide reimbursable support for about 60 other federal agencies and several State and local governments through help with environmental, engineering, and construction management work. Total reimbursement for such work in fiscal year 1999 is projected to be close to $814 million. About half of this is for environmental work. The largest share—nearly $300 million—is expected from the Environmental Protection Agency (EPA) for cleanup of wastes at numerous sites under its Superfund program. 98 percent of our Reimbursed Program funding is provided by federal agencies.

STAFFING

Total staffing for the Civil Works Program for fiscal year 1999 is 25,520 FTE's. This reflects a reduction of 448 FTE's from the fiscal year 1998 total. Of the total, 24,416 FTE's are for the Direct Program and 1,204 FTE's are for the Reimbursed Program. Total staffing is allocated 90 percent to districts, 4.5 percent to laboratories and other separate field operating agencies, 3.5 percent to division offices, and less than 2.0 percent to headquarters. Under restructuring, the headquarters share will remain essentially unchanged, while district and separate field operating agency shares will grow from reallocation of division office savings.

IMPROVEMENT IN BUSINESS PROCESSES

INTRODUCTION

This part of my testimony summarizes efforts to improve business processes of the Civil Works Program over the past few years, with emphasis on accomplishments in fiscal year 1997, and efforts underway in fiscal year 1998.

DECISION DOCUMENT REVIEW/APPROVAL

As I reported last year, we have put in place a process that now restricts Headquarters review of decision documents to "policy review," ensuring compliance with law and Administration policy, with divisions providing quality assurance, and districts accomplishing technical reviews, thereby controlling the technical adequacy of the planning and engineering in these documents at the local level. I am happy to report that we have made significant progress in achieving corporate efficiency and effectiveness through elimination of fragmented review at multiple layers.

HEADQUARTERS RESPONSIVENESS TO FIELD OFFICES

In addition to restricting its review to policy review, our "one-stop" Washington-level review office continues to improve its review process in an effort to provide more timely decisions to districts.

In fiscal year 1997, this office received 425 decision document policy review actions from our field offices, including actions for review of reconnaissance, feasibility, design, and major rehabilitation reports. We completed over 380 of these review actions in fiscal year 1997, for a review efficiency of 90 percent. Through the 1st quarter of fiscal year 1998, we completed review of 113 decision documents. We are on track to complete well over 400 in fiscal year 1998.

Additionally, in fiscal year 1997, this office reviewed and approved 34 Project Cooperation Agreements (PCA's)—contracts spelling out roles and responsibilities of the federal government and nonfederal sponsor—for specifically authorized projects. Average processing time for these documents continues to be less than 60 days, enabling project construction to begin expeditiously. Through the 1st quarter of fiscal year 1998, we have had over 30 PCA reviews underway, and executed 8 PCA's. A total of 70 PCA reviews are scheduled for execution in fiscal year 1998.

Finally, in the interest of further expediting project development, Army established an expedited reconnaissance study and report process. The expedited process focuses on determining Federal interest and developing a detailed plan of study for subsequent feasibility work. This process has been successful in completing the reconnaissance studies more quickly and moving viable locally supported studies forward toward solutions. Although the process is still new, it has been well received.

PROJECT COOPERATION AGREEMENTS

We have continued efforts to make negotiation and processing of PCA's more predictable and efficient in three ways.

First, in consultation with nonfederal project sponsors, Army continues to develop new PCA models reflecting principles of partnering, and addressing recurring con-

cerns of sponsors. These models cover specific program authorities, and expedite the agreement process. Two of the models, for specifically authorized flood control projects and commercial navigation projects, cover most of the Corps' program. Other models cover continuing authorities and environmental infrastructure projects. Additionally, one covers preconstruction, engineering and design (PED) agreements for cost-sharing of the PED phase. Latest versions of all models are easily accessible to our field offices and project sponsors on the world-wide web.

Second, headquarters has delegated authority to division and district commanders to execute PCA's and PED agreements, conforming to the models, without Washington-level review.

Finally, we have posted all current guidance for preparation of PCA's and other agreements on our homepage, easily accessible to nonfederal sponsors, as well as Corps personnel and the public. Homepage publication enables almost instantaneous notification of changes in guidance to the benefit of all involved.

These improvements have fostered partnership and expedited negotiations.

PARTNERING

The Corps has long supported dispute prevention and resolution in its corporate policy and workplace practice. The Alternate Dispute Resolution (ADR)/Partnering Program continues to lay the foundation for better working relations among Corps personnel, partners, and customers. It focuses on the development of cooperative project management teams through collective definition of goals, improved communication, and the fostering of problem-solving attitudes among parties involved. The ADR Program has become a model for programs of other federal agencies, including the Office of Personnel Management's program for executive management, and for programs of several law schools and universities. The program provides for training, publications, and field support.

Partnering philosophy is the key to more successful and effective project execution, resulting in improvements in quality, schedule and cost. It is aimed at improving our business process by making our customers and partners an integral part of the team. While the concept was originally applied only to construction contracts, it is now being used to improve business relationships across the broad spectrum of Corps activities. Partnering has dramatically reduced the number of construction-related claims and appeals.

In fiscal year 1997 we pursued recommendations, made at the partnering workshop of the previous year, for improvement of service to local sponsors. We have taken actions to increase our efficiency and enhance sponsor involvement in project development and execution. These have included improvement of the existing and development of new models for project cost-sharing agreements, improvements in the real estate review and acquisition process, and acceleration of review and approval of the decision documents and reports.

Our major initiative in fiscal year 1997 was development of the Partnering Guide for Civil Missions. The guide is one in a series of publications describing techniques and applications of Partnering in Corps programs. When completed, it will serve as a tool for successful execution of our missions. A partnering workshop was conducted with our division and district personnel in December 1997 to finalize the guide and explore further opportunities for Partnering in Civil Works missions.

In fiscal year 1998 we undertook a major initiative in the customer satisfaction arena to develop service standards and implement a pilot test in Mississippi Valley Division. Our objective is to develop tools to measure satisfaction and, then, to use the feedback to change Corps business processes to improve services and products within available resources. The pilot test will result in tools for evaluation of customer satisfaction Corps-wide.

GOVERNMENT PERFORMANCE AND RESULTS

The Government Performance and Results Act of 1993 (GPRA) requires that we show how improvements in our business processes, and efforts to balance scarce budgetary resources between operation and maintenance and new investments, ultimately impact delivery of our products and services to the Nation.

The improvements in our business processes, discussed elsewhere in this statement, include: streamlined decision document review processes, eliminating duplication of functions at different levels; intensively monitored policy review, significantly reducing average review times; standardized PCA models, simplifying and expediting development, review, and approval of PCA's; broader application of partnering techniques to strengthen partnerships with sponsors, expediting construction and minimizing costs; and intensively managed program execution, for more efficient and timely production and greater customer satisfaction.

Until recently, we could demonstrate benefits of these process improvements only at the project level; we did not have means to display them at the program level. Likewise, we could demonstrate the impacts of varying funding levels on levels of program services and the timing of program results at the project level; however, again, we did not have means to measure such impacts at the program level.

Currently, we are testing an initial set of results-oriented performance measures for demonstrating the contributions of internal process improvements and impacts of different levels of funding for programs. Our goal is to comply with GPRA in development of a comprehensive set of results-oriented program performance measures. We are discussing these measures with OMB, and continuing the consultation process with Congress.

CORPS OF ENGINEERS FINANCIAL MANAGEMENT SYSTEM

We are continuing deployment of the Corps of Engineers Financial Management System (CEFMS). As of 30 September 1997, we had completed deployment at forty-four Corps locations. To date, in fiscal year 1998, we have completed deployment at our Cold Regions Research and Engineering Laboratory, Northwestern Division, Alaska District, and Transatlantic Engineering Center, Europe, and initiated deployment at the South Pacific Division. We anticipate completing the process for all locations this month, with deployment at the North Atlantic Division.

I am pleased to report on success achieved by our first Division to have completed a full year of operations using CEFMS. The U.S. Army Audit Agency and Corps teamed together at our Southwest Division in fiscal year 1997 to verify that CEFMS will produce consolidated financial statements consistent with requirements of the Chief Financial Officers Act. The Army Auditors have advised me that the fiscal year 1997 Southwest Division consolidated financial statements will receive an unqualified audit opinion. This is a big step forward for the Corps, Army, and Department of Defense (DOD) in demonstrating the capability of our automated financial management information system to document the financial integrity of our stewardship of funds entrusted to us.

CEFMS is now being adopted for wider use throughout DOD because of its demonstrated capabilities.

PROGRAM EXECUTION AND OUTLOOK

INTRODUCTION

Program Execution continues to be very important throughout the Corps. In fiscal year 1997, our divisions and districts generally succeeded in improving their execution, as measured in terms of expenditures. Division commanders have described execution results of their divisions for that year, by program, in their status reports. As usual, these will be made available to the Subcommittee, following this hearing. We are continuing to emphasize the importance of meeting obligation and expenditure schedules in fiscal year 1998.

In following discussions, the term "expenditure" is substituted for "accrued expenditure."

GENERAL INVESTIGATIONS

Scheduled expenditure for the GI Program in fiscal year 1997 was $161 million. We spent $151 million, or 94 percent of this, and 80 percent of funding available. This execution, based upon funding available, was unsurpassed in the preceding five years.

Scheduled report production for the program in fiscal year 1997 included 90 reconnaissance and 20 feasibility reports. The performance goal for reconnaissance reports was completion of 81 of the 90, or 90 percent, within the 12–18-month legislative time-frame for regular reconnaissance reports, and 6–9-month time-frame for expedited reports. We completed 84 of the 90 for a performance result of 93 percent. The performance goal for feasibility reports was completion of 16 of the 20, or 80 percent. We completed 16, meeting this goal.

Scheduled expenditure for the GI Program in fiscal year 1998 is $157 million. Our goal is to expend 95 percent of this amount. Based on first quarter results, we will exceed that goal.

In addition to the GI improvements of last year, in anticipation of implementing further efficiencies, we have contracted with the National Research Council to provide an independent assessment of the Civil Works decision making process, taking into consideration the magnitude of investments, the state of analytic arts, governing laws, and executive branch guidance. We expect a report in January 1999.

The President's Budget provides for $150 million in new funding for the GI Program. The outlook for program workload is healthy. We are striving continually to enhance our performance during these times of limited resources.

CONSTRUCTION, GENERAL

In fiscal year 1997, scheduled expenditures totaled $1.10 billion, we expended $1.05 billion, and carried an unexpended balance of $313 million over into fiscal year 1998. This unexpended carryover was significantly less than our historical average. Moreover, it included $149 million earmarked in law for specific activities or projects which could not be accomplished that year.

In fiscal year 1998, $1.79 billion was available for expenditure in the CG account at the beginning of the year. Expenditures scheduled for this year total $1.30 billion, leaving $490 million to be carried over into fiscal year 1999. At the end of the first quarter, expenditures were on schedule at $190 million.

The President's Budget provides for $784 million in new funding for the CG Program in fiscal year 1999. It also provides for advance new obligation authority of $531 million for the four-year fiscal year 2000–03 period for completion of 60 specifically authorized projects scheduled for completion during that period. Of the fiscal year 1999 amount, $16 million is for initiation of 8 new start projects. The balance of $768 million, reflecting a reduction for savings and slippage in the total program, is for specifically authorized continuing projects and remaining items, including projects under CAP. About $659 million of this amount is for specifically authorized projects.

The budget request includes $25 million for the Challenge 21—Riverine Ecosystem Restoration and Flood Hazard Mitigation Initiative as part of the President's Environmental Resources Fund for America. This new program will examine entire watersheds to expand the use of non-structural alternatives to reduce flood hazards and flood disaster recovery costs while helping to restore natural functions and values to riverine ecosystems.

OPERATION AND MAINTENANCE, GENERAL

In fiscal year 1997, we expended 92 percent of the funds available to operate and maintain the existing federal water resources infrastructure, including 12,000 miles of inland waterways, 237 locks, 926 harbors, 383 dams and reservoirs and recreation facilities for 375 million visits over the year. This infrastructure provides beneficial outputs for navigation, flood damage reduction, hydropower generation, recreation, and environmental stewardship that are important to the economic and environmental well-being of the Nation. Our workload was financed with the $1.697 billion regular appropriation plus two emergency supplemental appropriations—$19 million to repair damages caused by Hurricane Fran along the Atlantic Coast and $150 million to repair Civil Works projects impacted by natural disasters that occurred throughout the Nation, including California, the Pacific Northwest, Gulf Coast, Ohio River Basin, and Upper Midwest. This performance, with an emphasis on justified results, reflects outstanding management by our headquarters and field staff who had to make substantial regional adjustments to deal with these major flooding events pending enactment of supplemental appropriations.

We expect even better performance in fiscal year 1998 with the appropriation of $1.733 billion which was 36 million, or 2.1 percent, greater than the initial fiscal year 1997 amount. This year's storms have caused damages to some of our projects. We will have to work hard to address these additional requirements while keeping the infrastructure in good working order.

Our fiscal year 1999 estimated O&M program is $1.709 billion, including a $1.603 billion appropriation request, an estimated $98 million in funding from the Bonneville Power Administration to operate and maintain hydropower facilities in the Pacific Northwest, and $8 million in cost-sharing contributions. I am confident that this amount will be adequate to operate and maintain our projects at justified levels of service.

For the period fiscal year 1997–99, the O&M program is essentially stable at the $1.7 billion level. As projects continue to age and federal funding constraints continue, it is clear that we need to find innovative ways to accomplish required O&M work nationwide. In order to continue providing services to project customers at this level of funding, we are proceeding with the O&M Cost Saving Initiative that I mentioned in last year's testimony. A report comparing project costs and outputs has been provided to various Congressional committees and customers. Although the O&M Cost Savings report is not intended to identify categories of projects for reduced funding, Corps field offices have been using it as a starting point to engage

our customers and Congressional delegations to further analyze their respective projects and seek cost saving opportunities.

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

In fiscal year 1997, we expended 98 percent of funds scheduled for expenditure on the MR&T Project. Of the $34.5 million unexpended, $8.7 million was unobligated and $25.8 million was obligated but unexpended. The unobligated carryover was about 3 percent of new budget authority for fiscal year 1997.

We anticipate excellent financial performance on the MR&T Project in fiscal year 1998.

The President's Budget request for $280 million in new funding for the MR&T Project includes funding for one new start reconnaissance study and one construction new start.

REGULATORY PROGRAM

The President's budget requests $117 million for the Regulatory Program, with $7 million to be derived from offsetting receipts under proposed legislation to restructure permit application fees, for a net of $110 million. Total funding is $11 million more than the fiscal year 1998 appropriation. The increase supports national water resources initiatives, including continued work under the President's Wetlands Plan of August 1993.

The requested funds will provide for the implementation of a full administrative appeals process by which the public can challenge regulatory decisions without resorting to litigation. This includes appeals of denials of permits and appeals of jurisdiction determinations. We will begin implementation for appeals of permit denials near the end of fiscal year 1998.

In addition, we are increasing efforts to initiate and sustain partnerships with State and local governments in the protection of the aquatic environment. With the proposed fiscal year 1999 funding, we will develop watershed management plans and other permitting mechanisms that allow state and local authorities to take on more permitting responsibilities, thus reducing Corps workload.

We are again proposing changes in fees for the regulatory program, including increasing fees for commercial applications to cover review costs, and dropping fees for applications of individuals. This proposal is expected to generate $14 million in the first full year of operation.

FLOOD CONTROL AND COASTAL EMERGENCIES

The President's Budget does not request new funding for the Flood Control and Coastal Emergencies (FCCE) Program. The expected carryover of funds appropriated in the 1997 Emergency Supplemental Appropriations Act is adequate for administration of the Disaster Preparedness and Emergency Response programs in fiscal year 1999. The need for additional funding will be determined by future events requiring extraordinary flood-fighting or subsequent repair of damaged water management facilities and the balance of funds in the FCCE account.

Under this program, we provide leadership and expertise in preparation for and response to disasters throughout the Nation. Since receiving our emergency mission in 1941, we have developed and sustained an engineering organization capable of responding to both natural and technological disasters, such as hurricanes, floods, earthquakes, and oil spills. This mission also entails supporting deployed U.S. Forces and accomplishing reimbursable work for other agencies, particularly, the Federal Emergency Management Agency.

Last year, we responded to several natural disasters, including the Western Floods of January 1997, flooding in the Ohio River and Mississippi River Basins in March 1997, and the Upper Midwest Floods of April. We have completed the repair and rehabilitation of critical levees in California and other States as we continue to restore flood protection to distressed communities throughout the Nation.

This year, we were part of the Federal relief efforts led by the Federal Emergency Management Agency in New England as the result of January's severe ice storm. In February, we responded to the flooding in California and Florida, and we remain a key player in the Federal recovery and relief efforts in these states. Also, as part of its overall emergency response mission, the Corps of Engineers continues to provide support to U.S. forces in Bosnia.

GENERAL EXPENSES

The President's Budget provides for $148 million in new funding for GE, the same as for fiscal year 1998. These funds support the headquarters, the new eight divi-

sion office structure and four field support activities. Expenses are allocated approximately 71 percent labor, 22 percent fixed costs such as rent, utilities, communications, and contractual services, and 7 percent for discretionary costs, such as travel, training, supplies and materials. It reflects initial savings from reducing the number of division offices phased over several years and other streamlining initiatives. It also includes absorbing the 1.5 percent increase for agency contributions for retirement benefits effective in fiscal year 1998, and the increase from 9 percent to 15 percent for payments to the Federal retirement account for employees taking Voluntary Early Retirement Authority (VERA) and Voluntary Separation Incentive Program (VSIP).

The budget requested supports projected staffing of 1,180 FTE's for all headquarters activities, and will continue to decline through fiscal year 2002 to about 1,050 FTE's. The fiscal year 1999 staffing for these executive direction and management functions comprises only 4.6 percent of the total civil workforce, and is projected to continue this decline to about 4.1 percent by fiscal year 2002. The headquarters staff of 453 FTE's represents less than 2 percent of the total civil program workforce.

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

Since transfer of execution responsibilities for FUSRAP from the Department of Energy (DOE), the Corps has ensured that the transition would not cause a slippage at any site, conducted a site-by-site assessment of the program, and is now developing schedules and funding requirements to maximize savings and accelerate project completion schedules. In its assessment of DOE's accelerated cleanup plan, the Corps found that program completion by 2002 was possible only by reducing the scope of the program.

The Corps' fiscal year 1999 FUSRAP request of $140,000,000 is based on a balanced approach to remediation which takes into account health and safety factors, regulatory requirements, community interests, future use of the property, and estimated cleanup costs. The requested funding will permit the Corps to complete three projects and continue work underway at the remaining 18 projects.

CORPS VISION AND STRATEGIC PLAN

Finally Mr. Chairman, last year I briefed you on the new Corps Vision and Strategic Management Plan. I should clarify that this Plan is not the Strategic Pan required by GPRA, rather, it is my separate plan for challenging the Corps to improve and adapt to the many changes occurring in our Nation at every level. For this, we need to have an end state in sight and a road map to get there. Here is our Vision for the Corps.

The U.S. Army Corps of Engineers is:

—the world's premier engineering organization, trained and ready to provide support any time, any place.

—a full-spectrum engineer force of high quality, dedicated soldiers and civilians:

  —a vital part of the Army;

  —the engineer team of choice—responding to our Nation's needs in peace and war; and

  —a values-based organization—respected, responsive, and reliable

—changing today to meet tomorrow's challenges!

As you can see, the Vision touches on many different areas. All of these are important, but several are critical. The first of these is to focus on our customers, as embodied in "The Engineer Team of choice." The second is to build on the successes in responding to our Nation's needs in peace, with the Civil Works Program being the cornerstone. The third is to become more relevant to the Army, where our roots are.

This Vision and Plan have matured a lot in the past year. The team that helped develop them is also helping to guide implementation; it consists of employees and commanders at every level, customers from both the civil works and Army side and other stakeholders in our success. We have developed a series of linked and tiered management plans that "govern" our management initiatives and move us toward that Vision. You can expect a continuing series of changes over the years, that will keep what is good, significantly improve some weak areas, and posture us for the next century.

CONCLUSION

The President's Budget for the Corps of Engineers provides stable funding with a balance among competing priorities. However, we must continue to find ways to reduce our costs and shift more of those remaining to direct beneficiaries of our

services. Meanwhile, we will do our very best to execute the Civil Works Program for maximum benefit to the Nation.

We have a long history of improving production of the Civil Works Program and achieving greater customer satisfaction, while conserving resources. A recently passed milestone in this history was formalized Corps-wide institution of project management, given impetus by nonfederal cost sharing requirements of WRDA86. This led to marked improvement in program execution and greatly improved partnerships with state and local governments.

Lately, we have been improving business processes, including the decision document review and approval process, project cooperation agreement execution process, and partnering process. Improvements adopted have eliminated duplication of effort; empowered districts to accomplish work formerly done at higher levels; expedited policy and nondepartmental reviews, yielding more timely answers for districts; and preset compatible goals for stakeholders in projects, enabling win-win outcomes with less rework, claims, and lawsuits. These improvements have further improved our production and customer satisfaction, while, simultaneously, enabling us to participate significantly in ongoing efforts to downsize government.

And now, our Strategic Management Plan commits us to dramatic improvement in performance and customer satisfaction within available resources, with a goal of revolutionizing our effectiveness in problem solving—continually maximizing actual and potential values of our organization to the Civil Works Program and the Army, and, thereby, the Nation. This, in conjunction with our ongoing implementation of GPRA, promise even greater improvements in future business operations.

Finally, the Energy and Water Development Appropriations Act, 1998, challenges us to accomplish a large workload in the current year. I am confident in our ability to meet that challenge, in continuing to benefit our great Nation.

Thank you Mr. Chairman and Members of the Committee. This concludes my statement.

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS—CIVIL WORKS—FISCAL YEAR 1999 DIRECT PROGRAM

[In thousands of dollars]

Source/account	Fiscal year		
	Actual/assumed 1997	Assumed 1998	Request 1999
Appropriation:			
Discretionary:			
Defense: Formerly Utilized Sites Remedial Action Program	.....	140,000	140,000
Domestic: General Investigations	152,972	156,804	150,000
Construction, General:			
General Fund	997,027	1,391,073	732,000
Harbor Maintenance Trust Fund	.....	.....	2,000
Inland Waterway Trust Fund	85,815	78,000	50,000
Total	1,082,842	1,469,073	784,000
Operation and Maintenance, General:			
General Fund	1,295,940	1,201,393	1,108,561
Harbor Maintenance Trust Fund	535,986	497,844	460,439
Special Recreation User Fees Fund	34,089	33,988	34,000
Total	1,866,015	1,733,225	1,603,000
Flood Control, Mississippi River and Tributaries	330,374	294,312	280,000
Regulatory Program:			
General Fund	101,000	106,000	117,000
Proposed Permit Fees	.....	.....	−7,000
Total	101,000	106,000	110,000
General Expenses	149,000	148,000	148,000
Flood Control and Coastal Emergencies	425,000	4,000	.....
Oil Spill Liability Trust Fund	.....	.....	.....
Total	4,107,203	3,911,414	3,075,000
Total	4,107,203	4,051,414	3,215,000

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS—CIVIL WORKS—FISCAL YEAR 1999 DIRECT PROGRAM—Continued

[In thousands of dollars]

Source/account	Fiscal year		
	Actual/assumed 1997	Assumed 1998	Request 1999
Mandatory:			
Permanent Appropriations	13,243	14,627	14,674
Coastal Wetlands Restoration Trust Fund:			
Corps	10,000	10,000	10,000
Others (excluded)	34,134	39,000	38,300
Total	44,134	49,000	48,300
Rivers and Harbors Contributions	190,051	233,217	143,741
Bonneville Power Administration	92,000	95,000	98,000
Washington Aqueduct (borrowing authority, excluded)	29,000	24,000	22,000
Total	305,294	352,844	266,415
Total	4,412,497	4,404,258	3,481,415

PREPARED STATEMENT OF RUSSELL L. FUHRMAN

Senator DOMENICI. Thank you very much, General Ballard.

Are we going to have a third statement? Are you going to testify, General Fuhrman?

General FUHRMAN. I would like to submit my statement for the record. I have no oral statement, Mr. Chairman.

[The statements follow:]

PREPARED STATEMENT OF RUSSELL L. FUHRMAN

INTRODUCTION

Mr. Chairman and members of the Subcommittee, I am honored to testify before you as Director of Civil Works.

I would like to note some highlights of the fiscal year 1999 budget request for Remaining Items, which include the Army Corps of Engineers (Corps) nationwide programs and activities. These include the General Expenses appropriation, which provides for executive direction and management of the Civil Works program at the Corps Headquarters and the Division Offices.

REMAINING ITEMS OVERVIEW

The total for Remaining Items in the budget request is $624.549 million of which $78.4 million is for General Investigations; $102.019 million for Construction, General; $39.13 million for Operation and Maintenance, General; $117 million for Regulatory Program; $140 million for Formerly Utilized Sites Remedial Action Program; and $148 million for General Expenses.

ACTIVITIES UNDER THE GENERAL INVESTIGATIONS APPROPRIATION

COORDINATION WITH OTHER FEDERAL AGENCIES, STATES, AND NON-FEDERAL INTERESTS

The request for Coordination with Other Federal Agencies, States, and Non-Federal Interests is $13.7 million, an increase of $6.765 million from the fiscal year 1998 allocation of $6.935 million for these activities. Following is a comparison of the fiscal year 1998 allocation and the fiscal year 1999 request for activities under this program:

Activity	Fiscal year	
	1998 allocation	1999 request
Planning Assistance to States	$2,897,000	$5,300,000
Special Investigations	1,687,000	3,742,000
Gulf of Mexico Program	127,000	200,000
Chesapeake Bay Program	348,000	250,000
Pacific Northwest Forest Case Study	326,000	300,000
Interagency Water Resources Development	753,000	1,300,000
Interagency and International Support	144,000	300,000
Inventory of Dams	197,000	500,000
National Estuary Program	69,000	100,000
North American Waterfowl Management Plan	69,000	100,000
Risk Based Analysis	116,000	108,000
Coordination with Other Water Resources	202,000	500,000
CALFED	.....	1,000,000

The request includes one new budgeted item for fiscal year 1999. The Corps participation in the CALFED Bay Delta process was initiated in fiscal year 1997. The Corps level of effort necessary for this program warrants the designation of CALFED as a separate line item.

CALFED.—The request of $1,000,000 allows the Corps to continue to play a key role in the CALFED Bay-Delta process in fiscal year 1999. The CALFED Bay-Delta Program is a three-phased solution process for the development of a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. This program is a joint effort between local land management agencies and the state and Federal government. In addition the Corps is requesting $89.1 million for studies and projects in Bay Delta.

Planning Assistance to States.—The request of $5.3 million is a major portion of the Coordination with Other Federal Agencies, States, and Non-Federal Interests program. The fiscal year 1999 request would enable the Corps to provide much needed planning and technical assistance for a variety of water resource efforts to states, territories, and Federally recognized Indian Tribes. The assistance is in the form of 50 percent Federal, 50 percent non-Federal cost-shared reconnaissance level studies which provide information and guidance to help the non-Federal sponsors become more active and effective working partners with the Federal government in resolving water resource problems. The studies may address a wide variety of water resource issues including environmental conservation/restoration, wetlands evaluation, water supply and demand, water quality, flood damage reduction, coastal zone management, and dam safety. Since fiscal year 1991, we have executed over 440 cost-sharing agreements with 48 states and 22 Indian Tribes. Significant flood events over the last several years have raised public awareness and increased the demand for assistance in resolving water resource problems. As a result, interest in this highly efficient and effective program continues to grow.

Special Investigations.—Another major portion of the fiscal year 1999 request is $3.742 million for Special Investigations. The activities of this program include: special investigations and reports of nominal scope prepared pursuant to Congressional and other requests from outside the Corps of Engineers for information relative to projects or activities which have no funds; review of reports and environmental impact statements of other agencies; and review of applications referred to us by the Federal Energy Regulatory Commission for permits or licenses for non-Federal hydropower developments at, or affecting, Corps water resource projects.

Interagency Water Resources Development.—The request is $1.3 million to conduct district activities, not otherwise funded, that require coordination effort with non-Federal interests. These activities include items such as meeting with City, County, and State officials to help solve water resources problems or to determine whether Corps programs are available and may be used to address the problems.

Gulf of Mexico Program.—The request of $200,000 allows the Corps to continue involvement in this U.S. Environmental Protection Agency (EPA)-initiated, partnership driven, program of blending of programs and resources of Federal, state, and local governments, with the resources and commitments of business, industry, citizens groups and academia. The Gulf of Mexico Program is formulating and implementing creative solutions to economic and environmental issues with Gulf-wide and national implications. Hypoxia/nutrient enrichment and nonindigenous species

are focus areas, which are linked to authorized Corps missions in the five-state program area.

Chesapeake Bay Program.—The request of $250,000 enables the Corps to continue participation in the EPA-initiated interagency program for the protection and restoration of the bay's natural resources. These natural resources have tremendous environmental and economic significance to the northeast region and to the nation.

Pacific Northwest Forest Case Study.—The request of $300,000 is for the Corps to continue participation in the interagency program initiated by the White House's Council of Environmental Quality for ecosystem management of the public lands in the Pacific Northwest within the range of the Northern Spotted Owl.

Risk Based Analysis.—The request of $108,000 provides for the completion of a study of the use of risk-based analysis by the Corps of Engineers in the evaluation of flood damage reduction studies. In accordance with Section 202(h) of Public Law 104–303, the funds would be used to fulfill contractual requirements with the National Academy of Sciences.

Interagency and International Support.—The $300,000 request allows the Corps of Engineers to participate with other Federal agencies and international organizations to address problems of national significance to the United States. In fiscal year 1998, program funding includes support to the State Department on international water and environmental issues related to U.S. national security, to support the Administration initiatives on Africa, and to participate in and support U.S. interests on the World Water Council.

Inventory of Dams.—The $500,000 request is for the continued maintenance and publication of the National Dam Inventory. This ongoing maintenance effort is a coordinated effort involving data for the Federal and non-Federal Dam Safety community in coordination with the Interagency Committee of Dam Safety. This inventory is now required for use by the Director of Federal Emergency Management Agency (FEMA) and the National Dam Safety Review Board in the allocation of dam safety program assistance funds to the various States in proportion to the number of dams in the state.

The request is $500,000 for Coordination with Other Water Resource Agencies, including the Department of Agriculture, Soil Conservation Service Department of Interior, and Regional Planning Commissions and Committees and $100,000 each to continue cooperation with Federal and state agencies in the EPA's National Estuary program and with Federal and state agencies, and non-Federal interests in support of the North America Waterfowl Management Plan administered by the U.S. Fish and Wildlife Service.

COLLECTION AND STUDY OF BASIC DATA

The fiscal year 1999 request of $17.350 million for Collection and Study of Basic Data is an increase of $5.078 million from the fiscal year 1998 allocation of $12.272 million for these activities. Following is a comparison of the fiscal year 1998 allocation and the fiscal year 1999 request for activities under this program:

	Fiscal year	
	1998 allocation	1999 request
Flood Plain Management Services	$7,344,000	$9,400,000
Stream Gaging (U.S. Geological Survey)	653,000	900,000
Precipitation Studies (National Weather Service)	326,000	450,000
International Water Studies	277,000	1,900,000
Hydrologic Studies	408,000	600,000
Scientific and Technical Information Centers	106,000	100,000
Coastal Field Data Collection	1,224,00	1,500,000
Transportation Systems	653,000	850,000
Environmental Data Studies	82,000	100,000
Remote Sensing/Geographic Information System Support	343,000	400,000
Automated Information System Support—Tri Service CADD/GIS Technology Center	530,000	650,000
Flood Damage Data	326,000	500,000

The Flood Plain Management Services, International Water Studies, and Coastal Field Data Collection programs respectively are the three largest programs of Collection and Study of Basic Data and are highlighted individually.

Flood Plain Management Services.—The largest portion of the Collection and Study of Basic Data program request is $9.4 million, for the Flood Plain Management Services program, an increase of $2.056 million from the fiscal year 1998 allocation. This program continues to be one of the most important non-project services that the Corps provides for Federally recognized Indian Tribes, states, and local governments. By working together with state, local, and tribal land use decision makers, we are able to alert them to various flood hazards, promote prudent use of the flood plains, and help mitigate future losses to life and property. The active involvement of land use decision makers is the key to sound flood plain management in the United States. Significant flood events over the past several years have raised public awareness and increased the demand for information and assistance for mitigating flood losses. The increased funding will provide flood plain management services to a greater number of state, regional, local governments, Indian Tribes, and other non-Federal public agencies who, in turn, invest their own funds to avoid flood hazards and make good use of the flood plains. This not only mitigates future losses to life and property but also reduces the need for costly Federal flood control works as well as the demand for other Federal, state, and local services such as providing major disaster assistance before, during, and after floods. Under this program, we also participate with the FEMA, the National Weather Service, and local governments in conducting critical pre-disaster hurricane evacuation and preparedness studies for mobilizing local community responsiveness to natural disasters in high hazard coastal areas of states and counties along the Atlantic Ocean and the Gulf of Mexico.

International Water Studies.—The request of $1.9 million for the International Water Studies program is an increase of $1.623 million from the fiscal year 1998 allocation of $277,000. The request will fund Corps of Engineers participation in assisting the U.S. Government meet its obligations under provisions of boundary water treaties and other international agreements between the United States and Canada. A significant portion, $1.4 million, of the fiscal year 1999 request will be used to complete the U.S./Canada cost-shared International Joint Commission study of the Red River Basin. The catastrophic losses and problems caused by the 1997 spring flood in the Red River of the North have increased the need for an international comprehensive water management plan for the Red River Basin. President Clinton specifically discussed the situation with the Canadian Prime Minister on 3 May 1997 and both agreed to take a joint international approach to find long term solutions to the Red River Basin flooding problem.

Coastal Field Data Collection.—The fiscal year 1999 request for this activity is $1.5 million to systematically measure and assemble information required to accomplish the Corps mission in coastal navigation, storm damage reduction, and evaluation of harbor entrance impacts on adjacent shores. Cost-effective mission accomplishment requires long-term data that encompasses winds, waves, currents, water levels, and bottom configuration, sediment characteristics, and geomorphologic data. With 800 navigation projects to maintain and repair (25 percent are more than 50-years old), cost attributable to having no data or poor data could be significant. These data are either unavailable in existing archives, are of uncertain or poor quality, or are too sparsely distributed temporally and/or spatially to have statistical value. The required data are regional in nature and not properly chargeable to authorized projects. Sufficient time is not available prior to or during project preauthorization planning studies to accumulate the years of base-line data necessary for adequate assessment of technical, economic, and environmental feasibility. Acquisition of the information will be accomplished through the concurrent accumulation of complementary items each of which is unique and contributes certain critically needed data. The value of program data and project-related data is maximized through the use of Corps-wide standards, routine updating of available data, utilization of a centralized data library on the world wide web and dissemination over the Internet.

Scientific and Technical Information Centers.—Public Law 99–802, Federal Technology Transfer Act of 1986 requires technology transfer from Federal agencies to the private sector. The fiscal year 1999 request will be utilized to acquire, examine, evaluate, summarize, and disseminate newly published scientific and technical information generated within the Corps and other activities within the U.S. and abroad.

Environmental Data Studies.—The fiscal year 1999 request will be utilized for the general, national or regional environmental data collection and statistical data summaries to include activities related to floods, droughts or climate change and variability and the development of information on the overall environmental program performance of the Corps.

Flood Damage Data Collection.—The fiscal year 1999 budget request includes $500,000 to continue a program to improve the technical accuracy and quality of flood damage data including the relationship of flood characteristics to property damage. This program will facilitate the timely collection of data when a damaging event occurs and the development of a national flood damage database to support local, state and Federal studies and research. Additionally, the program is currently developing generic flood damage and property valuation relationships which could be used Corps-wide. This will result in shorter, less-costly flood damage reduction studies.

Automated Information System Support—Tri-Service CADD/GIS Technology Center.—The fiscal year 1999 request of $650,000 for the Tri-Service CADD/GIS Technology Center represents the Civil Works share of the total $3.05 million required to operate and maintain this important center of expertise. The remainder of the total requirement is provided by the Navy, the Air Force, and from Army military appropriations, in accordance with a 1992 agreement, establishing a Tri-Service center in order to minimize duplication of effort of the three services. All phases of Corps work, including planning, real estate, design, construction, operations, maintenance and readiness benefit from CADD/GIS technologies.

RESEARCH AND DEVELOPMENT

The fiscal year 1999 request for Research and Development (R&D) under General Investigations is $30 million. The Corps must pursue an aggressive R&D effort to take advantage of rapidly developing technologies and techniques that offer the possibility of significant monetary savings and greater reliability, safety, and increased efficiency. The added complexities of downsizing, environmental and social considerations, energy conservation, and the mounting concern with urban problems necessitate, more than ever, increased emphasis on new approaches and methods. The Civil Works R&D program is formulated to directly support the established business programs and strategic directions of the Civil Works Program including Flood and Coastal Storm Damage Prevention, Inland and Coastal Navigation, Environment, Water Supply, Hydropower, Emergency Management, Recreation, and Regulatory. The Civil Works R&D requirements are primarily user driven and the effort is essentially a problem solving process by which the Corps systematically examines new ideas, approaches, and techniques, with a view toward improving the efficiency of Civil Works planning, design, construction, operations and maintenance activities.

Base Research and Development.—A major focus area of the fiscal year 1999 Civil Works Research and Development Program continues to be the Innovative Design and Construction Techniques for Navigation Projects Research Program. This multidisciplinary research will include studies to develop new filling and emptying systems for locks and the use of alternative construction methods such as float-in, lift-in, and underwater construction techniques for navigation projects. The results of these studies will provide the needed guidance for the implementation of innovative concepts that will result in rapid construction and modernization of navigation projects at a much reduced cost and with little or no impact to navigation during construction. This five-year research program will have the potential savings between $1.4 and $1.8 billion for the eleven navigation projects requiring major rehabilitation and modernization in the next 15 to 20 years on the Upper Mississippi River, Ohio River Main Stem, and Illinois Waterway systems. Development of cost-reducing design and construction techniques will permit the construction and rehabilitation of more navigation projects with limited funds in the Inland Waterways Trust Fund and will reduce the potential for major disruptions in inland navigation and decrease operating costs to the Nation's inland navigation industry. Another area of research focus is to develop new or enhanced technologies to extend the life and reduce future operational costs of Corps' Civil Works facilities. These technologies will be produced by developing high-performance materials and systems with major emphasis on reducing rehabilitation and maintenance costs. The results of this research will furnish the Corps with improved materials and technologies to ensure a continued high level of safety and reliability of Civil Works facilities and more economically design and construct required remedial and rehabilitation improvements. Potential partnership with industry and other Federal and state agencies is being actively pursued to leverage limited R&D resources. The recent Return-on-Investment Study indicated that the benefits of this type of high-performance materials research are generally six times greater than the research investment. A third major research focus area is on sediment management. Improved sediment management at Civil Works navigation and flood damage prevention projects offers tremendous potential for cost-reductions. Research in this area will focus on reduced sedimentation, optimizing channel depths and dimensions, reduced dredged mate-

rial management costs and increased navigation system reliability. The Research Program will also focus on developing watershed/ecosystem level management and assessment technologies. This is a high priority field research need in a number of areas, including water management, emergency management, ecosystem restoration and regulatory functions such as cumulative impact assessments.

The Civil Works R&D Program continues to provide practical end products and a high return on investment for the Corps and the taxpayer. The following are some examples of benefits derived from this program in fiscal year 1998:

New computer-aided analysis tools were developed to support bearing pile analysis, automated method for design of steel in tainter gates, and for the layout of concrete arch dams. The field offices have identified annual savings of over $5 million through the reduction of man hours by using this suite of practical computer tools for each of the past 9 years.

Guidance was provided for the design of earth embankments using reinforcement such as geosynthetics. While earth embankments are generally cost-competitive with sheet-pile walls, reinforced earth embankments are less expensive because the side slopes can be steeper; reducing the amount of right of way that must be acquired for construction. This benefit has not been previously realized because design and analysis procedures were inadequate. The improved design tools led to savings of $500,000 on the Sargent Beach Erosion Protection Project in the Galveston District.

Developed shallow-draft coastal port design guidance for entrance channels subjected to waves for small commercial vessels. Experiments with two vessels, an Alaskan fishing boat and a New England lobster boat, were completed and guidance based on these experiments was developed to aid in the design of shallow-draft ports.

New methods and associated three computer programs that greatly improve the efficiency and accuracy of planning, design, and operation of flood damage reduction projects and support field office flood damage reduction studies and reservoir operations were released.

Developed criteria to improve channel depth and width design guidance to optimize deep-draft navigation entrance channel dimensions, taking into account hydrodynamic forces, ship motions, and the projected future international shipping fleet.

Completed field guidance for design habitat corridors and buffer strips to reduce the effects of increasing impacts from commercial and private development on Corps projects.

Completed field guidance for application of the U.S. Coast Guard Radio beacon System on Corps projects to improve navigation safety.

Earthquake Engineering Research.—The fiscal year 1999 funding request for $2.65 million will be used to continue the Earthquake Engineering Research Program. This is a significant Federal R&D program focused on eliminating inadequacies in present seismic safety evaluation knowledge for dams and their appurtenant structures. The Corps may be required to expend more than $10 billion to assure adequate seismic performance of its 580 dams unless advancements continue to be made in earthquake dam safety analysis. Most Corps dams were built before seismic hazards were well understood. More than 200 high hazard dams and 73 intake towers have been identified as subject to severe earthquake shaking; most of which would expose downstream populations to mortal hazard in the event of failure. Expensive remediation actions are being considered for many Corps dams. For example, Arkabutla, Enid, Wappapello, Success, and Tuttle Creek have been identified and the number is rising due to an increased seismic threat in the western U.S. Virtually all 73 intake towers at these projects would be judged inadequate with today's analysis techniques, which translates into about $7 billion in repair costs. Expensive remediation can be avoided or minimized in many cases by reevaluating the structure using improved methods of engineering analysis.

This program offers the potential for vast cost savings in seismic remediation efforts by performing focused research to ensure that safe dams are not remediated and that dams that are unsafe are remediated as quickly, efficiently, and cost effectively as possible. For example, using the tools developed in this research program, the nation will realize: $100 million remediation costs avoidance for each intake tower found to be safe with new methods; a $200 million cost avoidance for each concrete dam and $50 million for each embankment dam found to be safe with more advanced analytical methods. There will also be reduced uncertainty in seismic damage to dams and increased safety for all Corps dams.

Significant accomplishments in fiscal year 1998 included: published guidance on selecting three-dimensional design earthquake ground motions for design of new and remediation of existing water resource facilities; conducted in-flight cone penetration measurements before and after liquefaction in centrifuge soil models (a his-

torical first); conducted preliminary centrifuge experiments to investigate the extent of damage to an embankment dam founded on liquefiable materials; developed simplified analysis procedures for intake towers and outlet works using results of physical experiments conducted in fiscal year 1996 and fiscal year 1997 which revealed new failure mechanisms that had not been included in traditional analysis methods and quantified (another historical first) ductility available in these lightly reinforced concrete structures essential to reservoir control; conducted cooperative full-scale shaking experiment of a concrete dam in China to contribute to field quantification of subbottom absorption and its effect on hydrodynamic pressures and dam-foundation-reservoir response to dynamic loads; and developed material constitutive model to predict the nonlinear structural response caused by cracking and large displacements in concrete materials. These research accomplishments were presented at workshops, conferences, seminars, Corps classes, on the Internet and in technical publications.

Zebra Mussel Control Research Program (ZMRP).—Funds are being requested in the amount of $1.5 million for fiscal year 1999 to continue this extremely high-priority program. The ZMRP is the only Federally authorized program which addresses control of zebra mussels and their effects on public facilities. The development of strategies to apply control methods involve engineering design, operations, and maintenance of facilities and structures. Control strategies are being developed for navigation structures, hydropower and other utilities, vessels and dredges, and water treatment, irrigation and other control structures. The zebra mussel has spread throughout the eastern half of the U.S. and threatens the rivers and water supply systems of the western States. Over $100 million is spent annually to prevent catastrophic shutdown of public facilities. This cost will increase to over one billion dollars annually, as numbers of zebra mussel increase in the Lower Mississippi River and spread to southeastern and western states. Methods of prevention and more effective, inexpensive methods of control must be developed. Existing research areas include the development of antifoulant coatings, filter systems, the use of electrical fields, the development of environmentally compatible biocides, and biological control using microorganisms. The program is transferring this technology through the development of a computer based information system and engineering handbooks for facility managers and operators of locks and dams, water supply and treatment facilities, power plants, and vessels which will identify the vulnerability of their facility and provide control options. Fiscal year 1998 accomplishments included development of specifications for a non-toxic, foul-release coating; new criteria documents for use of thermal spray and paint coatings to control zebra mussels; and joint studies with Russian scientists using thermal spray shock applied underwater to control infestations. The resulting technology will be directly applicable as control measures for a wide variety of impacted facilities and will preclude the costly necessity of plant shutdowns, dewatering and dry docking associated with current control technologies.

Characterization and Restoration of Wetlands Research Program.—Funding in the amount of $1.85 million is requested for this critical program in fiscal year 1999. The Corps has been designated as the lead Federal agency to develop and implement the Hydrogeomorphic (HGM) approach to wetlands functional evaluation. In response to this directive, the research program is focused on the development of both national and regional models to assess the functions and values of our nation's wetlands. This information will be used directly by Corps Civil Works projects in NEPA compliance, in Section 404 regulated activities involving wetlands and in the successful restoration and creation of wetlands. Major research focus areas include regional wetlands functional assessments and delineations; innovative construction techniques, structures and equipment for wetland- and/or region-specific applications; and development of contract-ready design criteria for wetlands restoration. Major accomplishments for fiscal year 1998 included completion of three national and 13 regional wetlands HGM models which will be useful in defining technically appropriate mitigation requirements for wetland actions under 404 permits; publication of the HGM National Action Plan, prioritizing wetlands types for study, distribution of products and training of government users; and completion of contract-ready design criteria for wetlands restoration in selected freshwater and coastal wetlands systems.

Engineering and Environmental Innovations of National Significance.—Section 212 of the Water Resources Development Act of 1996 (WRDA 96) authorizes the Secretary of the Army to undertake investigations of such innovative technologies that may lead to work new under existing authorities or to recommendations for additional authorities. Fiscal year 1999 funding of $600,000 is requested to continue this important provision. The following work initiated in fiscal year 1998 will be completed in fiscal year 1999: cost-effective technologies and protocols for contami-

nated bottom sediments remediation associated with existing Corps navigation projects, as authorized by Section 205 of the WRDA 96; development and demonstration of a state-of-the-art Watershed Management Support System comprised of integrated technology capabilities representing advanced data acquisition and management systems, geo-ecophysical models and decision support technologies; and development of technologies and guidance to support EPA Brownfields economic revitalization initiatives associated with Corps Civil Works projects. During fiscal year 1999, work will also be initiated to develop field guidance on regional sediment management strategies, protocols, and technologies for application to both coastal and Great Lakes environments.

Total Civil Works Research and Development Funding.—The conference report, House Report number 102–177, accompanying the fiscal year 1992 Energy and Water Development Appropriations Act stated the conferees concern with the trend of spreading research related programs throughout several appropriation accounts in the Civil Works budget request, and directed the Corps to work with the committees to address this issue. In response to this interest by the committees the following table has been developed to provide a consolidated display of all Civil Works research and development activities for which there is a request for funding in the fiscal year 1999 budget:

Account and Activity	*Dollar amount*
General investigations:	
Base Research & Development	$23,400,000
Earthquake Engineering	2,650,000
Zebra Mussel Control Research Program	1,500,000
Characterization & Restoration of Wetlands	1,850,000
Engineering & Environmental Innovations (WRDA 96)	600,000
Construction, general: Aquatic Plant Control	2,600,000
Operation and maintenance, general:	
Coastal Inlet Research	4,000,000
Dredging Operations & Environmental Research	8,000,000
Civil Works Management Tools	600,000
General expenses: Coastal Engineering Research Board	324,000
Grand total	45,524,000

ACTIVITIES UNDER THE CONSTRUCTION, GENERAL APPROPRIATION

CONTINUING AUTHORITIES

The fiscal year 1999 request for the six Continuing Authorities funded under Construction, General is $47 million. This is a decrease of $16.4 million from the fiscal year 1998 allocation. The request covers funding of planning, design, and construction to provide solutions to flood control and emergency streambank erosion problems under the Section 205 and Section 14 programs, navigation problems under the Section 107 program, shoreline damage problems under the Section 103 and Section 111 programs, and clearing and snagging problems under the Section 208 program. Under our Continuing Authorities Program, projects are accomplished expeditiously and result in a high level of customer satisfaction. Continuing Authorities projects continue to be an important segment of our total water resources infrastructure investment program.

INLAND WATERWAYS USERS BOARD

Funds are requested for fiscal year 1999 in the amount of $230,000 for the Inland Waterways Users Board activity. Section 302 of the WRDA 86, created this eleven-member advisory board of inland waterway users and shippers to make recommendations to the Secretary of the Army and the Congress regarding construction and rehabilitation priorities and spending levels for commercial waterway improvements. The Board members were initially appointed in late Spring of 1987. The Board has held thirty-one meetings since it was created. The Board's recommendations are a valuable addition to our program and budget development process. We appreciate the contribution of the Board's chairman and its members to the efficient management and modernization of our inland waterways. We believe the Board provides an important advisory function to both the Secretary of the Army and the Congress.

PROJECT MODIFICATIONS FOR IMPROVEMENT OF THE ENVIRONMENT

Funds are requested for fiscal year 1999 in the amount of $5.3 million for Project Modifications for Improvement of the Environment authorized by Section 1135 of

the WRDA 86, as amended. This is a decrease of $14.6 million from the fiscal year 1998 allocation. These funds will be used to determine the need for structural or operational modifications of Corps projects for the purpose of improving the quality of the environment. Section 1135 projects contribute to achievement of national and regional program goals for ecosystem restoration.

BENEFICIAL USES OF DREDGED MATERIAL

The fiscal year 1999 request includes funds in the amount of $200,000 for Beneficial Uses of Dredged Material authorized by Section 204 of WRDA 92. This is a decrease of $1.7 million from the fiscal year 1998 allocation. These funds will be used to carry out projects for the protection, restoration, and creation of aquatic and ecologically related habitats and wetlands in connection with dredging projects. The program provides an attractive alternative solution for the frequently difficult problem of determining where to place dredged material.

AQUATIC ECOSYSTEM RESTORATION

Funds in the amount of $2 million are requested for fiscal year 1999 for Aquatic Ecosystem Restoration authorized by Section 206 of WRDA 96. This is a decrease of $3.6 million from the fiscal year 1998 allocation. These funds will be used to carry out projects for aquatic ecosystem restoration and protection to improve the quality of the environment.

AQUATIC PLANT CONTROL PROGRAM

The fiscal year 1999 request includes funds in the amount of $2 million for the Aquatic Plant Control Program authorized by Section 104 of the Rivers and Harbors Act of 1958, as amended. This is a decrease of $2.7 million from the fiscal year 1998 allocation. These funds will be used to continue research efforts for aquatic plant control technologies to support operation and maintenance of Corps Water Resources projects. Primary research efforts are focused on the non-indigenous submersed species, hydrilla and Eurasian watermilfoil, with emphasis on development of biological control agents.

DREDGED MATERIAL DISPOSAL FACILITIES PROGRAM

Funds in the amount of $2 million are requested for fiscal year 1999 to initiate the Dredged Material Disposal Facilities Program. Section 101 of WRDA 86, as amended by Section 201 of WRDA 96, established consistent cost sharing for construction of dredged material disposal facilities associated with Federal navigation projects, including disposal facilities for Federal project maintenance. Funds requested for fiscal year 1999 will be used for the Federal share of construction of applicable dredged material disposal facilities required for maintenance of existing projects, reimbursement of non-Federal sponsors for dredged material disposal facilities constructed by them in advance of Federal appropriations for such purpose, or fee payments to private entities for the use of privately owned dredged material disposal facilities if such a facility is the least cost alternative to dispose of dredged material. All costs for dredged material disposal facilities associated with project maintenance will be reimbursed from the Harbor Maintenance Trust Fund.

FLOOD HAZARD MITIGATION AND RIVERINE ECOSYSTEM RESTORATION

The fiscal year 1999 request includes funds in the amount of $25 million for the Challenge 21 initiative, the Corps' Flood hazard Mitigation and Riverine Ecosystem Restoration Program. As proposed for inclusion in this year's Water Resources Development Act, this initiative expands the use of non-structural flood hazards mitigation options to achieve the dual purposes of flood damage reduction and restoration of the functions and values of riverine ecosystems. Projects might include the relocation of threatened homes or businesses, conservation or restoration of wetlands and natural floodwater storage areas and planning for responses and solutions to potential future floods. Although focused on non-structural alternatives to flood protection, a Challenge 21 project could, where appropriate, include structural pieces. Challenge 21 builds on existing programs and initiatives, uses a watershed approach and initiates and expands partnerships with other Federal agencies (particularly FEMA, NRCS and USFWS) and non-Federal public entities. Candidate projects might be areas where frequent or severe flooding has occurred, emergency assistance has been necessary, flood hazards have increased due to changes in hydrologic and hydraulic regimes, development is encroaching on and altering flood plains and important floodplain functions and values need maintenance or restora-

tion. Cost sharing will be 50 percent Federal and 50 percent non-Federal for studies and 65 percent Federal and 35 percent non-Federal for design and implementation.

EMPLOYEES' COMPENSATION

The fiscal year 1999 request includes $18.3 million for transfer to the Department of Labor to repay the Employees' Compensation Fund for costs charged during the period July 1, 1996 through June 30, 1997 and for investigation of fraudulent claims for workers compensation benefits. This is an increase of $241,000 over the fiscal year 1998 allocation. The transfer to the Department of Labor is for payment of benefits and claims due to injury or death of persons under the jurisdiction of the Corps of Engineers civil functions.

ACTIVITIES UNDER THE OPERATION AND MAINTENANCE, GENERAL APPROPRIATION

COASTAL INLETS RESEARCH PROGRAM

The fiscal year 1999 budget includes $4 million to fund the Coastal Inlet Research Program, a short-term focused program to increase Corps capabilities to cost-effectively design and maintain the over 100 inlet projects which comprise the bulk of coastal operations and maintenance (O&M) expenditures. Because of their complex nature, the behavior of inlets is poorly understood. So little is known about inlet behavior and response that it is possible that the Corps is spending much more of its O&M budget than necessary to maintain inlet projects. The Coastal Inlets Research Program is evaluating functional aspects of inlets such as their short- and long-term behavior and their response to waves, tides, currents, and man-made changes, given their geologic make-up. As inlet behavior becomes better understood, sophisticated tools for management of inlets for navigation projects, such as models and empirical relationships, will become available from the research program.

With our fiscal year 1998 allocations we plan to: (a) complete development of empirical relationships to predict scour depths and related structural stability due to outgoing tides around coastal structures; (b) develop a preliminary sediment budget methodology, an essential tool for effective sand management at and adjacent to inlets; (c) complete study of inner bank erosion mechanisms which will assist in revised designs to increase project stability and reduce sedimentation into the navigation channels from adjacent banklines; and (d) complete study of shoal removal methodologies aimed at minimizing impacts on downstream shorelines and navigation channels.

DREDGING OPERATIONS AND ENVIRONMENTAL RESEARCH PROGRAM (DOER)

An allocation of $8 million is requested in fiscal year 1999 to continue this eight-year program. The objective of DOER is to balance environmental and operational requirements while economically maintaining a viable navigation system. Research is required to address operations and environmental demands in six major areas: contaminated sediment characterization and management; instrumentation for monitoring and site management; near-shore placement of dredged materials at coasts, estuaries and rivers; environmental windows for dredging operations; innovative equipment and technologies demonstrations; and, environmental risk management for dredging and disposal activities. Benefits will include application of environmental windows, cost-effective identification and management of contaminated sediments, greater flexibility for dredging in sensitive ecological areas, and expanded options for beneficial uses of dredged materials.

By the end of fiscal year 1998, we will have (a) produced cost-effective rapid screening methods for high profile toxic substances (e.g., dioxin) for wide application to Corps projects, (b) developed a risk characterization document for application to dredging and dredged material disposal impact assessment, (c) formulated the technical and managerial requirements for an automated dredging and dredged-material disposal performance system for pipeline and hopper dredges, and (d) began a cooperative assessment of seasonal dredging restrictions, a major issue for many Corps districts, with the evaluation of the effects of turbidity and entrainment effects at dredging and disposal sites on marine organisms. In addition, DOER identified existing confined dredged-material disposal facilities containing marginally contaminated sediments and applied an assessment framework for removal for beneficial use and increased capacity purposes.

DREDGING OPERATIONS TECHNICAL SUPPORT (DOTS) PROGRAM

DOTS is a continuing program with a fiscal year 1999 budget request of $2 million to provide technical assistance and technology transfer of general use at all dredging projects. The on-going DOTS program, formed in 1978, supplies direct en-

vironmental and engineering technical support to all Corps elements in support of maintenance dredging projects; training of Corps staff on the latest environmental and engineering techniques associated with dredging and dredged material management; short-term work efforts to address generic Corps-wide technical dredging and dredged material disposal problems; and technology transfer of new and emerging techniques in assessment and management of dredged material for determining compliance with environmental protection statutes.

The expertise obtained through the DOTS program is not available through any other source. As technical personnel at the district level continue to be lost to private industry, the DOTS program is called upon more frequently to accomplish technical support for maintenance dredging and disposal projects. The state-of-the-science for testing and evaluating dredged material is advancing more quickly than our ability to interpret the data for decision-making. The DOTS program supports scientists in a centralized location for mobilization at Corps projects. Highly contaminated sediments continue to be found at Corps projects such as dioxin at the Port of New York/New Jersey. The Corps must maintain the technical capability through the DOTS program to respond to such issues.

Ongoing dredged material management tasks include assistance in using implementation manuals for the Clean Water Act and the Marine Protection, Research, and Sanctuaries Act. Guidance is being developed for the application of techniques and methodologies for the management of contaminated dredged material to include risk management, equipment selection, confined disposal facility management, and quality assurance/quality control guidance. As computer information sciences advance, the DOTS program is keeping pace by integrating all dredging information, research results, dredging related databases, and other dredging information computer systems into a central repository accessible through the Internet.

MONITORING OF COASTAL NAVIGATION PROJECTS

The fiscal year 1999 request of $2 million for Monitoring of Navigation Projects will provide for the continuing program of monitoring critical engineering parameters of selected coastal and inland navigation projects to determine and analyze project-induced changes in topography, currents, tidal stages, and other physical processes phenomena. The data collected and analyzed are used to evaluate project performance in relation to design, operation, and maintenance expectations. These evaluations are then used to develop improved designs for navigation projects or desirable modifications in their operation or maintenance modes. Studies are performed at the local level to evaluate project performance and physical processes response in relation to the particular needs of each project. Additionally, the information is collected and analyzed from a Corps-wide perspective to document successes and the sometimes costly lessons learned and to transfer the information into guidance for field and management staff. The information developed by this program is made available to other federal, state, and local agencies concerned with planning and regulating the conservation, development, and use of coastal and inland waterway resources.

CULTURAL RESOURCES (NAGPRA/CURATION)

The Native American Graves Protection and Repatriation Act of 1990 addresses the recovery, treatment, and repatriation of Native American and Native Hawaiian cultural items by Federal agencies and museums. Cultural items are defined as human remains and associated and unassociated items having to do with funerals and/or burials, sacred objects, and objects of cultural patrimony. The Department of the Interior has developed regulations for compliance with the provisions of this Act and the Corps is requesting funds because of the immediate impacts and reporting requirements the regulations impose. In fiscal year 1998, Corps field offices are continuing an inventory of those cultural items which were started in prior years. Information will be made available to interested individuals and groups through notices in the Federal Register. Corps field offices will engage in formal consultation with recognized tribes to repatriate cultural objects for which there are claims consistent with the provisions of the Act and implementing regulations. In addition, the Corps has established the St. Louis District as a center of expertise (MCX) for curation because of the large volume of cultural resource materials collected from Corps flood control projects. The MCX is also continuing a partnership effort with the Department of Defense to identify suitable facilities to house Corps and DOD collections according to the standards established by the Department of the Interior. The fiscal year 1999 budget request includes $2 million to continue this program.

NATIONAL DAM SAFETY PROGRAM

The National Dam Safety Program Act (Public Law 92–367 as amended) designates FEMA as lead agency in all efforts to enhance national dam safety. The National Dam Safety Program is coordinated through the Interagency Committee of Dam Safety (ICODS). The Chief, Engineering Division, Directorate of Civil Works, represents the Department of Defense as a member of ICODS. The Corps and FEMA signed a Memorandum of Understanding for the purpose of establishing responsibilities for management and administration assistance in the implementation of the National Dam Safety Program. FEMA acting through ICODS will provide support in development of Federal guidelines for dam safety, promotion of public awareness programs, publications, training materials, the National Performance of Dams Program, and workshops. The fiscal year 1999 budget request includes $40,000 to continue this participation.

NATIONAL RECREATION MANAGEMENT SUPPORT (NRMS)—(FORMERLY NATURAL RESOURCES TECHNICAL SUPPORT (NRTS))

Changed from "Natural Resources Technical Support (NRTS)" to reflect more clearly the scope of conducted activities, NRMS is a continuing program to provide technical assistance and support to the Corps recreation business function which generates about $34 million dollars in Special Recreation Use Fees, annually. Visitors spend over $12 billion annually to engage in recreation at Corps projects. Over 600,000 full and part time jobs are associated with this spending. Our fiscal year 1999 allocation request for this program is $1.85 million.

NRMS supports the conduct of focused management studies and reports on recreation related issues. It provides assistance in the transfer and application of technology to solve immediate technical problems of national scope, including the establishment of an Internet Website in fiscal year 1999 to facilitate technology transfer for recreation issues. We have contracted for the National Recreation Reservation Service, in coordination with the USDA Forest Service and the Department of Interior, to provide toll-free telephone and Internet reservation services for our public recreation facilities and programs nationwide. We expect this service to be operational in early fiscal year 1999.

WATER OPERATIONS TECHNICAL SUPPORT (WOTS) PROGRAM

The fiscal year 1999 budget request includes $850,000 for the WOTS Program. This will provide effective environmental and water quality engineering technology to address a wide range of water resource management problems that can be applied throughout the Corps system of over 540 reservoirs, hundreds of miles of ancillary waterway projects and thousands of miles of rivers impacted by the operation of Corps projects. Technology is provided to address problems occurring from the presence of non-indigenous species, tailwater fisheries at pump-back hydropower projects, water quality impacts of shoreline erosion and reservoir sedimentation, and dozens of other project operations related environmental and water quality issues.

PROTECTION OF NAVIGATION

The fiscal year 1999 budget request for Protection of Navigation totals $6.6 million and includes funding for the following five continuing programs under this category:

(1) $1,075,000 for the Dredging Data and Lock Performance Monitoring System which provides data for efficient management of navigation projects consistent with federal laws regarding execution of our dredging program. The program also includes a continuing evaluation of local conditions and performance measures throughout the navigation system to facilitate traffic control and critical management decisions.

(2) $50,000 for work pursuant to the authority provided in Section 3 of the 1945 River and Harbor Act to protect, clear and straighten channels in navigable waters for small projects not specifically authorized by Congress.

(3) $500,000 for removal of sunken vessels and other obstructions.

(4) $4,400,000 for the collection of waterborne commerce statistics pertaining to rivers, harbors, and waterways, and publication of such data.

(5) $575,000 for collection of Harbor Maintenance Trust Fund Fees.

NATIONAL EMERGENCY PREPAREDNESS PROGRAM (NEPP)

Preparedness for response to national emergencies, including catastrophic disasters, is a fundamental Governmental obligation. From support to national mobilization during World War II through response to events such as Hurricane Andrew,

the Northridge Earthquake and the 1993 Midwest Floods, the importance of the Corps role associated with this responsibility has been amply demonstrated.

The NEPP is the civil component of the Corps National Security Emergency Program and a vital element of Corps readiness. The program provides the capability to rapidly and effectively respond to a broad spectrum of catastrophic technological and natural disasters, having national implications, as well as the capability to satisfy Corps requirements associated with anti-terrorism initiatives. The Flood Control and Coastal Emergencies (FC&CE) (another Civil Works appropriation account) and NEPP programs are complementary. However, the NEPP supports planning and preparation for scenario specific catastrophic disasters (natural and technological) of national proportions. Additionally, NEPP planning goes beyond disaster response to include planning for the Continuity of Operations/Government, Emergency Water Program, anti-terrorism programs directed at Corps projects and other national disaster preparedness and recovery activities. The high level and broad spectrum of preparation associated with the NEPP provides synergistic benefits to FC&CE funded efforts.

A substantial portion of the NEPP funding pays for the salaries of the emergency planners who lead the catastrophic and anti-terrorism planning and functional personnel (e.g. engineering, contracting, etc.) who provide supporting data and plans. The planners also coordinate and conduct exercises with Federal, state and local governments and, during emergencies, serve as part of the emergency response teams which coordinate the Corps response. These personnel and their activities have enabled the Corps to respond effectively to disasters such as Hurricane Andrew and the Northridge Earthquake. Absent the readiness funding that supports these activities, the Corps response to these and other similar events would not have been as capable nor as timely. The $6 million requested in fiscal year 1999 for the NEPP will enable us to maintain our current, minimal, levels of preparedness while continuing to develop catastrophic disaster preparedness and anti-terrorism related activities.

EARTHQUAKE HAZARDS REDUCTION PROGRAM FOR BUILDINGS AND LIFELINES

Public Law 101–614 requires the Corps, among other Federal Agencies, to establish and initiate for buildings and lifelines a systematic approach to reducing loss of life, injuries, and economic costs resulting from earthquakes in the United States. Lifelines are defined as public works and utility systems. The Corps main lifeline functions include waterways transportation, hydroelectric power, and water supply. The Earthquake Hazards Reduction Program for Buildings And Lifelines provides for the single source management of funds for: (a) preparation of guidance and training for district personnel to conduct seismic evaluations, (b) performance of seismic evaluations and development of mitigation cost estimates, (c) development of the required inventory data for Corps owned or leased buildings, (d) assistance to the districts participating in the program, and (e) assuring uniformity in the results.

Executive Order 12941, Seismic Safety of Existing Federal Buildings directs all federal departments and agencies to develop by December 1, 1998, an inventory of their owned and leased buildings and an estimate of the cost of mitigating unacceptable seismic risks in their buildings. The completion of the inventory data and the mitigation cost estimates are scheduled to be completed in fiscal year 1999. To support the follow-up seismic mitigation program for buildings and lifelines, this program has been extended to fiscal year 2002 at minimal funding. The fiscal year 1999 budget request for this program is $2 million.

MANAGEMENT TOOLS FOR CIVIL WORKS RESEARCH PROGRAM

Federal deficit reduction measures mandating budgetary constraints are likely to continue well into the future. Because the funding requests for operating and maintaining Corps projects significantly outstrip the reasonably anticipated resources, an objective and consistent prioritization procedure is essential. This prioritization requirement is complicated by the diversity and size of the O&M projects. The performance-based budget requirement is also an impetus for this research program. This research will develop a performance-based return-on-investment (ROI) model and procedure for prioritization and ranking of the maintenance activities of the annual Civil Works O&M budget. The need for a performance-based procedure has been validated by several recent initiatives including: the Government Performance and Results Act (1993), Corps Performance Measurement Guidebook (1995), Corps full service Civil Works vision and focus, and the Corps Operation and Maintenance Cost Savings Initiative (1997). The product of this research will provide an objective and consistent procedure for both O&M budget prioritization and other issues in-

cluding the impact of O&M funding shortfalls on project effectiveness and the impact of deferred maintenance on operation expenditures. Funding in the amount of $600,000 is requested to initiate this critically needed research.

MISSISSIPPI RIVER BASIN MAINSTEM MODEL DEVELOPMENT (MRM)

The Great Flood of 1993 demonstrated the need for the Corps to develop an integrated model to operate and manage flood control projects under a wide spread storm system covering a geographic region as large as the Upper Mississippi and Lower Missouri River basins. Such a model will enable the Corps to compute the real-time flow and stage data along various river reaches during flood events, assess the extent of impacts due to levee failures, and to facilitate communications between Corps offices, other agencies and with Corps customers.

Sub-models for the individual river reaches in St. Paul, Rock Island, St. Louis, Omaha, and Kansas City Districts and lower Mississippi River from Cairo to the Gulf outlet have now been developed. In fiscal year 1999 we will (a) incorporate the digital terrain elevation data (DEM) acquired in 1998 in the MRM, (b) update model cross-sectional data, recalibrate and validate MRM, facilitate interface of MRM output with DEM in generating innundation mapping, and (d) provide coordination.

Fiscal year 1999 is the final year for the MRM program as we complete the integrated systemic model, thoroughly test in real-time mode, and recalibrate and validate with up to date terrain data. The fiscal year 1999 budget request to complete this program is $2 million.

PERFORMANCE BASED BUDGETING SUPPORT PROGRAM (PBBSP)

The Government Performance and Results Act (GPRA) requires that agencies implement performance based budgeting for their programs such as the Civil Works Operation and Maintenance, General program. The PBBSP addresses this requirement by seeking new methods for linking performance to annual budget requests and for analyzing the potential economic impact of budget requests on customers who use Corps projects. The fiscal year 1999 request to fund this work is $515,000.

RELIABILITY MODELS PROGRAM FOR MAJOR REHABILITATION

The budget request also includes $675,000 for the Waterways Experiment Station to support districts with a Reliability Models Program for Major Rehabilitation. These models are used by the districts to prepare reports for projects submitted under the Major Rehabilitation Program. The Reliability Models Program is varied yearly to respond directly to field needs for the fiscal year and to assist in the preparation of reliability analyses for projects as requested by the districts. Some examples include reliability models needed for determining sliding stability parameters for difficult foundation conditions, conducting stress analyses of hydropower turbine blades and shafts, and evaluation of structural integrity based on recent flood data. Virtually every major rehabilitation report submitted since fiscal year 1993 has utilized this program to prepare the reliability analyses required for the report. This is a continuing program with an estimated average annual cost of $675,000.

ACTIVITIES UNDER THE REGULATORY PROGRAM APPROPRIATION

The fiscal year 1999 Regulatory Program budget request is $117 million. This is an $11 million increase over the fiscal year 1998 appropriated amount.

This Spring, we will publish, for public comment, our new nationwide permits under the Regulatory Program. These are replacement permits for nationwide permit 26 which expires at the end of this year. In December 1996, the Corps revised nationwide permit 26 to reduce the limits of filling in isolated waters and above headwaters from 10 acres to 3 acres. Our experience with the 10-acre limit warranted the reduction to 3 acres to lessen impacts on the aquatic environment. The replacement permits will authorize specific fill activities.

We are committed to insuring that the Corps' nationwide permits support the President's Wetlands Plan by assuring environmental protection while maintaining or enhancing our responsiveness to the regulated public.

In fiscal year 1997, the Corps processed more than 85,000 documented permit actions, an increase of 34,000 from five years earlier. Of these 85,000 actions, 94 percent were approved under nationwide or regional general permits in less than sixty days. This was the same percentage as in fiscal year 1996 and the first time this decade that we did not improve from the year before. We are beginning to experience a leveling off in performance although the fiscal year 1998 appropriation of $106 million, after three years at $101 million, is helping to restore some of the personnel vacancies in the district offices. Our fiscal year 1999 budget request includes

$3 million to cover personnel cost increases associated with this labor-intensive program. As permit numbers increase each year, we are finding it difficult to maintain the performance standards we believe the public expects and deserves.

We again propose the establishment of a full administrative appeals program. We will implement a program for review of permit denials by the end of this fiscal year. This will allow applicants to challenge denials without the need for time-consuming and costly litigation. In fiscal year 1999, with the requested funding, we would expand the program to include review of appeals of Corps jurisdiction determinations. We estimate there will be about 100 denial appeals and 5,000 jurisdiction appeals per year. The total cost for the full administrative appeals program is about $5 million per year.

The budget request includes about $3 million to develop watershed management plans and other cooperative efforts with state and local governments. Wherever state and local authorities can increase their regulatory role for aquatic resources, Corps workload can be reduced. We have been particularly successful with programmatic general permits which transfer to the states permitting responsibilities in certain areas.

We plan to implement the Wetlands Delineator Certification Program in fiscal year 1999. This program will create a nationwide pool of certified non-Federal wetlands delineation experts. With start-up costs of about $500,000, the program will yield future cost savings because of reduced delineation workload for the Corps.

Our regulations on excavation activities are currently the subject of judicial review. In January 1997, the Federal District Court held that the Corps "Tulloch Rule" was invalid and ordered the Corps to not apply the rule where regulation was solely based on incidental fallback of excavated material. The Corps continues to regulate most excavation activities after a stay of the order was granted by the Federal Circuit Court last June. The issue is on appeal and we expect a final decision this Spring. In the 1980's, there was an increase in actions to fill or clear wetlands by methods that were not clearly regulated by our existing regulations. Since issuing the Tulloch Rule in 1993, the Corps has been consistently regulating these activities nationwide. These activities include all ditching, mining in waters of the U.S., and most land clearing.

Corps jurisdiction over isolated waters has been challenged by the Fourth Circuit of the U.S. Court of Appeals decision on the Interstate General Corporation, or "Wilson," case. On December 23, 1997, the Court ruled that the Corps exceeded its authority when it extended its jurisdiction under the Clean Water Act to isolated waters, including isolated wetlands, without documenting a connection to interstate commerce (e.g., actual use by migratory birds). The Corps and the Justice Department are reviewing the Government's options regarding this decision.

We have proposed language for inclusion in this year's Water Resources Development Act which would raise permit fees for commercial projects. This would help recover some of the costs associated with the review of more complex projects. Under the revised fee system, which would be based on the complexity of a project, we expect about $14 million to be collected during the first full year of operation.

ACTIVITIES UNDER THE FLOOD CONTROL AND COASTAL EMERGENCIES APPROPRIATION

The Corps continues to provide leadership in response to natural disasters and, therefore, must maintain a preparedness program that meets the needs of the Nation. Although no new funds are requested for fiscal year 1999, carryover of fiscal year 1997 Supplemental funds, contingent on the number of disasters to be funded in fiscal year 1998, will provide for the basic requirements of the preparedness program.

The Corps responsibility for emergency response requires that its engineering, construction, and emergency operations capabilities are maintained. Therefore, the level of funding must be sufficient to support an organization capable of responding to both natural and man-made disasters: hurricanes, floods, earthquakes, and other disasters, such as contaminated public water supplies and terrorist acts. The anticipated carryover of fiscal year 1997 Supplemental funds for use in fiscal year 1999 will support baseline preparedness and operations in response to life threatening situations and protection and restoration of critical infrastructure necessary for public health and safety. This basic level of funding for fiscal year 1999 may require supplementation in the event of a major disaster.

Activities in this program include: the review and updating of response plans to maintain readiness; training to ensure our capability to respond under adverse circumstances; procurement and pre-positioning of critical equipment and supplies such as sandbags and pumps, which are not likely to be available during initial stages of a response; periodic exercises to test and evaluate plans, personnel and

adequacy of training; inspection of non-federal flood control projects to ensure their viability to provide flood protection; laboratory support for field operations; and the overall management of the response program to ensure workable, coordinated efforts are undertaken in a timely manner.

In addition, work continues on comprehensive interagency response planning activities. These activities support the FEMA's Federal Response Plan for providing engineering and construction support following major disasters, such as recurring floods in the Midwest and Western states, major hurricanes, such as Andrew and Fran, and the Northridge Earthquake. In support of FEMA's disaster response and recovery activities, our mission assignments have included: emergency debris removal; temporary housing; emergency water; restoration of infrastructure; temporary power; construction management; and other support which uses Corps engineering, contracting, and construction expertise.

ACTIVITIES UNDER THE FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM (FUSRAP)

Since receiving responsibility for FUSRAP administration and execution with enactment of the Energy and Water Development Appropriations Act, 1998, last October, the Corps has moved rapidly, first, to insure that no slippage would occur at any site as result of the transition from Department of Energy, and second to develop schedules and funding requirements by site to maximize potential savings and accelerate completion schedules. The Corps has concluded that the 2002 target completion date established in the Department of Energy's (DOE's) accelerated cleanup plan was not realistic. It did not clean-up the Niagara Falls Storage Site; it greatly underestimated the quantity of hazardous wastes at the Lucky site; and it did not recognize the potential for ground water contamination.

The Corps fiscal year 1999 FUSRAP request will permit the Corps to complete three projects and possibly a fourth one. It also fully funds the requirements at those projects which are at the site characterization/site investigation stage prior to the development of a cleanup plan and provides sufficient funding to continue the remediation efforts at all other sites.

ACTIVITIES UNDER THE GENERAL EXPENSES APPROPRIATION

The General Expenses (GE) appropriation provides for the executive direction and management of the overall Civil Works program through the Office of the Chief of Engineers and the regional Major Subordinate Commands. The primary purpose of the GE account is to provide definitive policy guidance, program management, regional and national interface, and quality assurance and oversight for all Corps activities toward execution of a comprehensive Civil Works program. The fiscal year 1999 budget request for the GE account is $148 million, consistent with the fiscal year 1998 funded level. Within this amount the Corps will be absorbing inflation and increases in personnel compensation and agency benefits contributions.

The GE account also funds activities providing support to the Headquarters to include the Coastal Engineering Research Board, which reviews and recommends coastal engineering research and development project priorities; the Humphreys Engineering Center Support Activity, which provides administrative support to the Corps Headquarters as well as other Corps tenants at the Humphreys Engineer Center at Fort Belvoir; the Water Resources Support Center, also at Fort Belvoir, which provides a variety of water management functions such as conducting and managing national studies, special studies in support of the Civil Works mission, data collection and distribution, and technical support to other Corps offices on water resource management matters; and the U.S. Army Corps of Engineers Finance Center which was established in 1996 in Memphis, TN, to begin the Corps-wide centralization of finance and accounting activities. These activities represent 139 FTE of the total GE staffing of 1,180 FTE.

The fiscal year 1999 General Expenses budget of $148 million consists of approximately 71 percent labor, 22 percent fixed costs, such as rent, utilities, communications, information management, and other contractual services, and 7 percent discretionary costs, for travel, training, supplies and materials, furniture, and equipment. The budget reflects absorption of inflation of 2.6 percent in nonlabor costs of about $1.1 million, and 4.8 percent in personnel costs from pay increases and agency contributions to retirement funds, for another $4.9 million. These costs will be offset through downsizing and restructuring efficiencies. In addition, in the fiscal year 1998 Energy and Water Development Appropriations Act, responsibility for FUSRAP was transferred from the DOE to the Corps. The costs associated with executive direction and management of this program, estimated at about $900,000, will also be absorbed within the fiscal year 1999 budget request.

The Corps has continued its efforts to streamline executive direction and management functions in compliance with the Administration's National Performance Review and Reinventing Government Initiatives. In January 1997, the Chief of Engineers and the Assistant Secretary of the Army (Civil Works) submitted a Division Office Restructuring Plan, in compliance with Congressional direction (Energy and Water Development Appropriations Act, 1997), to reduce the number of division offices from eleven to eight, with each division responsible for no fewer than four districts. The Secretary of the Army approved the plan in February 1997, and implementation began on 1 April 1997 as scheduled.

The fiscal year 1999 budget supports the new 8 division office structure at a reduced staffing level of 588 FTE, down 54 FTE, or −8.4 percent, from the staffing level at implementation in fiscal year 1997. The Division Office Restructuring Plan put into place a typical division office structure with a base staffing level of 73 FTE, adjusted for significant variances in volume and mix of workload and geographical dispersion. The exception is the Pacific Ocean Division (POD), previously an operating division, which under this plan would become a full-fledged division consistent with the roles and missions of the remaining 7 continental United States (CONUS) divisions. However, POD has a predominantly military mission workload and a comparatively small civil workload, creating the reverse staffing relationship as the CONUS divisions. The CONUS divisions, under this restructuring plan, are on a downward staffing slope to achieve the average of 73 FTE per division by fiscal year 2002, for a total of 506 FTE, plus 16 for POD.

Consistent with streamlining initiatives across the Corps, the Headquarters and its support activities have also been under intensive review to find opportunities for consolidations and efficiency savings. One step toward achieving these savings was the Chief of Engineer's decision to disestablish the Engineer Strategic Studies Center at Fort Belvoir, Virginia, in late 1997 and merge that staff's strategic planning expertise into the Headquarters to eliminate duplication of effort and realize efficiencies. A similar review is being made of the Water Resources Support Center as well as other support activities.

The five-year staffing plan for the Headquarters and support activities also reflects a downward slope equivalent to the divisions in support of the Administration's deficit reduction initiatives and federal downsizing goals. The Headquarters and supporting field activities staffing level by the year 2002 is projected at 525, down from 672 FTE in fiscal year 1996. Across all GE-funded activities, this represents a 41 percent reduction in staffing (from 1,760 to 1,050 FTE) since 1989, when various streamlining initiatives began, and 23 percent from the fiscal year 1996 base year prior to reducing the number of division offices and downsizing Headquarters activities. These percentages far exceed the Administration's Federal Workforce Reductions Act 12 percent goal.

Meeting the Headquarters' fiscal year 2002 downsizing goals without impacting products and services presents a real challenge, but one the Chief of Engineers is committed to achieve. At these projected staffing levels, the total General Expenses "headquarters activities" will be performed by 4 percent of the total Civil Works FTE and approximately 4 percent of the total Civil Works budget. This staffing level is the minimum required to provide oversight of the execution the Civil Works program throughout the planning, programming, budgeting, and execution phases.

Through these restructuring, collocation, and downsizing initiatives, we have been able to absorb cost increases of inflation and increased pay and benefits costs, as well as assume responsibility for managing the FUSRAP program. Pre-restructuring budget estimates with staffing reductions constrained to that required by FWRA only would have required $161 million to support 1,322 FTE in lieu of the 1,219 FTE budgeted, or $13 million more than the budget request of $148 million. Fiscal year 1999 budget requirements would have been $163 million after FWRA reductions, reflecting a cost avoidance of $15 million. Savings estimates, or cost avoidance, through completion of the five-year plan in fiscal year 2002 reflect cumulative reductions of $113 million, and an annual cost avoidance in excess of $30 million per year thereafter.

ACTIVITIES UNDER THE REVOLVING FUND

The fiscal year 1999 Plant Replacement and Improvement Program (PRIP) obligations under the Revolving fund for items designed to improve productivity, increase efficiency, modernize, and improve the Corps equipment and operational capabilities, and increase safety are estimated at $100 million. This figure includes estimated fiscal year 1999 expenditures of $53.2 million for 12 new major items: $15 million to repower the Dredge POTTER for the St. Louis District; $3.5 million for dredge ladder extensions for the HURLEY and JADWIN in the Memphis and Vicks-

burg Districts, respectively; $3.9 million to replace a fuel oil barge, a tender and the service base trestle in the St. Louis District; $3.4 million to replace a tugboat and rehabilitate the Ft. Mifflin pier in the Philadelphia District; $2.4 million to replace a surveyboat in the New York District; $5 million for a dock front rehabilitation for the Pittsburgh District; $3 million to replace the hydropower communications system in the Mobile District; $100,000 for a hyperflume research facility at the Waterways Experiment Station; and $16.9 million for costs associated with relocating Corps headquarters to the General Accounting Office (GAO) headquarters facility. Also included are expenditure estimates of $28.3 million for the acquisition of continuing major items and $18.5 million for the design, rehabilitation, construction, acquisition, additions and improvements of miscellaneous items of plant and equipment with unit costs less than $700,000.

Included above are two items which were not included in the justification sheets for the Revolving Fund submitted in support of the President's budget on 2 February 1998, specifically, the dredge ladder extensions for the HURLEY and JADWIN in the Memphis and Vicksburg Districts, respectively. Through an administrative oversight these items were omitted and two items which were not part of the President's approved new start program included instead, specifically, the single point mooring system for the Philadelphia District and the replacement crane barge for the Mobile District. The dredge ladder extensions are needed to maintain the recently deepened 45 foot navigation channel on the Mississippi River between Baton Rouge and New Orleans at the authorized channel width. The single point mooring system and the replacement crane barge will be considered for possible funding in future years. Also, in light of our Headquarters relocation planning I have increased our estimated expenditures in the Plant Replacement and Improvement Program by $10 million, from the amount in the justification sheets, to $100 million.

AUTOMATION

The Corps has again included an estimate of automation costs. Costs are displayed under three categories, hardware acquisition, software or automated systems, and automation personnel. Total hardware acquisition costs for fiscal year 1999 are estimated at $66.7 million. $14.3 million of these costs are included in the fiscal year 1999 Revolving Fund PRIP request. The remainder will be paid for using the General Expenses appropriation funds, district or laboratory overhead accounts, or funds provided for specific Civil Works studies, projects or programs. Total automated information systems costs for fiscal year 1999 are estimated at $25.8 million. Total estimated automation personnel costs for fiscal year 1999 are $31.2 million. The Corps continues to improve the tools it uses to develop these estimates and to measure actual expenditures. This will increase the accuracy of the data in future submissions and facilitate Corps management of automation resources.

HEADQUARTERS RELOCATION PLANNING

Corps proposes relocating its Headquarters to the 3rd floor of the GAO Headquarters building at 441 G St. NW, four blocks to the northwest of the Pulaski Building.

By doing so, the Corps would leave commercially leased space to make more efficient use of government owned space. The only alternative to relocating is a further extension on the Pulaski lease or a new long term one, since the present lease was intended only to fill the gap until the General Services Administration could relocate the Corps to a new facility at the Southeast Federal Center (SEFC). In addition to the advantages to the government of the Corps being in government owned space, the Corps will be saving lease costs due to the favorable terms which the GAO has offered to the Corps. Also the close proximity of the GAO headquarters to the Pulaski Building will minimize impact of the relocation on Corps employees and our headquarters will not be disrupted by reconfiguration/modernization of space which would be required if the Corps were to remain in the Pulaski. The GAO has requested that the Corps utilize Revolving Fund resources to pay advance rent in order to support renovation of the 6th floor for their use. This advance rent would be credited against rent owed by the Corps during the first three to five years of the Corps lease and would enable GAO to move remaining employees in renovated space sooner. The Corps has initiated a relocation planning process intended to result in a physical relocation to the new headquarters in August 2000, and is working with the GAO to finalize the terms of the lease agreement.

SUPPORT FOR OTHERS

In fiscal year 1999, the Corps will provide reimbursable engineering, environmental remediation, construction management, emergency response and other technical support to over 60 various Federal Agencies. The estimated dollar value of the Corps efforts is $800 million. The actual program size depends on various factors: requesting agency's appropriation (which often is not known until the first quarter of the fiscal year), requesting agency's final decisions on how their projects will be executed, and the nature and magnitude of national emergencies.

CONCLUSION

This concludes the detailed statement of Major General Russell L. Fuhrman on Remaining Items of the fiscal year 1999 Civil Works Budget.

IMPACT OF BUDGET REQUEST ON CONSTRUCTION PROGRAM

Senator DOMENICI. Thank you very much.

Let me say that I am free to stay here for as long as it takes this morning, so I would yield to Senators who have questions.

Senator Byrd, do you have any questions?

Senator BYRD. Thank you, Mr. Chairman.

The Corps' request to OMB for construction funding was $1,894,000,000. OMB reduced this by $1,110,000,000. So the request is now $784 million. Thus, OMB reduced the amount recommended by the Department of the Army by some 58 percent.

What is your assessment as to the Corps' ability to execute a program of the magnitude proposed to OMB?

Dr. ZIRSCHKY. Sir, we did indeed submit that request. Part of our difficulty is with the uncertainty. It would depend on how we got the $1.8 billion we requested. Had we gotten it in January and known it was going to be in the President's budget, we would have 9 months to prepare, get our designs done and be ready to award those contracts.

If we don't find out until September that we are going to get $1.8 billion, it is going to be much more difficult. But I believe that the Corps, if we could get some predictability, can, indeed, utilize the funds.

Senator BYRD. I ask that same question of General Ballard.

General BALLARD. Sir, the $1.8 billion request that the Corps submitted was the amount of money we thought was necessary to continue those projects that we already had in the pipeline prior to the 1998 budget. That $1.8 billion would allow us to continue to work on all of those programs that we have had and the new programs that were identified without delay.

So this budget of $784 million would cause some delay and disruption in that workload.

Senator BYRD. Dr. Zirschky, if you had any such doubts about the Corps' ability, doubts that I hear being expressed by General Ballard, surely you must have known about those. I am positive that you inquired of General Ballard as to what his viewpoint was. If that is the case, with such doubts about the Corps' ability to execute a large program in fiscal year 1999, then why was the Corps allowed to submit a $1.9 billion proposed construction program to OMB?

Dr. ZIRSCHKY. Sir, I believe that, had we gotten that request, we could have executed it. One of our biggest obstacles is uncertainty.

We are asking now for $784 million in construction, which means that our folks out in the field, until you all act to change that, have to plan for that level of funding.

That means that things get more constrained.

I think the uncertainty of not knowing how much money we are going to have in the future is an inhibitor to the amount of work we can do.

We have great people. But what we need is predictability in our funding schedule.

Director Raines, I believe, has written to the Senate and offered to meet with the committee and other Senators to see if we can arrive at a mutually satisfactory number for the construction program that will give us the kind of predictability that we can execute everything effectively.

Senator BYRD. If there were concerns about the Corps' ability to carry out a program more in line with what Congress approved for fiscal year 1998, then I should think it would be doubtful that such a huge request would have been forwarded to OMB.

I'm sure those concerns existed. And yet, the huge request went forward. Now there is reason to wonder what happened.

What happened between the time the request went forward and now?

Dr. ZIRSCHKY. Sir, it was a couple of things.

For one, there have been some restrictions on how we can use the money, what kinds of contracting that we can do. But the primary factor that I believe makes the Corps' job difficult is the time that will elapse. If we knew today that we were going to get $1.8 billion, we could begin planning for that, making sure that we have the people in the right places now so that at the start of the fiscal year, we would be 100 percent ready to respond.

I will assume the bill will not be signed until September. We will get our allocation from OMB probably at the end of October. We will have already missed a good part of the construction season in many areas. So now we are looking at trying to spend that money beginning in March or April in many parts of the country.

It is an issue of timing. If I know today how much money I am going to have, I have every confidence that the Corps can execute the program.

Senator BYRD. Dr. Zirschky, with all due respect to you, you are jumping around on the head of a pin. You have not answered my question.

INCREASED PROJECT COSTS AND LOST BENEFITS

Let me ask you this question. What are the consequences of further delays in the construction program? What will happen to the total project costs? Will they rise? If so, do you have any estimate of the additional out-year costs that will result from this proposal?

Dr. ZIRSCHKY. Yes, sir; there are two components. First, by delaying the projects, the country will not get the benefits. A rough estimate is that we will lose about $2.8 billion in potential benefits.

Senator BYRD. That's $2.8 billion in benefits?

Dr. ZIRSCHKY. Lost benefits.

Then we also have the increased costs to build the projects to get to those benefits. I don't have an exact number.

Do you have that, General Ballard?

General BALLARD. For the delay?

Dr. ZIRSCHKY. Not the lost benefits, but the increased costs.

General BALLARD. Increased costs, sir, would be roughly $400 million.

Senator BYRD. So there would be an increase in the cost of $400 million, which seems to me to be pretty low. But you are the engineer, I am not.

General BALLARD. We calculated that, sir, on the basis of 5 years. If you stretch it out longer than 5 years, the costs would go up incrementally.

So that is about a delay of, we are looking at a 5-year delay on the average project, and that cost would be about $400 million. Longer delays would mean increased costs.

Senator BYRD. What effect would the proposed fiscal year 1999 budget have on the major contracts already in place for so many ongoing projects?

Do you expect significant contract termination or cancellation costs?

Dr. ZIRSCHKY. Sir, we expect that most of the projects will be delayed. I am hoping that we will have enough flexibility to not have to terminate projects. But I believe costs will increase substantially.

Senator BYRD. Yet in spite of what you say, the administration has managed to find significant funding for a few favored projects, such as those projects which I enumerated at the beginning. But it is neglecting so many other projects as it elects to go forward with such projects as the Everglades and South Florida projects.

MARMET LOCK AND DAM

What are the estimated delay and cost growth consequences of this proposed budget on the Marmet Locks and Dams replacement project—to bring it right down to Earth, where Earth really is, Marmet, Kanawha County, southern West Virginia, down in that area where the hills sharply decline and create hollows which are subject to sudden floods because of summer torrential storms. Just bring it down to Earth and tell me what would happen.

What is the estimated delay in cost growth consequences?

General FUHRMAN. For that one, Senator, the foregone benefits would be approximately $48 million and delay costs would be an additional $8 million.

Senator BYRD. How much?

General FUHRMAN. An additional $8 million in increased costs.

Senator BYRD. $8 million. All right.

Mr. Chairman, I am not going to take too much longer. I know others want to ask some questions.

IMPLICATION OF CONTINUED BUDGET CONSTRAINTS

Let me just say this, however. I am concerned about the long-term implications of the administration's proposed funding level for the Corps of Engineers. Dr. Zirschky's statements suggest that this budget is necessary to comply with the overall spending constraints.

However, those concerns about spending constraints do not appear to be evident when one looks at other parts of the budget. There are spending increases for any number of administration initiatives, whether for the environment, education, global climate change, or basic research.

I think we have a fundamental disagreement with the administration regarding the need for further investment in the basic infrastructure. It serves no purpose for the administration to send up a budget for the Corps of Engineers that is as totally unrealistic as is this one.

It sets the stage for problems in resolving the appropriations bills this summer and fall if the administration expects to receive the funding increases that it has proposed in other program areas. Those increases are predicated on Congress accepting reductions such as those proposed for the Corps of Engineers.

I hope that my colleagues are not prepared to accept such draconian actions. I am very disappointed that the fiscal year 1999 budget does not include the funding necessary to keep the Marmet project on schedule.

This is a project that has been identified as one of the top priorities for the inland navigation system. Marmet has a strong benefit/cost ratio because of the value of the coal, the chemical, and the other products that are shipped along the Kanawha River to the Ohio River navigation system.

The people whose lives are affected by this project have already been subjected to unnecessary delays and uncertainties.

However, now that the project is ready to proceed, it is a shame that the Corps has been unable to take care of such basic responsibilities, such as the Marmet project, but has provided enhanced funding for other initiatives.

So, I will be working with the chairman to ensure that the fiscal year 1999 Energy and Water appropriations bill provides adequate funding to keep this project on track and to minimize any opportunities for further delay.

I thank you. I hope I will be able to ask another question later.

Senator DOMENICI. Thank you very much, Senator Byrd.

I think I will ask just a few questions now. I would like to give another example, Senator Byrd, of where you spoke of programs and projects within our subcommittee for which the President has asked for a lot more funding. While it is not for the Corps, the Bureau of Reclamation received fiscal year 1998 funding of $85 million for California Bay-Delta Restoration Program. Since that is more desirable than some in your State, you should know that the request this year is $143 million—more than a $60 million increase.

Last year it was a brand new program.

We have programs that have been 8 or 10 years in development or construction that have not been treated so well.

I would like to be more specific since there are members of the media here. I don't want to misstate anything.

I have just checked and the President found room for $125 billion in new programs in his fiscal year 1999 budget.

Senator BYRD. Would you state that figure again?

Senator DOMENICI. That's $125 billion.

Senator BYRD. I thought you had said "million." Thank you.

Senator DOMENICI. It's billion.

To be fair, I have to say that $62.5 billion of it was estimated to come from the cigarette tax settlement, which may not occur. But that was also spent on programs that are in competition with the normal budget with something like the Bureau of Reclamation, Corps of Engineers, and other things.

BENEFITS FOREGONE

Having said that, I wonder if we should make sure that we have the right number with reference to benefits foregone.

Senator Byrd asked about benefits foregone and I have a chart, General Ballard, which shows a different number than the Assistant Secretary. I have the figure for benefits foregone as $3.6 billion. Is that correct?

General BALLARD. That is the number I have, sir.

Senator DOMENICI. All right.

So, Senator Byrd, the number was not $2 billion but $3.6 billion, according to the General.

Just by itself, it is a rather incredible number when you consider the number of dollars that we are trying to get back that would provide these benefits over a period of time.

I have a lot of questions, but there are other Senators here. So I just want to go through a few that establish what I am concerned about.

DEVELOPMENT OF FISCAL YEAR 1999 BUDGET

General Ballard has indicated that the Corps recommended funding request for Construction General was $1.8 billion. Is that correct?

General BALLARD. That's correct, Senator.

Senator DOMENICI. Was OMB's final funding level appealed?

General BALLARD. Yes, sir; it was.

Senator DOMENICI. Was the appeal made in the executive branch all the way to the President?

General BALLARD. It was made, sir; twice to OMB. I am assuming that that information was transmitted to the President. I am not aware of that, though.

Senator DOMENICI. So, you don't know for sure?

General BALLARD. I don't know for sure, sir.

Senator DOMENICI. Assistant Secretary, do you know?

Dr. ZIRSCHKY. We did not make the list of people who were able to present an appeal to the President, sir. So, I do not know if he actually had the information.

FULLY FUNDED CONTRACTING POLICY

Senator DOMENICI. Dr. Zirschky, on January 23, 1998, Majority Leader Lott and a bipartisan group of more than 40 Senators wrote to Director Raines of OMB regarding OMB's instructions to the Corps to enter into only lump sum contracts for unrequested new construction projects.

Mr. Secretary, has OMB responded to Senator Lott's letter? If so, could you tell the committee how OMB responded?

Dr. ZIRSCHKY. Yes, sir; I believe OMB has responded and their response was to add the administration's requested new starts from fiscal year 1998 to that list.

Senator DOMENICI. So, there was no reconsideration?

Dr. ZIRSCHKY. The reconsideration, sir—their decision was to add more projects to the list rather than to get rid of the list.

CONSTRUCTION GENERAL PROGRAM

Senator DOMENICI. General Ballard and General Fuhrman, is the $784 million funding request for construction sufficient to carry out the fiscal year 1998 program approved by Congress and signed into law by the President without major disruptions and without subsequent increased costs?

General BALLARD. No, sir; there will be delays in undertaking and completing many of those projects.

Senator DOMENICI. Now, frankly, at some point in time we may not get the resources to fully fund what you requested, General.

General BALLARD. Yes, sir.

MINIMUM FUNDING LEVEL NEED FOR FISCAL YEAR 1999

Senator DOMENICI. I think at some point we need to know what the minimal levels of funding would be to allow the Corps to manage the current programs in an efficient way without these major disruptions.

What other actions or guidance can you give the committee that would help us in making sure that the Corps' ability to effectively manage these programs is maintained?

General BALLARD. Well, sir, any additional funding would be generally all that is necessary to execute the program.

Senator DOMENICI. Right.

General BALLARD. However, we are prepared to submit for the record the minimum funding that we think is necessary to complete those.

Senator DOMENICI. You don't know that number now?

General BALLARD. General Fuhrman.

General FUHRMAN. It really would be too hard to determine right now, because the $1.8 billion is what is required to carry out what is provided in the President's programs plus those added by Congress. Until we know, in 1999, what gets added by Congress, it would be hard for us to determine what the delta is below $1.8 billion.

Senator DOMENICI. I would think, and as chairman I am interested in knowing what this number is before our appropriations chairman has to make the subcommittee budget allocations. I think we ought to go tell him in our communications what you say, Generals. We also ought to say if this is the amount that we can get that is less than that, how it will minimize the damage that is going to occur to these projects and minimize the costs.

Will you do that for us?

General BALLARD. Sir, I will be happy to do that. This is an important number and I would have to take a guess at it. I would be more than happy to submit that for the record.

Senator DOMENICI. Thank you.

[The information follows:]

MINIMUM FUNDING LEVEL FOR THE CONSTRUCTION, GENERAL PROGRAM

Determination of a minimum fiscal year 1999 funding level for the Construction, General program is based on the premise that all facets of the program would be treated equitably. This includes new and continuing projects and programs presented in the President's fiscal year 1999 budget, as well as fiscal year 1998 Congressionally added new start construction projects and other continuing unbudgeted projects. It also assumes that no unbudgeted new start construction projects would be undertaken in fiscal year 1999. The minimum funding level would provide less than optimum funding, and thus would not allow projects to be completed on the most efficient schedules possible to minimize project cost increases and achieve benefits at the earliest time; however, it would allow reasonably efficient scheduling. Based on these assumptions, the minimum fiscal year 1999 funding level for the Construction, General program is $1,600,000. This would result in delays ranging up to 12 months from optimum project schedules in fiscal year 1999 for ongoing projects.

ACEQUIAS IRRIGATION SYSTEM, NM

Senator DOMENICI. I have a request today with reference to a small historic program in my State that you all know about, although most of you don't say the name right. So, I will tell you how to say it again. We have some historic ditches in New Mexico that take water from streams and move it around. They are 400 years old and they are called acequias. That's acequias. It means water carriers in Spanish.

Now this program has been funded with little, small amounts every year for you to supervise the maintenance of some of these.

I would like the two Generals to try to help me understand what is causing the delays in these projects. Can the Corps give us, at the earliest convenience, a written statement about how we resolve some of the problems of delays and what we could do to make that a more efficient process?

It seems to me that all kinds of rumors are coming that you don't want to do the program and that you would rather someone else do it. I would like a statement about that. If it is too burdensome for some reason, then clearly we would have to make some adjustments.

[The information follows:]

ACEQUIAS PROGRAM

The Corps of Engineers is committed to providing the irrigators in New Mexico reliable, permanent facilities requiring minimal maintenance. We have successfully designed and constructed over 35 projects dating back to 1987, and we look forward to continuing the program and building on strong relationships forged over the last decade between us and our local sponsor. That is not to say, however, that our processes cannot be improved. Indeed, they can.

Recent delays have been caused by an inability to execute local loan agreements. As you are aware, we cannot proceed past the reconnaissance phase until our partner is financially committed to the project. There are currently seven projects that the State of New Mexico, the local sponsor, is reviewing and coordinating with the local Acequias associations for approval. These seven projects have been under financial and technical review by the State for over two years.

The Corps will continue to work with the New Mexico Acequias Commission, the New Mexico Interstate Stream Commission, and the individual community acequias associations to insure expectations of water delivery, project longevity and cost effectiveness are achieved. We are also meeting with all stakeholders to refine the process and proceed in an efficient and effective manner. For example, we are reviewing processes for accelerating environmental documentation and preliminary design. We also plan to produce programmatic environmental impact statements for major acequias and river basin areas. With these improvements, we can proceed with preliminary design and required environmental documentation while our sponsor and sub-sponsors finalize local cost sharing arrangements. We are also exploring other

opportunities to expedite our processes to assure prompt delivery of quality products within budget.

The Corps has a proud history of meeting the country's engineering needs. We remain committed to executing the acequias program and satisfying the requirements of our local sponsor, the State of New Mexico. We fully expect our process improvements will expedite the program, and look forward to leading Federal participation in the rich history of the acequias tradition.

Senator DOMENICI. My last observation and question combined is this. There is a commission that works on preservation of these historic ditches. Will you work with that commission in the next few months to see if, between the two, you can come up with some reasonable suggestions about expediting and efficiency?

General BALLARD. Yes, sir; we will.

General FUHRMAN. Yes, sir.

LAS CRUCES, NM, PROJECT

Senator DOMENICI. I have a project in Las Cruces, NM, and I would just want to know how will the $150,000 included in the President's budget be used.

General BALLARD. Sir, I would defer here to General Fuhrman for that information.

Senator DOMENICI. You need more than that to keep it on schedule, don't you? My understanding is you need $3.5 million to keep it on schedule.

Would that take too much time for you right now, sir?

General FUHRMAN. Let me provide that for the record, Senator.

General BALLARD. The exact amount.

Senator DOMENICI. I've got it here. I will put it in the record. If you think it is not right, then you can correct it. It is easier for me to find it than it is you. I know what it means.

It says $3.5 million is needed to keep it going. So if that is not correct, will you correct the record?

General FUHRMAN. We will correct it.

General BALLARD. I most certainly will, Senator.

[The information follows:]

LAS CRUCES, NM

The $150,000 included in the President's budget will be used to continue real estate coordination and to ready the project for construction. If $3.5 million were provided, we could award the construction contract in December 1998 and complete construction as originally scheduled in August 2000 rather than August 2001 as reflected in the budget justification materials.

Senator DOMENICI. Which Senator would like to proceed next.

Senator REID. Mr. Chairman, I have indicated that I am going to submit my questions in writing.

Senator DOMENICI. Then Senator Dorgan.

DEVILS LAKE, ND

Senator DORGAN. Mr. Chairman, I also would like to submit a series of questions in writing with your permission to both the Corps and the Bureau in the event I am not here later.

Let me now just ask this. Secretary Zirschky, on the Devils Lake project, can you give me a status report of the Corps work on that project?

Dr. ZIRSCHKY. Yes, sir; we are in the process of raising the levees around the city of Devils Lake. The water level is still rising in the basin.

We recently conducted an exercise with the help of the Energy and Environment Research Center in Grand Forks to study various options on how to respond to the ever-increasing flood. That was completed earlier this month. We hope to have a report back on that. It was a very useful exercise, identifying the various options to help fight that flood.

Senator DORGAN. The Corps remains supportive of the outlet?

Dr. ZIRSCHKY. Yes, sir; we are still evaluating it. But the virtual flood indicated that there were scenarios where it could be a very useful tool for fighting the flood.

Senator DORGAN. I would like to show my colleagues a chart that deals with a summary of damages in the Devils Lake area, because this relates to the point I made earlier that some of these investments that we make here are very important.

The estimate of damages here with the rise of Devils Lake shows we have already spent just over $200 million to try to mitigate damages, raising roads, moving buildings, and a range of other issues. If this continues to rise, this closed basin, if the water level continues to rise, we are headed toward over $400 million.

Rather small investments can save very large amounts here. The reason I asked about the outlet is this. You are building the levee. The water is projected to increase nearly 2 feet again by midsummer, which is going to get you to the limit of the levee that is already under construction.

Is that correct?

Dr. ZIRSCHKY. Yes, sir.

Senator DORGAN. We are trying to get an outlet that would measure some release of that water in quantities that would not hurt any other rivers or any other citizens but that would take some pressure off this lake which, potentially, could save a couple of hundred million dollars over time.

Dr. ZIRSCHKY. Yes.

Senator DORGAN. Mr. Chairman, these issues are always very difficult, but necessary. As I said, there are only two closed basins of this type in the country. One is the Great Salt Lake and the other is Devils Lake. These have no inlet and no outlet, and when the water continues to rise, we face enormous problems.

If I might have the chart about the water levels over time, I could just show my colleagues what we are facing.

We have a chart that shows over a long period of history what is happening in Devils Lake. The 1,445.5 foot level is expected to be reached midsummer this summer. That basin has in the past 5 years tripled in volume, doubled in size, risen more than 20 feet.

This picture shows a woman standing in the Devils Lake area near a telephone pole. If you will take a look at the woman down at the bottom of the pole and then take a look way up there on top to where the pole has been extended, that is where the lake is today. That tells you what is happening in this closed basin.

It is simply gobbling up land, homes, and property.

There is a fellow who my colleague, Conrad Burns, will know. His name is Dwayne Howard. He was one of the great bull riders

in America for many years, one of the great rodeo cowboys. He won all over America.

He had a ranch in this area but he does not have a ranch there anymore. He is gone. He had to move out. He could not get to his house. All of his ranch was under water.

Senator BURNS. He went from riding bulls to fishing. [Laughter.]

Senator DORGAN. That's right. But he is not fishing anymore, because he cannot be there anymore. It has broken his heart. Here is a guy who has lost everything.

In human terms, this has an enormous consequence.

Senator REID. On the Indian side is it water?

Senator DORGAN. The lake continues to rise.

Senator REID. Where is the water coming from?

Senator DORGAN. No one knows. The upper basin, obviously we have had wet years, and the water comes from down the basin. There is some theory that there is an aquifer feeding and no one quite understands this. We don't even quite understand the full history because we only have 150 years or so of history of this closed basin.

The point is that it is an awful problem for these people and this subcommittee has been very helpful. Secretary Zirschky and the Corps has been very helpful. We are struggling very hard on several fronts—a levee, an outlet.

Secretary Zirschky, again, just to reiterate, the preconstruction money was allocated by this committee for the outlet's design, planning, and preconstruction. That is underway. The first $5 million of construction money has already been appropriated.

The President is requesting—what—$14 million?

General FUHRMAN. $16 million.

Senator DORGAN. Excuse me—$16 million in this set of recommendations, and the Corps continues to support that and continues to see the value and the merit of these approaches.

General FUHRMAN. Yes, sir.

Senator DORGAN. Thank you.

Mr. Chairman, I know that others would like to ask questions. I would like to be able to submit additional questions to both the Corps and the Bureau.

Senator DOMENICI. We will submit those to the witnesses in your behalf. Thank you.

Senator Burns.

Senator BURNS. Thank you very much, Mr. Chairman. I have an amendment coming up on the floor and I appreciate the courtesy. I have just one comment to make.

By the way, Senator, we found your answer. There are some pumps down on the Great Salt Lake that have never been used. If you could get trucks down there, we might be able to get you some pumps. Will that help you out any?

Senator DORGAN. You know, you seem to have an answer every time I ask you a question. But the water keeps going up. [Laughter.]

Senator BURNS. That's all right. These pumps are going to take care of that.

Dr. Zirschky, we have a little situation. I would like some time with you if I could come to your office or you could come to mine.

We have a situation up at Fort Peck having to do with fossils. I thought he was referring to me. But that is not true.

We need to visit about that because it is just an isolated thing and we need to take some action. We have some people who are getting conflicting stories and I think we can work that out in nothing flat.

Dr. ZIRSCHKY. I would be delighted to come to your office.

Senator BURNS. Thank you very much. I appreciate that.

Thank you, Mr. Chairman.

Senator DOMENICI. Thank you, Senator.

Senator Gorton.

Senator GORTON. Mr. Chairman, like the other members of the committee, I have a long series of questions to submit to the Corps that I will do in writing.

CORPS OF ENGINEERS PUBLIC OPINION SURVEY

But I do want to share with you and the other members what I think to be an almost unbelievable set of priorities or campaigns in which the Corps of Engineers has engaged in Washington, Oregon, and Idaho.

Last week, one of my constituents sent me a survey the Corps of Engineers is sponsoring. When the recipient opened up the survey, a $2 bill dropped out. The Corps of Engineers was paying him $2 to pick up his mail.

Then the Corps said that if he would fill out the survey, they would pay him another $10.

Senator REID. Are you joking?

Senator GORTON. No; I'm telling the truth. I have the letter right here. They would pay him another $10, because they wanted to find out what his views were on removing all of the dams on the Snake River for the salmon.

By contrast, one of my friends, when I was talking about it the other night, said that he had gotten a survey like this from Lexus, a luxury automobile, for which he got $1. He filled it out. In this case, you get $12 if you fill it out.

I made a speech on the floor of the Senate last week. It is the only lottery in the State of Washington of which everyone was a winner.

Senator REID. But you get $2 if you do nothing?

Senator GORTON. You get $2 just for opening up the envelope. The $2 bill fell out simply by doing that.

Senator DORGAN. If I might inquire, has the Corps acknowledged that this is something they have done?

Senator GORTON. Oh, yes; it is a Corps deal.

Then they are going to do 10,000 or 12,000 more of these surveys after they perfect this one. They tell us, when I make the speech they say oh, no, the second time around you are only going to get the $2. Maybe so, maybe not.

But in addition to the fact that they were willing to pay people $12 of our taxpayers' money to fill out the survey, you ought to see the survey. You know, we here are partisans and you know how the Democratic National Committee will send out a poll that says "Do you want to allow Republicans to destroy Social Security and throw old people out on the street?"

Senator DORGAN. Oh, no, never. [Laughter.]

Senator GORTON. And how Republicans may send out a poll that will say "Do you want to allow Democrats to triple your tax burden and take all of your money away from you for wasteful Federal spending in other States?" [Laughter.]

Well, the Corps of Engineers survey is sort of like that. They go through all of these facts about how many fish can be saved and a few little mentions of maybe it will cost a little bit of money, and all of these wonderful recreational opportunities that will be given if this crazy idea of destroying dams, which were put up for power, for irrigation, and for transportation is effected and the dams are taken down.

So not only are we having all this money being spent, given away for people to fill out the form, they are trying to fix the answers to the survey the way we sometimes do politically.

I really want General Ballard to justify who in the world came up not only with the crazy idea of paying people this amount of money to fill out a survey but with the totally biased nature of the questions that are included in it.

General BALLARD. I can't wait to answer that question.

First of all, let me say that it did not come from headquarters. The Corps is like one of those organizations where if we were a musical instrument, we would be a drum because there is an opportunity for a lot of folks to beat us.

I was not aware of this survey until I heard your speech on the floor and it was immediately brought to my attention. Let me tell you what I have done.

I have launched an investigation to find out who authorized it, where did the money come from, what was the purpose of the survey, and I am expecting an answer next week. As soon as I get that answer, I would be more than willing to either come see you or submit it for the record, sir.

Senator GORTON. That is a responsive response. I appreciate it. I will be happy to see you on it and I will defer my next speech on the floor until you have had an opportunity to explain it.

General BALLARD. I would appreciate that, sir.

Senator DOMENICI. We all would be interested.

General BALLARD. I will submit it for the record.

Senator DOMENICI. Yes; submit it for the record, and go and see the Senator also.

General BALLARD. I will do that, sir.

[The information follows:]

LETTER FROM JOE N. BALLARD

APRIL 1, 1998.

Hon. SLADE GORTON,
U.S. Senate, Washington, DC.

Dear SENATOR GORTON: I am taking this opportunity to respond to questions raised at the March 26, 1998, subcommittee hearings regarding a U.S. Army Corps of Engineers recreation survey. This survey is one tool being used by the Corps to collect information for its Lower Snake River Juvenile Salmon Migration Feasibility Study. The study is investigating potential long-term configurations of the Snake River hydroelectric system to aid in the recovery of listed salmon populations. Funding for the study and the associated recreation survey is appropriated through the Columbia River Fish Mitigation Project.

Study recommendations and follow-on decisions could have major economic and natural resource implications for the region. Accordingly, the best possible information is being sought for the study. As you are aware, some of the information for the recreation analysis is being obtained through a public survey. Our Walla Walla District office has contracted with Normandeau Associates to conduct the survey.

Survey needs, protocol and questions are being developed by the contractor in collaboration with a broad group of regional economists who are assisting the Corps in fully evaluating social and economic effects of each study alternative. This group has developed a number of different versions of the survey to improve the validity of the information.

A test mailing of the "dam removal" draft survey was made this past February and March. The test survey, which was sent to 150 people selected at random, included $2 as a participation incentive. The use of such incentive payments is not an unusual practice in the survey industry to ensure a higher response rate. An additional $10 was provided to those 43 who responded to the survey and completed a 45 minute telephone follow-up interview.

The final survey form and questions will be completed after internal and peer reviews of the draft survey. The final survey will adhere to Office of Management and Budget guidelines. At this time, we do not plan to use a cash incentive in the distribution of the final survey. The enclosed information paper provides additional details on scope, nature and basis of the recreation survey.

I appreciate your interest and concern in this matter. If I can assist you further, please contact me. I will ensure that copies of this letter are provided to the other members of the subcommittee.

Sincerely,

JOE N. BALLARD,
Lieutenant General, U.S. Army, Commanding.

INFORMATION PAPER

LOWER SNAKE RIVER JUVENILE SALMON MIGRATION FEASIBILITY STUDY

RECREATION SURVEY AND ANALYSIS

Background

The Walla Walla District of the Corps of Engineers is conducting a feasibility study in response to the March 1995 Biological Opinion for Federal Columbia River Power System operation, issued by National Marine Fisheries Service (NMFS). Walla Walla District will prepare a Feasibility Report/Environmental Impact Statement. The draft report/EIS will be distributed by April 1999. The report will make a recommendation, fully coordinated with regional interests and the public, to either implement the permanent natural river drawdown on the lower Snake River or a non-drawdown alternative to provide survival benefits to salmon and aid in the recovery of endangered salmon stocks. As a component of the feasibility study, the Drawdown Regional Economic Analysis Workgroup (DREW) was established to develop a comprehensive social and economic analysis (which includes recreation). DREW includes economists from many Federal agencies (Corps of Engineers, NMFS, Bonneville Power Administration, and the Bureau of Reclamation), Northwest Power Planning Council, states, tribes, contractors, and environmental conservation groups. The recreation survey and analysis is a product of the DREW.

Funding for this study, including the recreation survey and analysis, is included in the appropriated funds for the Columbia River Fish Mitigation project in the Corps of Engineers Construction General appropriation account.

Recreation Survey Objective

Recreation on the four lower Snake River reservoirs is a project purpose. As indicated by DREW, recreation is considered to be potentially a significant economic impact, particularly with the drawdown alternative. Therefore, the need exists to develop quantitative and qualitative information related to the potential effects. There are four primary objectives for the survey:

—Estimate the recreation use and benefits associated with the existing system.
—Estimate recreation use and benefits from returning the lower Snake River to a more natural state.
—Estimate non-use values for a more natural river and for salmon.
—Estimate non-use values for salmon recovery associated with project improvements and additional transportation of juvenile salmon.

Survey Facts

The surveys are still in draft form. The draft survey was developed by the consultant in collaboration with the DREW. All activities associated with the draft survey were authorized by the Walla Walla District. We are still working with the consultant in the development of the final versions. The work related to this recreation analysis is being conducted by Normandeau Associates, a consulting firm located in Bedford, New Hampshire. Normandeau has enlisted the following subcontractors to assist in this effort: Agricultural Enterprises Inc. of Masonville, Colorado, Colorado State University at Fort Collins, and University of Idaho. The cost for this contract is $300,000, which includes preparing the survey, distribution, compiling survey results, and preparing a report including an analysis of the recreation effects.

There is a range of different survey versions being developed and considered. These versions focus on different potential benefits for salmon. One survey, for example, will assume juvenile fish transportation as the only way to meet recovery needs. The others represent drawdown as the most effective way to meet recovery standards and incorporate different anticipated biological outputs. This approach was recommended by the consultant as the best way to portray potential biological effectiveness since specific information is not available at this time.

Many of the questions in the draft surveys assume a definite conclusion, which may not be factual. This approach was deemed necessary to assure a high confidence in the accuracy of the responses. Research has shown that questions which appear to be hypothetical or use words such as "if" and "may" lead to less accurate answers by survey respondents. That is, hypothetical questions give rise to hypothetical answers and the objective is to achieve greater certainty in the survey results. This response pattern is the basis for stating a hypothetical condition in the survey as more of an assumed fact.

The present strategy, which is still under review, is for the final survey to be distributed to a total of 15,000 people. No incentive will be used in the distribution of the final survey. The surveys are scheduled to be sent out in April 1998 and completed in July 1998. They will be distributed by the University of Idaho. There is no reference in the survey to the Corps or the Lower Snake River Juvenile Salmon Feasibility Study.

Survey Development—Preliminary Test Survey

A preliminary test mailing of five of the "dam removal" versions of the draft survey was made during February-March 1998. The survey was reviewed by the Corps for consistency with pre-approved OMB survey questions and was approved in February 1998. The test surveys were sent to 150 people selected at random with a $2 bill included as a participation incentive. Specific approval from OMB for the monetary incentive was not sought. A further $10 payment was provided to those 43 individuals who responded to the survey and completed a 45 minute telephone follow-up interview. Three or four "transport" versions of the survey are being developed as are one or two more "dam removal" versions for inclusion in the final survey.

Internal and peer reviews of the draft surveys are scheduled in the next several weeks. Those reviews will determine the final questions and protocol. The final survey will adhere to all OMB guidelines and criteria for surveys.

Senator DORGAN. May I just ask on this? I did not hear your speech. I assume it was an eloquent speech and that you sat and fumed and wondered what went on. So I assume you got on the phone immediately to find out who in the hell did this.

General BALLARD. I did.

Senator DORGAN. So, what did you find out?

General BALLARD. Well, what we have found out so far is there is a group that is working in support of the Corps as we look at a number of issues that the local commander asked to take a look, to do a survey. What has been told to me so far over the telephone is that about $800 total was sent out to the folks who were—what is the word, Russ?

General FUHRMAN. To develop a survey, to get public input on a study that we are doing out there, what the public input was with regard to some of the proposals.

General BALLARD. This method, I am told, is rather common procedure. I don't know. But let me just say this. Any survey that is

done in support of a policy of the Corps or the administration has to be eventually submitted to OMB for approval.

I am not justifying the survey. I don't know enough about it to tell this committee in a reasonable manner what occurred. So I will defer any conclusions until I do the investigation and find out exactly the rationale behind it.

Senator GORTON. For me, at least at this point, that is an adequate response. We will hear from them on how they came up with it, who did it, and why it was justified. But I have never heard of anyone getting $2 to open an envelope and another $10 to fill out a true/false questionnaire.

Senator BYRD. Will the Senator yield?

Senator GORTON. Yes; of course.

Senator BYRD. I hope that the response that the General is going to give you will come to each of us.

General BALLARD. Yes, sir.

Senator BYRD. I hope it will be in writing, because few of us ever go back to these printed hearings. We will forget about this in a day or two, because there will be something else that commands our attention. We may never, many of us, know what the response is in this record.

But I think this is something that we all would be interested in knowing what the answer is or what the answers are.

So I would like, Mr. Chairman, for the General or for someone, Dr. Zirschky or someone, to send each of us an explanation of this in writing, if that is agreeable with the Senator.

Senator GORTON. Oh, it is more than agreeable. This is the responsibility of this subcommittee.

Senator DOMENICI. Would you please do that?

General BALLARD. I will do that, sir.

Senator GORTON. With that, I have a number of other questions that are not quite so colorful with this one. I will not take your time with them but will submit the questions to them in writing.

General BALLARD. Yes, sir.

Senator GORTON. Thank you, Mr. Chairman.

Senator DOMENICI. We have two more witnesses that we want to hear from with reference to Bureau of Reclamation programs for 1999. I want to accommodate Senators also.

Do we have any further questions? We have a vote at 11:45 a.m.

Senator BYRD. Did the chairman ask if we had more questions?

Senator DOMENICI. I was wondering if we could take the other two witnesses at the earliest possible time. But if there are some urgent questions of this panel, then I obviously do not want to go to the next panel.

Senator BYRD. I don't have any questions of the other witnesses. I have one or two that I would like to propound here.

Senator DOMENICI. Then why don't we do that now, Senator.

Senator BYRD. All right. I thank the chairman.

GREENBRIER RIVER BASIN, WV

Recently, the Corps completed an updated evaluation report to provide a more accurate assessment of flood control options for the Greenbrier River Basin. In that report, the Corps did not endorse a particular option but, rather, identifies the various benefits,

costs, and procedural requirements associated with each of the alternatives.

Will the Corps take any further actions to pursue a particular option or is a cost-sharing partner necessary before proceeding to the next step?

Dr. ZIRSCHKY. Yes, sir; we are going to complete our studies. In fact, I will probably be going to that project site in West Virginia.

So far, our studies show that a dry dam may be economically justified. We still have some planning, engineering, and design to do. As for cost sharing, certainly the administration would prefer cost sharing on all of our projects.

Senator BYRD. What would be the cost sharing in this instance?

Dr. ZIRSCHKY. I believe sir, depending on the authority under which we did this, we could do it at 75 Federal/25 local.

Senator BYRD. Is it less than that in certain instances? If so, what would be the circumstances required?

Dr. ZIRSCHKY. In most flood control projects, it is 65/35. I believe, and I could be mistaken, that this project has an older authority that might allow it to be grandfathered. That is something we will have to evaluate further, sir.

Senator BYRD. If local consensus develops around one of the options that involves a dam—and you made reference to a dry dam—and a cost sharing partner steps forward, would the administration be likely to support authorization to allow such an option to proceed?

Dr. ZIRSCHKY. Sir, if the project is economically justified and environmentally acceptable, the Army will support the project. I cannot speak for the administration, because they have not had an opportunity to review it. But the Army would support such a project.

Senator BYRD. In your opinion, is it likely that the administration would be willing to support construction of a dry dam?

Dr. ZIRSCHKY. We have one going on, sir, at Seven Oaks in California. But, quite frankly, we would, I believe, have to do a considerable amount of work to gain their support.

Senator BYRD. You are treading lightly, aren't you? [Laughter.]

If a nondam alternative is supported locally and a cost-sharing partner comes forward, what further steps would be necessary for the project to proceed?

Dr. ZIRSCHKY. I believe we would need to finish some more planning, engineering, and design and then get the construction funding and authorization and build it.

Senator BYRD. Would you say that again.

Dr. ZIRSCHKY. General Fuhrman, do you want to explain?

Senator BYRD. Pull the microphone up there in front of you, will you please?

General FUHRMAN. Basically, with a local cost-sharing sponsor, we could move forward with planning and engineering. So only the appropriations part, the money, would be required.

Senator BYRD. Are more studies necessary or is the Corps ready to proceed to detailed planning and design so that the project implementation could begin?

General FUHRMAN. If the locals determine that that is the solution, we are ready to proceed.

Senator BYRD. If the local protection plans and nonstructural enhancements are the chosen alternative, what funding is necessary in fiscal year 1999 to enable continued progress to be made?

General FUHRMAN. We would require $1 million, Senator.

Senator BYRD. And this is in the case of a nondam alternative?

General FUHRMAN. Yes; it is.

Senator BYRD. What is the Corps' view with respect to the various options if there be various options?

What is the position of the Corps as to a dam?

Dr. ZIRSCHKY. Sir, I don't believe at this time we have a position. I hope to learn more about the project when I go to the area and once we get the reports. But the headquarters does not have an official position on that project yet.

Senator BYRD. Can anyone speak to that question?

General Ballard, can you?

General BALLARD. Russ, can you?

General FUHRMAN. From a headquarters perspective, we have not, the district and the Division have not forwarded the proposal. So, we don't know. We know that from an economic perspective, a dry dam looks like it is economically justified, cost/benefit ratio. But with regard to the environmental issues, yet there is no decision.

Senator BYRD. There has been a recent report, I believe, concerning this project, has there not been?

General FUHRMAN. It is not at the headquarters, Senator.

Senator BYRD. Is there one down the road?

General FUHRMAN. There is one in the district, Senator, but it has not reached the Division and been forwarded to headquarters as yet.

Senator BYRD. So you are not prepared to comment on that report?

General FUHRMAN. That is correct, Senator, we are not.

Senator BYRD. I would encourage the Corps to continue their efforts to work with the citizens in the affected areas of the Greenbrier River Basin to address ongoing concerns about adequate flood control protection for their communities. These local areas must decide which option best suits their needs and can be supported financially with local cost-sharing arrangements.

I want to do whatever I can to assist the communities. I hope that the Corps will be forthcoming and direct in responding to requests for information and providing technical assistance regarding the different options.

I am interested in doing what I can to help the residents to obtain flood protection as quickly as possible if options can be found that are economically feasible and if cost-sharing partners can be designated. But I hope the engineers will be very frank as to their opinions regarding the various options.

There are some people in the area who want a dam while others want this and others want that. They need the expertise of the engineers. I need that as do my colleagues on the delegation.

While a local cost-sharing partner will need to be identified, I hope that the Corps will do everything it can to move this project along and be realistic on its cost and schedules, and complete the

necessary planning and studies promptly so that implementation can begin.

What is your reaction? Can you do that? Will you do it?

Dr. ZIRSCHKY. We would agree with that.

Senator BYRD. And you will do that?

Dr. ZIRSCHKY. Yes, sir.

General FUHRMAN. Yes, sir.

Senator BYRD. I thank you.

Thank you very much, Mr. Chairman.

Senator DOMENICI. Thank you.

Senator Reid, are you finished with this panel?

Senator REID. Yes, Mr. Chairman.

Senator DOMENICI. Mr. Secretary, did you want to say something?

Dr. ZIRSCHKY. If I might, sir.

PROGRAM EXECUTION

Thank you very much for working with us on this issue. I just would like, in closing, to ask you for two favors. One, we need to come to some agreement with OMB on the size of the program to give us the predictability that we need to do our best possible job. It is very tough on us right now with this uncertainty. It even causes debates about how much we can execute.

I am more worried about that because we get penalized for carryover, and a lot of the money we are not able to actually use. OMB counts it against us when they put together the budget request—through no fault of our own for much of the money, but it still works against us.

So with your help, Mr. Chairman, over the next few weeks and months, we will probably be submitting many reprogramming requests to try to keep what we have going and to get things going as fast as we can.

Some of the money I may have to come to ask you for is money that previous administrations have reprogrammed away from projects for which they did not have follow-on funding. We have tried not to reprogram money away from projects which the President did not include in his 1999 budget because we don't have a way to pay it back. But we are about to run out of complete flexibility because we will submit requests for all the money we can easily touch.

Now I am going to have to get to the hard stuff which is I may have to come to you and ask you to help us reprogram money that I cannot promise to pay back just to keep things going. It is not something we want to do, but it is something we may need to do. If that happens, I would like to be able to work with the committee to keep what we have going.

RESOLUTION OF BUDGET DIFFERENCES

Senator DOMENICI. Let me just make an observation and then try to see if we can reach a consensus here on what we want to do.

Frankly, I recall, my staff has reminded me of the veto message that the President sent up last year. In it, on water projects, the

President said he was willing to meet with the Congress and try to come up with a workable plan.

Now, I have inquired everywhere I can, but it does not seem like the administration has asked anybody to meet any time about anything.

Then comes this budget and that was the commitment about where this budget ought to be based on the President's concerns about what we did for 1998. That is water under the bridge.

Now, it is obvious to me that we are in a critical situation. You know, contractors must be in a state of turmoil and many of them must be about to close up their operations and get out, because they don't have a contract or are uncertain the Corps will have sufficient funds to cover their earnings. There are a lot of them like that.

The only acknowledgement we have of the willingness to meet is in the response letter that I alluded to where Senator Lott and 40 Senators sent a letter to the executive branch. In that, the OMB Director said, "I welcome the opportunity to meet with you and other interested Senators to discuss issues involved in the Corps' near-term and long-term funding. To this end, I would appreciate it if a meeting could be convened" and that they will be ready and willing to meet on that.

This letter is only dated March 20, so not much time has passed. But I would think, since our leader made the request in this letter, perhaps we ought to consider convening a meeting with Mr. Raines with members of this subcommittee, the leader, and whomever else and ask Mr. Raines to settle this issue of how we are going to keep you all operating.

I think we would have to have more information, wouldn't you, Senator, before we go in there?

Senator BYRD. Absolutely.

Senator DOMENICI. We don't want to go in there cold. We need some information.

Senator BYRD. Yes.

Dr. ZIRSCHKY. I would be delighted, sir, to make anybody in the Corps available to provide you whatever information you need.

Senator DOMENICI. Yes; you know, we start with this point. OMB wants about $1 billion for construction. Congress and the Corps think they need $1.8 billion. So, we start with that.

Then you have to help us with information regarding what is going to happen if we don't get some relief from OMB with reference to the problems you are going to list for us. Could we have those presented so that they are agreeable to the General and you, sir? Give us that information and then we will see about seeking that meeting as soon as we can.

Does that make sense to you, Senator Byrd?

Senator BYRD. Yes.

Senator DOMENICI. We will proceed on that score, then. I personally think it is appropriate for you to ask this committee for—well, you called it a favor. I think it is just a forthright statement that you have a terrible problem, and we are going to be jumping on everybody for the results that are going to happen if we don't get you some relief. We are going to be very upset, because a program we thought was going forward is not going on and you have the poten-

tial to lose contractors, cancel contracts, and let people go home instead of working out on these sites.

If you would get us that information as soon as possible, we would appreciate it.

Thank you, all four of you. It was a pleasure to have you all here.

Dr. ZIRSCHKY. Thank you.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. All of the questions submitted by various members for the Corps of Engineers will be incorporated in the record at this point for your response.

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

QUESTIONS SUBMITTED BY SENATOR DOMENICI

BUDGET REQUEST AND IMPACTS

Question. Gentlemen, we have had a chance to look at the budget request for the Corps of Engineers and I have heard from many Senators regarding the potential impact the budget request poses on many individual projects nationwide if the President's funding levels are adopted.

Most projects would be funded at 50 percent or less than what is needed to maintain more efficient construction schedules. This results in most projects having completion schedules extended 2–3 years, but some have delays of 15 years or more.

Could you provide some insight into why the President is proposing such a dramatic reduction in funding levels?

Answer. As part of the Administration's efforts to balance the budget, the Administration believes that outlays for the Corps of Engineers Construction, General program should be stabilized at about $1 billion each fiscal year. The fiscal year 1999 budget decisions for the Corps were made very difficult for the Administration by fiscal year 1998 Congressional actions. The large unrequested fiscal year 1998 funding increase of $391 million in the Construction, General account from a budget request of $1.078 billion to an appropriation of $1.469 billion resulted in nearly $200 million of additional outlays in fiscal year 1999 that must be absorbed within the fiscal year 1999 funding level.

Question. What are the impacts of this budget request in terms of increased project cost?

Answer. The Corps estimates that increased costs due to inflation under the completion schedules proposed in the fiscal year 1999 budget on projects that are currently in the construction pipeline compared to schedules under an unconstrained funding schedule are about $400 million. The impacts were computed by multiplying the months of delay between the two completion dates for each project by a prorated share of inflation costs. For projects not included in the fiscal year 1999 budget, a uniform delay of 12 months was assumed.

Question. What are the impacts of this budget request in terms of lost benefits—that is benefits foregone by extended completion schedules?

Answer. The Corps estimates that total benefits foregone under the completion schedules proposed in the fiscal year 1999 budget on projects that are currently in the construction pipeline is about $3.6 billion. These impacts were calculated in the same manner as increased project costs.

FUTURE FUNDING LEVELS FOR WATER RESOURCE DEVELOPMENT

Question. Now, the President in vetoing certain water resources development projects in the fiscal year 1998 Energy and Water Appropriations bill indicated his desire to work with the Congress to solve the growing problem of future liabilities and extended delays.

How does this budget request fulfill the President's stated intention to work with the congress to find an acceptable program level for the water resource development program?

Answer. The budget request presented by the President sets forth his view of the program amount that is affordable for water resources development in the context of all the other programs competing for the funds that are available for domestic

discretionary spending. The Administration recognizes that the Congress has differing views on the priority of water resources in relationship to other domestic programs. Therefore, a dialogue is desirable to come to an agreement on a program level for water resources that allows for the President's priorities and those of the Congress. The Army cannot effectively manage this program with such levels of uncertainty regarding funding levels.

Question. Mr. Gauthier, associate Director at OMB, indicated in his November 13, 1997 letter to you Dr. Zirschky, that the Administration "intends to meet with appropriate Members of Congress to follow up on the President's commitment to work toward a solution." Can you inform the Committee of what meeting or negotiations have taken place to this point? Can you check with officials at OMB and provide, for the record, a list of meetings which have taken place to date to negotiate a solution to this problem?

Answer. The Administration has officially requested a meeting, but none has yet taken place.

LUMP SUM CONTRACTING POLICY

Question. On January 23, 1998, Majority Leader Lott and a bipartisan group of more than 40 Senators wrote to Director Raines of OMB regarding OMB instructions to the Corps to enter into only lump sum contracts for unrequested new construction projects funded by Congress in fiscal year 1998.

Dr. Zirschky, has OMB responded to Senator Lott's letter, and if so, can you tell the committee how OMB responded?

Answer. OMB's initial directive was to only enter into fully funded lump sum contracts with the funds added by Congress for new start construction projects and elements that were not included in the President's fiscal year 1998 budget OMB has now extended its directive to all fiscal year 1998 new start projects and elements for which funds were appropriated in fiscal year 1998, including those proposed in the budget. This directive now includes the twelve new start construction projects that were in the President's fiscal year 1998 budget and funded by Congress. In addition, the Director of OMB wrote to Senator Trent Lott on March 20, 1998, and offered to meet to resolve differences on the level of funding for the Civil Works program.

Question. General Ballard, what impact will this prohibition have on continuing contracts have on the progress of the affected projects?

Answer. Fifteen of the 50 unbudgeted new start construction projects or elements for which Congress added funds in fiscal year 1998 were scheduled for award of continuing contracts in fiscal year 1998. The remainder were scheduled for engineering and design and land acquisition activities or for award of only fully funded lump sum contracts as a normal course of action because of the limited project scope. Seven of the budgeted new start projects were scheduled to include award of continuing contracts in fiscal year 1998. One project was scheduled for award of a fully funded lump sum contract, one project was scheduled for land acquisition and engineering and design activities, and three projects were scheduled only for engineering and design activities. The projects for which continuing contracts were scheduled to be awarded must now include award of only fully funded lump sum contracts in fiscal year 1998. Awarding lump sum contracts for portions of projects that would ordinarily be awarded as part of multi-year continuing contracts is more costly in the long run primarily due to increased mobilization and demobilization costs. These costs generally account for 5 to 10 percent of total contract costs. About $88 million was appropriated in fiscal year 1998 for the 50 Construction, General, unbudgeted new start projects and elements. Increased mobilization and demobilization costs for these projects could range from $4 to $8 million, but will very likely be less than $4 million because many of the added projects or elements are not yet ready to begin construction, the added funds are not sufficient to award substantial amounts of work, or the non-Federal sponsors may be unwilling to only undertake portions of the projects or elements since no funds were included in the fiscal year 1999 budget.

Question. General Ballard, what impact would Congressional action directing the Corps to award continuing contracts on new project contract awards have on the ability to manage the construction program?

Answer. Congressional action directing the Corps to award continuing contracts on new project contract awards could have both advantages and disadvantages. Continuing contracts are generally used if work will be completed over several fiscal years, and they are incrementally funded each year as funds are appropriated for the applicable project. On the plus side, such Congressional direction would assure that all new start construction projects are undertaken in the same manner as most

ongoing Corps construction projects included in the President's budget each fiscal year. On the minus side, such action would require award of continuing contracts for projects that are not included in the President's budget and would require significant Congressional adds each fiscal year to preclude terminating contracts due to lack of funds.

UNFUNDED OBLIGATIONS

Question. Dr. Zirschky, I wrote you earlier this year regarding requests to approve local interests advancing funds to the Corps to allow work to proceed earlier than Corps budgets could accommodate or to allow non-Federal interests to undertake work and receive a credit at a later time.

Can you give the committee an estimate of the future unfunded liability of work the Corps of Engineers is currently considering?

Answer. The Corps indicates we have 21 existing agreements which total about $274 million in credits and reimbursements. There is a potential demand for 27 additional agreements which total about $604 million. About $36 million of this potential demand is for contributions made by non-Federal interests where the Corps has not agreed to make reimbursements.

Question. Do you believe it prudent to approve such requests?

Answer. It is only prudent to enter into future agreements for those projects we believe will be budgeted within available future funds to provide timely credit or reimbursement. That is why I move such requests only very slowly and with great hesitation. I would greatly appreciate your thoughts.

Question. A condition for the committee considering future requests of this nature is a repayment plan agreed to by the Administration and the non-Federal partner. When could non-federal sponsors expect to receive reimbursement within the funding targets envisioned by the President's proposed budget?

Answer. The Corps has compiled information related to potential credits and reimbursements for the period fiscal year 1997 through fiscal year 2002 based on non-Federal sponsor expectations and fiscal year 1999 through fiscal year 2002 budget ceilings. Most of the credits and reimbursements would occur later than sponsor expectations as the result of constrained budget ceilings and so far out in the future as to not really constitute a commitment. (The information follows:)

The Administration would only enter into reimbursement agreements for which funds are expected to be available. The timing for reimbursements would be worked out on a project specific basis.

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM (FUSRAP)

Question. Congressional action on the fiscal year 1998 Energy and Water Appropriations bill transferred the FUSRAP program from the Department of Energy to the Army Corps of Engineers in order to use the expertise and experience of the Corps in remediating contaminated sites. Aware of potential problems in DOE, Congressman McDade and I wrote to the Secretaries of Energy and Defense setting forth the committee's expectations.

Among these expectations was that a Memorandum of Understanding (MOU) between the two departments defining respective roles and responsibilities would be executed.

General Ballard, would you please tell us what has transpired with the transition of this program?

Answer. The Corps established as its top priority for FUSRAP in fiscal year 1998 ensuring that no slippages would occur as a result of the transfer from the Department of Energy (DOE). We have achieved that goal. Our second highest priority was to complete an assessment of the program which was transferred to us and the report you requested. In ensuring a seamless transition and in our program assessment we have received the support and cooperation from the DOE at Oak Ridge, without which neither would have been possible. Our third highest priority was to transfer program and project management responsibilities from the management contractor used by DOE to our district and division offices. This is now being done. The Corps geographic districts recently negotiated their own delivery orders with the management contractor. The final stage in the transfer will occur before the end of the calendar year, as the geographic districts begin utilizing their own contract vehicles.

Question. Has an MOU been developed or executed in accordance with congressional intent? Is this having any adverse impact on the Corps' ability to execute the FUSRAP program?

Answer. We have not executed an MOU in accordance with congressional intent. We have met with DOE officials to discuss issues related to the transfer of the pro-

gram. The Corps has begun drafting a proposed MOU identifying roles and expect this effort will be intensified over the next couple of months. The lack of an MOU, however, has not had an impact on the execution of the work scheduled for fiscal year 1998. I believe that having an MOU will improve the exchange of information between the Corps and DOE and is needed to resolve issues concerning the respective roles of the two agencies.

Question. The Committee is informed that DOE has indicated that there was a significant gap in the transfer of this program, and the gap was related to regulatory issues. Could you explain the nature of this gap?

Answer. The Corps has the necessary Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) authorities and responsibilities to complete cleanup of the remaining 22 FUSRAP sites. While certain questions remain (e.g., regarding management of the federally owned disposal sites, such as the Niagara Falls Storage Site).

Question. There are concerns that the Corps is unilaterally reclassifying the FUSRAP nuclear waste material and disposing of it in a manner that is not in compliance with regulators in order to reduce costs thereby making the Corps execution of this program look better. General Ballard, how do you respond to this?

Answer. The Corps has the responsibility to characterize all waste which must be disposed as a result of the cleanup at the FUSRAP sites. There are a number of federal and state laws which impose limitations on the disposal of waste materials at facilities which are permitted to receive particular kinds of solid, hazardous or radioactive waste. USACE will ensure that all waste which is disposed from FUSRAP sites is managed in compliance with all applicable federal and state laws and regulations, and will continue to work with environmental regulatory agencies to ensure such compliance.

Question. The Congress requested a report on the Corps assessment of the program and steps that could be taken to complete the FUSRAP clean up program faster and at reduced cost. General Ballard, has the report been completed, and if so, in your judgement could DOE have completed the cleanup effort by 2002?

Answer. Based on the information available to me, I do not believe that DOE was on track to complete the cleanup of FUSRAP sites by 2002. The draft accelerated cleanup plan which DOE prepared in June 1997 limited the scope of the program principally by proposing that hazardous wastes at the Niagara Falls Storage Site remain on site and by proposing to clean up the St. Louis sites to a restricted use industrial standard rather than industrial use. In addition, the draft accelerated cleanup plan was based on an early estimate of the scope of the required work at the Luckey site which, it has since been established, greatly underestimated the quantities requiring remediation. Further, DOE's completion date of 2002 for the draft accelerated cleanup plan was premised on an annual funding level of $182 million per year over the next several years which, at this time, doesn't seem likely.

Question. What is the Corps assessment of when the cleanup of all the remaining sites can be completed? What are the reasons for the differences between DOE's plan and the Corps assessment?

Answer. In our assessment the Corps could complete 16 sites by 2002, following the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) close out process. Four additional sites could be completed by 2004. The two remaining sites, Niagara Falls Storage Site, NY and Luckey, OH could not be completed until 2006. These last two sites are in the early stages of characterization and pose a major technical challenge for site cleanup. The Corps assessment includes removal of hazardous wastes at the Niagara Falls Storage Site and recognizes the increased quantities at the Luckey, OH, site. Our ability to actually accomplish cleanup by these dates will depend on the level of funding provided and the specific cleanup criteria established for inidividual sites in accordance with CERCLA.

Question. What annual funding level would be necessary to complete the cleanup program by 2006? Does the fiscal year 1999 budget request support the 2006 date?

Answer. In order to complete in 2006, funding for fiscal years 1999–2002 would have to be $281.1 million, $322.1 million, $314.3 million and $230.5 million, respectively. Requirements for fiscal year 2003–2006 would be substantially less, $62.5 million, $103.5 million, $96.9 million, and $7.4 million respectively. These estimates are based on assumptions regarding cleanup criteria. Actual cleanup criteria, which will be established on a site by site basis in accordance with the CERCLA process, will impact both schedule and costs. Funding at the $140 million level will not permit completion of the program until fiscal year 2011.

Question. General Ballard, the Corps has been managing this program only 6 months. Has DOE been completely cooperative and helpful, particularly here in Washington, to bring about a smooth transition? What areas or issues remain unre-

solved between DOE and the Corps and have DOE and the Corps agreed on a plan to resolve them? Provide for the record a list of the remaining issues and the dates when you expect them to be resolved. What are the most notable achievements of your first months of FUSRAP management?

Answer. We have achieved a smooth transition from DOE without slippage at any of the FUSRAP sites in large part because of the support we have received from DOE and its contractors at their Oak Ridge facilities. However, we have not reached agreement with the DOE regarding the extent to which FUSRAP responsibilities which were transferred by the Energy and Water Development Appropriations Act.

Chief among the unresolved issues are ownership and maintenance responsibilities for sites completed by DOE prior to 13 October 1998, responsibility for the designation of new sites into FUSRAP, and responsibility for site closeout and long term monitoring and maintenance at the 22 sites which the Corps was asked to complete. In order to resolve these issues, the Corps is drafting a proposed Memorandum of Understanding to clarify the respective roles and responsibilities of DOE and the Corps regarding FUSRAP. I would like to complete negotiations with DOE and execute a MOU so we move into fiscal year 1999 execution with the transition behind us.

Our biggest achievement was ensuring that there would be no slippages as a result of the transfer. We not only have been able to maintain schedules, but it appears we have postured ourselves to accelerate efforts at Middlesex, NJ, and at several sites which had been put on the back burner, including Bliss and Laughlin Steel, Buffalo, NY; Madison, IL; W.R. Grace Site, Curtis Bay, MD; and Dupont and Co., Deepwater, NJ. In addition, we anticipate closing out the Shpack Landfill, Norton, MA site. We have negotiated a new disposal contract at one of our sites which will reduce disposal costs for mixed wastes by approximately a third for that site. We have undertaken several value engineering studies which have the potential to produce substantial savings.

TENNESSEE VALLEY AUTHORITY NON-POWER FUNCTIONS

Question. You are aware that TVA performs non-power functions such as flood control and navigation on the Tennessee River and its tributaries. Which of these non-power functions are similar to activities the Corps performs in other parts of the country?

Answer. The water resources development and management functions performed by TVA are virtually identical to what the Corps does nationwide. The Corps constructs dams and reservoirs, such as are found on the Tennessee River and tributaries, and controls the impounded water for multiple purposes, including navigation, flood control, hydropower, water supply, and recreation. We also operate or license the lands at those reservoirs for recreation, resource management, and environmental stewardship. In addition, the Corps designs, constructs, rehabilitates, and operates the system of locks and dams on the Inland Waterway System, and in fact we operate the locks at the TVA dams, maintain the Tennessee River for navigation, are constructing Kentucky Lock on the Tennessee River, and have performed an independent review of the condition of TVA's Chicamauga Lock.

Other functions are less similar. The Land Between the Lakes National Recreation Area would pose a challenge because there are several unique activities at Land Between the Lakes that the Corps does not perform as part of its traditional recreation management mission at lake projects. Regional economic development assistance is beyond our authority.

Question. Does the Corps have the technical capability to take over those TVA functions?

Answer. Yes, the Corps has the technical capability to take over the dams and reservoirs, operate them as a system, and perform repair and rehabilitation activities to ensure that they are efficient, reliable and safe.

The Corps does not have the manpower, funds, or authority to assume these responsibilities, and the steps to transfer the physical assets and associated responsibilities would take additional time and money.

TVA maintains its power and non-power programs are integrated in such a way that separating them could cause inefficiencies and loss of money and power. Any transfer would have to deal with this issue.

Question. Could you provide the Committee at the earliest possible time an analysis as to what functions would be appropriate to possibly transfer to the Corps including an estimate of the funding and personnel resources that would be necessary for the Corps to carry out those functions. Also provide any legislative language that would be helpful in making an orderly transition.

Answer. I will work through the Administration to provide the information you have requested. I would note that the Office of management and Budget is preparing a report to Congress, in response to a request in the Conference Report to the Fiscal Year 1998 Energy and Water Development Appropriations Act, that will address the issue of whether some other entities should be responsible for the execution of TVA non-power activities.

NEW MEXICO PROJECTS

LAS CRUCES FLOOD CONTROL PROJECT, NEW MEXICO

Question. The Congress provided $1,500,000 to initiate the Las Cruces flood control project in New Mexico. This project was included in the President's fiscal year 1998 budget as a new construction start. We have information that the Corps plans to use only about $400,000 of the $1,500,000 appropriated for fiscal year 1998. Is this correct, and if so why?

Answer. Sir, $400,000 will be used in fiscal year 1998 to complete the plans and specifications, execute the Project Cost Sharing Agreement, and continue coordination with the City of Las Cruces. The additional funds could not be used to accelerate the project due to the remaining time required by the local sponsor to complete real estate acquisition. The local sponsors have indeed moved out quickly. However, they do not have all the land, perhaps 90 percent but not all. Even once the remaining 10 percent is acquired, there are still certifications of compliance and etc. required to wrap everything up.

Question. How will the $150,000 included in the President's fiscal year 1999 budget request be used?

Answer. Sir, those funds will be used to continue real estate coordination and to ready the project for construction.

Question. What impact does the budget request have on the project completion schedule?

Answer. The construction contract award for the Las Cruces project was delayed one year due to a constrained budget ceiling, and is now scheduled for December 1999. Project completion will be delayed from August 2000 to August 2001.

Question. How much is the cost of the project expected to increase?

Answer. Sir, the project costs are anticipated to increase by $200,000.

Question. Who is responsible for paying those costs?

Answer. Sir, this increase in cost will be shared on a 75–25 percent basis by the Federal government and the City of Las Cruces.

Question. The City of Las Cruces has acquired necessary property and passed a $2,000,000 bond issue to cover the local cost sharing requirement. They are ready to go. How much funding is needed in fiscal year 1999 to get this project under construction and on an efficient schedule?

Answer. Sir, funding in fiscal year 1999 in the amount of $3,470,000 would enable us to award the construction contract in December 1998 and complete construction as originally scheduled in August 2000. Although project and study capabilities reflect the readiness of the work for accomplishment, they are in competition for available funds and manpower army-wide. In this context, the fiscal year 1999 capability amount for $3,470,000 considers the Las Cruces Flood Control project by itself without reference to the rest of the program. However, it is emphasized that the total amount proposed for the Army's Civil works program in the President's budget for fiscal year 1999 is the appropriate amount consistent with the Administration's assessment of national priorities for Federal investments and the objective of achieving and maintaining a balanced budget. Therefore, while we could use $3,470,000 on the Las Cruces Flood Control project, offsetting reductions would be required in order to maintain our overall budgetary objectives.

ACEQUIAS IRRIGATION SYSTEM, NEW MEXICO

Question. My office continues to hear from interests in New Mexico that the Corps is not proceeding in an efficient and effective manner on the Acequias Irrigation System rehabilitation work. However, information provided to the Subcommittee by the Corps indicates that the Corps cannot proceed with work until the Interstate Streams Commission gives approval to individual cost-sharing agreements with the acequias organizations. General Furhman/General Ballard can you help me understand what is causing the delays on this project?

Answer. Sir, the information previously provided by the Corps is correct. There are currently seven projects that the State of New Mexico, the local sponsor, is reviewing and coordinating with the local Acequias associations for approval. These

seven projects have been under financial and technical review by the State for over two years.

Question. What can the Corps do to resolve these problems?

Answer. Sir, the Corps will continue to work with the New Mexico Acequias Commission, the State of New Mexico, and the individual Community Ditch Associations. The U.S. Fish and Wildlife Service has completed a Programmatic Fish and Wildlife Coordination Act Report for the acequia program. We will no longer have to prepare individual Fish and Wildlife Coordination Act Reports for each project. We also plan to produce Programmatic Environmental Assessments for acequias in major river basins. This would eliminate the requirement to prepare an Environmental Assessment and conduct public review for each individual acequia project. Remaining environmental coordination will continue to include Section 106, National Historic Preservation Act compliance and Endangered Species Act compliance. We are also exploring other opportunities to expedite our processes to assure prompt delivery of quality products with budget.

Question. What assurances can you give me that the problem is not with the Corps of Engineers?

Answer. Sir, the Corps is committed to providing the irrigators in New Mexico reliable, permanent facilities requiring minimal maintenance. We will continue to work with all Federal, State and local entities to refine the process and proceed in an efficient and effective manner.

Question. How much funding was available to be spent in fiscal year 1998 and how much does the Corps expect will actually be used?

Answer. Sir, in fiscal year 1998 the Corps had $1,980,000 available for expenditure. We have scheduled $587,000 for expenditure.

Question. Will the Corps work cooperatively with the New Mexico Acequias Commission and other interested parties in evaluating the efforts and effectiveness of the Corps in executing the Acequias Rehabilitation project?

Answer. Yes, Sir. The Corps is committed to this effort.

Question. Do you expect to be able to spend more than the $150,000 budget request for fiscal year 1999?

Answer. Yes, Sir.

Question. If so, how much additional funding is needed and how will the funds be used?

Answer. Sir, our approved capability is $600,000. Although project and study capabilities reflect the readiness of the work for accomplishment, they are in competition for available funds and manpower army-wide. In this context, the fiscal year 1999 capability amount for $600,000 considers the Acequias Irrigation System project by itself without reference to the rest of the program. However, it is emphasized that the total amount proposed for the Army's Civil works program in the President's budget for fiscal year 1999 is the appropriate amount consistent with the Administration's assessment of national priorities for Federal investments and the objective of achieving and maintaining a balanced budget. Therefore, while we could use $600,000 on the Acequias Irrigation System project, offsetting reductions would be required in order to maintain our overall budgetary objectives. Pending approval of the cost sharing agreements by the State of New Mexico, the Corps could continue to design and ready the acequias projects for construction.

UPPER RIO GRANDE WATER OPERATIONS MODEL

Question. The committee has strongly supported the Corps efforts related to scheduling reservoir operations and the joint program with other Federal agencies related to the need for an Upper Rio Grande water operations model to help managers in flood operations, water accounting, and evaluation of water operations. Is this a worthwhile activity that is providing benefit to the Corps?

Answer. Yes, Sir. The Upper Rio Grande Water Operations Model is a tool to more efficiently manage water, a critical resource for the future of the Rio Grande Basin. The water operations model will replace our current processes that impede making timely water management decisions. It will provide immediate information for daily reservoir water operations, and more accurate and timely projections of Federal water operations in the basin.It will be used extensively to evaluate the interrelated effects of water operation alternatives and individual water management decisions on the river basin as a whole with all of the Basin's contemporary complexities.

Question. Have the other Federal agencies budgeted their funding for fiscal year 1999?

Answer. Yes, Sir. The Bureau of Reclamation has budgeted $229,000 within its Middle Rio Grande Project for fiscal year 1999 and have expressed a need for an

additional $350,000 for their participation in this joint effort in fiscal year 1999. The U.S. Fish and Wildlife Service, U.S. Geological Survey, Bureau of Indian Affairs and International Boundary and Water Commission have not previously had a separate budget item included for this effort but have supported it through their other ongoing activities in the Rio Grande Basin.

Question. How much is included in the Corps budget to continue participation in fiscal year 1999?

Answer. Sir, $60,000 was included in the Corps' fiscal year 1999 Operations and Maintenance budget for the Upper Rio Grande Water Operations Model Study.

Question. What does the Corps need in fiscal year 1999 to continue their involvement in this joint effort?

Answer. Sir, the Corps needs $850,000 in fiscal year 1999 to continue the joint program with other Federal agencies for development of the water operations model and to evaluate existing Federal basin water operations in cooperation with the Bureau of Reclamation. Although project and study capabilities reflect the readiness of the work for accomplishment, they are in competition for available funds and manpower army-wide. In this context, the fiscal year 1999 capability amount for $850,000 considers the Upper Rio Grande Water Operations Model by itself without reference to the rest of the program. However, it is emphasized that the total amount proposed for the Army's Civil works program in the President's budget for fiscal year 1999 is the appropriate amount consistent with the Administration's assessment of national priorities for Federal investments and the objective of achieving and maintaining a balanced budget. Therefore, while we could use $600,000 on the Upper Rio Grande Water Operations Model, offsetting reductions would be required in order to maintain our overall budgetary objectives.

LOYAL SOCK CREEK, PA

Question. The Dushore project was funded in fiscal year 1998 under Section 14 and Section 205. What is the status of the Corps of Engineers review of this project and why shouldn't it be funded entirely in Section 205?

Answer. Initiation of both the Section 14 and Section 205 investigations was formally requested by the Borough of Dushore on March 27, 1998. An initial coordination meeting and site visit with the sponsor will be conducted in April. After this site visit, a decision will be made on whether it is appropriate to incorporate the Section 14 project into the Section 205 project.

Question. What is the Corps capability to continue this project in fiscal year 1999?

Answer. The amount appropriated in fiscal year 1998 is sufficient to continue this project in fiscal year 1999.

Question. When do you expect to complete the reconnaissance level study and begin a feasibility study?

Answer. The feasibility study will be initiated in April 1998.

Question. Assuming a favorable reconnaissance report, when could a feasibility study be completed and actual construction begin?

Answer. If the Section 14 project is incorporated into the Section 205 project, the feasibility study could be completed in fiscal year 2000 and construction could be initiated in fiscal year 2001.

Question. Could this be started in fiscal year 1999?

Answer. Yes. The feasibility study will be initiated in April 1998.

Question. Will you provide for the record a list of all the new start programs and projects included in the fiscal year 1999 budget?

Answer. Yes sir, the following table reflects the proposed new start studies, projects and programs for fiscal year 1999.

GENERAL INVESTIGATIONS

Kern River Valley (Isabella Lake), CA
Long Island, Marsh & Johns Creeks, GA
Ala Wai Canal, Oahu, HI
Coastal Massachusetts Ecosystem Restoration, MA
Bayou Pierre, MS
Cimarron River and Tributaries, NM, OK, CO, & KS
Columbus Metropolitan Area, OH
Lower Columbia River, OR & WA

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

Mississippi River, Alexander Co., IL & Scott Co., MO

CONSTRUCTION, GENERAL

Walter F. George Powerhouse and Dam, AL & GA (Major Rehab)
Jim Woodruff Lock and Dam, Lake Seminole, FL, AL & GA
Chain of Rocks Canal, Mississippi River, IL (Def Corr)
Lock and Dam 24 Part 2, Mississippi River, IL & MO (Major Rehab)
Patoka Lake, IN (Major Rehab)
Assateague Island, MD
Big Sioux River, Sioux Falls, SD
London Locks and Dam, Kanawha River, WV (Major Rehab)

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

Grand Prairie, AR

CONSTRUCTION, GENERAL

Riverine Ecosystem Restoration and Flood Hazard Mitigation
Dredged Material Disposal Facilities Program

OPERATION AND MAINTENANCE, GENERAL

Management Tools for Civil Works Research Program

QUESTIONS SUBMITTED BY SENATOR GORTON

Question. As you know, the Corps of Engineers has recently begun distributing surveys to Northwest residents in an attempt to assess the impacts on recreation of breaching Snake River dams. Included in these surveys is a two-dollar bill and, in many surveys, the promise that if one responds, an additional ten dollars will be paid to the respondent. Please explain the process through which the Administration, specifically the Corps of Engineers, approved of the content and structure of the surveys. This response should include a detailed explanation of both the study and pre-study process, as well as justification for the use of substantially different texts during individual rounds of surveys and what results are expected as a result of their use.

Answer. The content and structure of the final surveys have not been approved at this time. The recreation surveys are in draft form, and are currently undergoing technical reviews within the Corps of Engineers, as well as a peer review. These reviews follow extensive reviews conducted by members of the Drawdown Regional Economic Analysis Workgroup (DREW). The surveys are being developed by a consultant who is a nationally recognized expert in this area. A variety of Federal agencies, tribes, private economic consultants, and other experts in conducting contingent value surveys have contributed in the development and review process. The intent of this extensive review process is to ensure the technical creditability of the surveys before they are finalized and approved.

Draft surveys were reviewed and approved by the Corps to allow for limited survey testing. Such testing, where the draft surveys were sent to 150 people selected at random, formed the basis for making further survey modifications to enhance the creditability of the responses when the official survey is conducted. Several different draft survey versions were developed. These versions differ primarily in the area of the potential biological benefits of the alternatives under consideration. Such versions were deemed necessary in the absence of specific biological information relating to the alternatives. In addition, many of the questions in the draft surveys assume a definite conclusion, which may not be factual. Such statements were deemed necessary in the absence of specific biological data to ensure a higher degree of accuracy in the responses. Research has shown that questions which appear to be hypothetical in nature, lead to less accurate answers by survey respondents. That is, questions presented in a hypothetical manner lead to hypothetical answers, and the object of the survey is to achieve greater certainty in the survey results.

The final survey forms and questions will be completed after extensive quality control/quality assurance reviews as discussed above. The final survey will be submitted to OMB for review and approval. We will not use a cash incentive in the distribution of the final survey. The final survey will be mailed to 15,000 people from the states of Oregon, Washington, Idaho, Montana, and northern California. Responses of the final survey will assist in providing: (1) estimates of recreation use and benefits associated with the existing system; (2) estimates of recreation use and benefits from returning the Lower Snake River to a more natural state; (3) estimates of non-use values for salmon and a more natural river condition; and, (4) esti-

mates of non-use values for salmon recovery associated with project improvements and additional barge transportation of juvenile salmon.

Question. How does the Corps of Engineers justify the inclusion of two-dollar bills and the incentive of an additional ten dollar to respondents? In addition, please explain the approval process the inclusion of such incentives was subject to, including the participation of the Office of Management and Budget or any other Federal agency in the development and approval of this plan.

Answer. The use of small monetary incentives in mail surveys is a commonly used practice to ensure higher response rates. A higher response rate will improve the reliability of survey findings, and will tend to reduce the level of risk and uncertainty in the conclusions derived from the survey results. Reliability in the conclusions drawn from the survey is critical, especially when such information may be used as part of the decision making process for long-term configuration of the four Lower Snake River projects. Such a decision will have significant regional and national implications.

These incentive payments were provided as part of the test mailing of five "dam removal" versions of the draft survey during February-March 1998. The test survey was sent to 150 people selected at random, each of whom received a $2 participation incentive. An additional $10 was provided to 43 of those who responded to the survey and completed a 45 minute telephone follow-up interview. The total incentive payment for the test was less than $750. The information obtained from the test of the draft survey and subsequent telephone interview will greatly assist in making refinements to the questionnaire and will further enhance the technical credibility of the final survey.

The surveys are being developed by a consultant who is a nationally recognized expert in this area. Federal agencies, tribes, private economic consultants, and other experts in conducting contingent value surveys have contributed in the development and review process. Draft surveys were reviewed and approved by the Corps in February 1998 to allow for limited survey testing. The Corps review was conducted to ensure consistency with pre-approved OMB survey questions. Specific approval from OMB for the small monetary incentive for the survey tests was not sought. The Corps has no plans to use monetary incentives in the distribution of the full survey.

Question. Please provide a detailed outline of the survey strategy. This outline should include numbers of surveys being mailed, content of surveys, including notification if more than one text will be used in any specific surveying rounds, and any other relevant information on the strategy of gathering public opinion on the drawdown or breach of Snake River Dams.

Answer. The present strategy, which is still under review, is for the final survey to be distributed to a total of 15,000 people residing in the states of Oregon, Washington, Idaho, Montana, and northern California. No incentive will be used in the distribution of the final survey. The surveys are scheduled to be sent out after OMB approval. They will be distributed by the University of Idaho. The Corps will provide Congressional notification of survey action prior to sending out any final survey documents to potential respondents. There is no reference in the survey to the Corps or the Lower Snake River Salmon Feasibility Study.

There is a range of different survey versions being developed. These versions project different potential benefits for salmon associated with the alternatives under consideration, including existing conditions, dam removal, and increased barge transportation. The use of a range of survey versions is necessitated by the absence of specific biological performance data for these alternatives at this time.

Question. The Corps of Engineers has recently awarded a contract to cover the site where the Kennewick Man remains were discovered. Included in the Senate version of the Supplemental Appropriations bill is an amendment prohibiting the Corps from taking any actions to cover or alter the site without specific approval by the Court with jurisdiction over a civil action between a group of prominent anthropologists and archaeologists and the Federal Government. As this is a matter of extreme urgency, I request responses to the following requests by April 3, 1998.

Answer. Yes, we understand.

Question. Please provide a justification for the Corps' actions. Included should be all relevant data supporting the claim that the site is at serious risk of erosion due to heaving rain flows in coming months.

Answer. In December 1997 the Corps determined that there was a potential for high flows, similar to previous years, which could inundate the park and further erode the site due to saturation and high flow velocities. We now expect spring flows will be lower than the December projections. However, a serious risk of erosion still exists due to wind-driven or boat generated wave action.

Question. Please provide a history of the administrative process through which the Corps determined the risk at the site, developed the plan for site protection, and approved of the plan.

Answer. The site of discovery of the subject human remains consists of a narrow beach bounded on one side by the Columbia River and on the landward side by a rapidly eroding bluff line and upland terrace. The subject human remains were discovered scattered along the beach and in the river surf-line. It has been postulated that a series of high-water events over a period of several years eroded the bluff line sufficiently to expose the subject human remains and it is this erosion that caused the bones to spill downward onto the beach and into the surf-line.

In the Fall of 1997, the Corps, the Departments of the Interior and Justice, and representatives from the President's Office of Science and Technology became sufficiently concerned about the on-going erosion and potential for additional erosion in the Spring and Summer of 1998 to begin the formulation of plans to physically protect the eroding bluff line. The interagency concern focused on the need to ensure the preservation of undisturbed cultural resources in the terrace behind the eroding bluff line.

In December 1997, the Corps led an integrated team of government scientists and investigators from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Washington State University (WSU) in a thorough examination of the beach and bluff line at and near the site of the discovery. The Corps notified the U.S. District Court of the scientific investigation and of the plan to protect the area. The Corps also complied with Section 106 of the National Historic Preservation Act by completing consultation with the Washington State Historic Preservation Office and the President's Advisory Council on Historic Preservation. Through the section 106 process, the Corps has confirmed that site protection measures will have no adverse effect on any significant cultural resources.

The Corps' Walla Walla District conducted an intensive evaluation of the discovery site characteristics and studied a number of engineering (structural and non-structural) solutions. The most effective and efficient remedy to the on-going erosion includes the placement of rockfill materials along the eroding bluff line, covering the rockfill with topsoil, and covering the topsoil with vegetation and plant species to stabilize and anchor the soil. Construction materials will be air lifted to a ground crew to avoid overland hauling that could adversely affect significant natural and cultural resources. The contract for this effort was awarded on 24 March 1998 and the contractor began work on that date. All in-water work is scheduled to be completed by 15 April 1998 and all construction activities will be completed by 30 April 1998.

Question. Please provide an account of what monies will be used for this purpose. Specifically, please include a list of the account or accounts to be drawn upon for funding for this project.

Answer. The monies that will be used for this will be from McNary Lock and Dam under the Operations and Maintenance, General, Appropriation.

Question. Please provide an explanation of the Corps' interpretation of the amendment to the Supplemental Appropriations bill and how it might affect the project to cover the site. Please specifically address any impacts on the project should the project start and the Supplemental Appropriations bill become law before its completion.

Answer. Work was started on 24 March and most of it must be completed by 15 April to avoid harm to endangered and threatened salmon and steelhead species which will be migrating through that stretch of the Columbia River on, and after, this date.

Question. How will any reductions in the Columbia River Fish Mitigation budget affect the Corps' ability to manage federal multiple-use projects on the Columbia and Snake Rivers? Additionally, how, if at all, will any reductions in this budget affect the Corps' relationship with the Bonneville Power Administration, in light of the recent direct funding agreement?

Answer. Sir, in the near term there would be little or no effect from any reduction in the Columbia River Fish Mitigation budget on our ability to manage our multiple use projects because this work is carried out with Operations and Maintenance funding rather than Construction, General, funding used for the Columbia River Fish Mitigation Project. However, reduced funding for this project over the next several years could impact management of the multipurpose projects in the long run. This is because the Columbia River Fish Mitigation Project is carrying out measures in the Reasonable and Prudent Alternative in the 1995 salmon Biological Opinion regarding hydropower operations and system configuration. If we are unable to implement measures in the Reasonable and Prudent Alternative as presently written, it is conceivable that other measures could be formulated, such as increased spills

and flow augmentation, which would impact other multiple uses. The recent agreement we signed with Bonneville Power Administration is for direct funding of annual Operation and Maintenance power costs to include hydropower specific costs, the power portion of joint use costs and power small capital items. At the present time we do not foresee that reduced funding in the Columbia River Fish Mitigation Project will affect our relationship with Bonneville Power Administration under the agreement.

Question. Representatives of the Corps of Engineers have recently stated that the Corps of Engineers could, under the correct circumstances, begin work to drawdown or breach Columbia River dams by early in the next century. Please provide a detailed account of any scenario in which drawdown or breach of a Columbia or Snake River dam could occur before 2008 and a list of assumptions that Corps representatives have used to develop such a scenario.

Answer. The Corps is currently only looking at drawdown or dam breaching of the four dams on the lower Snake River. We have not started planning studies for any projects on the lower Columbia River at this time, and are awaiting a decision and funding from Congress to conduct the first phase of planning study on John Day reservoir drawdown.

For the lower Snake River dams we are developing an implementation (design and construction) plan that would be used if a decision is made to breach the dams. Based on preliminary information it may be possible to actually breach the lower Snake River dams on or before 2008. A number of assumptions are inherent in this optimistic scenario, including the following:

The draft EIS and Feasibility Report would be distributed in April 1999. The final EIS and Feasibility Report would be completed in December 1999. It assumes that the recommended plan of action in the EIS has regional consensus.

It is assumed that there would not be lengthy litigation. This may be an optimistic assumption but there is no reasonable way to account for litigation in an implementation schedule.

It assumes Congressional authorization to implement drawdown or dam breaching would occur in 2000, presumably as part of a WRDA. This is possible assuming there are no delays in the review process and submission of the Chief of Engineers report to Congress.

It assumes appropriations, along with authorization, would occur in the fall of 2000 and that the Corps would receive the required funding in all future years (related to drawdown) so as to preclude any future resource limitations.

Preconstruction, Engineering and Design phase would be initiated following both appropriations and authorization.

In-water work period extensions or exemptions would be provided by the fishery management entities. The normal in-water work window for the Snake River is November to March, which is a period of low salmon and steelhead migration. During the breaching process, in-water work would need to start in August, when fish are migrating.

Question. Please provide justification for the representative's position that Planning, Engineering and Design on deconstruction of the projects can begin prior to any congressional authorization to breach, drawdown or remove dams.

Answer. Usually, the Corps initiates its Preconstruction, Engineering and Design (PED) work after the Feasibility Report is forwarded to Headquarters for processing and the Division Engineer issues the "Notice of Report." This is part of the Corps seamless funding process to assure the swift implementation of water resource projects. It is recognized that this is not a typical project. Therefore, it has been assumed for the implementation of drawdown that the Corps would need project authorization and appropriations prior to initiating PED.

Question. The hydro-electric production of Columbia and Snake River dams is an essential component of the economies of the states in the Pacific Northwest. Any slowdown in rehabilitation and modernization plans underway at Northwest projects has a direct effect on these economies. Please provide a detailed justification of the Corps of Engineers' plans to decrease funding in fiscal year 1999 for the rehabilitation and upgrade projects at Bonneville and The Dalles dams and any other affected projects.

Answer. The needs at these on-going projects had to be reduced by about 70 percent to fit within the budgetary ceiling. Funding needs for on-going contracts were given due consideration but, when possible, the schedules were stretched out. Unstarted work and future contract awards were delayed or the specific yearly amounts reduced with the work being stretched out.

Question. Please provide a schedule for completion of the rehabilitation and modernization of these projects, including any changes that must be made due to the Administration's lower funding request for fiscal year 1999.

Answer. The project completion dates for Northwestern Division's three Major Rehabilitation projects are September 2005 for Bonneville Powerhouse Phase II Major Rehabilitation project, September 2007 for the Garrison Dam and Powerhouse Major Rehabilitation project, and September 2007 for The Dalles Powerhouse Major Rehabilitation project. As a result of the reduced fiscal year 1999 funding request, The Dalles exciter replacements and the start of additional rewinds for eight more generators will be delayed one year. Work at Garrison Dam will be delayed one year which includes some engineering work, gantry and bridge crane repairs, governor repair, replacement of two draft tube bulkheads, and other general powerplant work. At Bonneville, generator windings and turbine replacements will be slowed down, causing a one year project completion delay.

Question. What consequences does the Corps see any slowdown might have on the Bonneville Power Administration and its rates to Northwest customers?

Answer. Schedule delays will increase the total cost for the rehabilitation of the powerhouses. The increases in costs will have to be paid by the appropriate Federal marketing agency, such as Bonneville Power Administration, through increases in electricity rates and repayment to the U.S. Treasury. Delays will also increase the possibility of unit failure, thus potentially reducing revenues due to units being out of service. As a result of delays, reliability of the powerhouses will continue to deteriorate resulting in major breakdowns; forced outages; and decreases in turbine efficiencies, operational flexibility, peaking capability, and juvenile fish survival. Powerhouse unreliability is a direct cause of large increases in O&M costs and total system power generation costs.

Question. In the Columbia River Fish Mitigation program, a number of alternative strategies for salmon recovery and fish passage are being pursued. Does this reflect a pursuit of strategies that will, in time, become incompatible? If so, at what point will that occur and at what point should decisions ultimately be made regarding the continuation of individual strategies?

Answer. Sir, all of the efforts in the Columbia River Fish Mitigation project are directed to improving survival of juvenile and adult salmon passing the eight Corps mainstem dams. The National Marine Fisheries Service 1995 Biological Opinion called for immediate and near-term improvements to the existing fish passage systems. Some of these improvements could become obsolete under certain long-term reconfiguration alternatives being evaluated under the Biological Opinion.

For the Lower Snake River dams, we are currently evaluating the feasibility of long-term actions such as breaching the dams, implementing major improvements such as surface bypass systems, or retaining the existing systems. The Biological Opinion calls for a 1999 decision on these long-term alternatives for the lower Snake River. If the dams were to be breached, the existing juvenile and adult bypass systems would no longer be functional, as the river would flow through a channel past the dams. If the decision is to implement surface bypass, existing juvenile bypass facilities may continue to be used in conjunction with surface bypass. Regional and federal review of a draft Environmental Impact Statement/Feasibility Study in 1999 will begin the decision process.

In the Lower Columbia River we are also evaluating and implementing passage improvements. These efforts are not necessarily mutually exclusive or incompatible at three of the four projects. For example, at Bonneville second powerhouse, we have begun construction of juvenile bypass system and outfall improvements. These will provide passage benefits regardless of the long-term plan at Bonneville, assuming breaching, or drawdown is not considered in the future. At John Day, we have deferred substantial investment in surface bypass development pending decisions by the Appropriations Committees on whether funding will be provided for drawdown studies. The 1995 Biological Opinion identifies specific decision and implementation dates for individual passage improvement measures at the Lower Columbia River projects but does not specify an overall decision timeline as for the Lower Snake River.

The Northwest Power Planning Council is engaged in reviewing the major construction activities in the Columbia River Fish Mitigation Project in response to the Conference Report for fiscal year 1998 Energy and Water Development Appropriations.

Question. In its fiscal year 1999 budget request, the Walla Walla District of the Corps of Engineers requested $100,000 for a reconnaissance study of fish habitat restoration along the Columbia River in the Tri-Cities area of Washington state. Please provide an explanation for this project's exclusion from the Corps' fiscal year 1999 budget request.

Answer. Due to the many recommended studies that competed for limited new start funding nationwide and the constrained number that could be included, the

Tri-Cities Levees Restoration study was not selected for the fiscal year 1999 budget request.

QUESTIONS SUBMITTED BY SENATOR CRAIG

DWORSHAK PROJECT

Question. The resource manager position at the Dworshak project has been vacant for some time, and according to a Corps employee, the position will be filled only temporarily. Why can't this position be filled permanently?

Answer. The Walla Walla District Commander made the decision to permanently fill this position on 16 March 1998.

Question. Please submit for the record proof whether the money specifically requested by the Corps and appropriated by Congress for the Dworshak Project during each fiscal year beginning in 1994 through 1998, was actually used for operations at the Dworshak Project.

Answer.

DWORSHAK DAM AND RESERVOIR, ID

	President's O&M budget request	Actual O&M expenditures
Routine O&M	($6,556,000)	($6,742,864)
Nonroutine O&M	(552,000)	[1] (434,000)
Fiscal year 1994	7,108,000	7,176,864
Routine O&M	(6,861,000)	(7,571,626)
Nonroutine O&M	(1,371,000)	[2] (687,000)
Fiscal year 1995	8,232,000	8,258,626
Routine O&M	(7,581,000)	(8,180,390)
Nonroutine O&M	(1,563,000)	[3] (928,000)
Fiscal year 1996	9,144,000	9,108,390
Routine O&M	(6,500,000)	(8,347,351)
Nonroutine O&M	(1,439,000)	[4] (2,662,000)
Fiscal year 1997	7,939,000	11,009,351
Routine O&M	(7,613,000)	[5] (7,974,700)
Nonroutine O&M	(253,000)	[5] [6] (3,418,000)
Fiscal year 1998	7,866,000	[5] 11,392,700

[1] Boat ramp extension and damage repair; infrastructure repair.
[2] Boat ramp extension; boat anchor repair; water supply; payment for damage claim.
[3] Foundation grouting; water supply; boat ramp extension; purchase tailrace crane.
[4] Foundation grouting; balance of purchase of tailrace crane.
[5] Estimated.
[6] Foundation grouting; hatchery water and temperature control work.

Question. Will any current or future operational plans for the Dworshak Project interrupt electric power, adversely impact recreational opportunities, or result in excessive inflow that would cause the Reservoir to overfill and harm the citizens of the City of Orofino, in Clearwater County, Idaho, or others down river?

Answer. Current and future plans for Dworshak Project include adequate resourcing to assure sound operation and maintenance practices of both the powerhouse and natural resource features. I do not anticipate significant changes to our overall management philosophy, and budget reductions are being applied with the principles of good stewardship in mind. Power demands will be met, as in the past. Smaller staffing, i.e., fewer rangers and tour guides, may reduce contact opportunities for the public. Maintenance expenditures in recreation areas have been reduced,

but no sites have been closed. Operational practices will continue to assure that the safety of the citizens living below the Project will be not be compromised.

LOWER SNAKE FEASIBILITY STUDY

Question. Describe the process by which the Corps will develop qualitative information related to the potential effects on recreation of alternatives being considered in the Feasibility Study. Include in this discussion a detailed explanation of how the Drawdown Regional Economic Analysis Workgroup (DREW) influences or directly impacts the Corps' process.

Answer. As a component of the feasibility study, the Drawdown Regional Economic Analysis Workgroup (DREW) was established to conduct a comprehensive analysis of the social and economic effects of alternative plans intended to assist in the recovery of listed salmon species on the Lower Snake River. Participants in the DREW represent numerous Federal agencies (Corps of Engineers, NMFS, BPA, Bureau of Reclamation, USFWS), the Northwest Power Planning Council (NPPC), the NPPC Independent Economic Advisory Board, states, tribes, environmental conservation groups, inland navigation interests, contractors, and others. The DREW is part of the Corps process to complete a feasibility study by late 1999.

The recreation analysis, and surveys in question, is a component of the overall economic analysis being conducted by the DREW. Recreation on the four Lower Snake River reservoirs is a project purpose, and these activities would be significantly altered with implementation of the drawdown alternative. A study plan was developed by the DREW to effectively evaluate the impacts to recreation. The analysis was also being designed to estimate how recreation uses would change in the event of drawdown. Recreation surveys are currently under development, and are designed to obtain necessary qualitative and quantitative information on the effects on recreation. Specifically, the four primary objectives of the surveys include:

—Estimate the recreation use and benefits associated with the existing system.
—Estimate recreation use and benefits from returning the Lower Snake River to a more natural state.
—Estimate non-use values for salmon and a more natural river.
—Estimate non-use values for salmon recovery associated with project improvements and additional transportation of juvenile salmon.

Question. Please provide an update on what is being done to improve the objectivity of the survey that will be used to determine: (1) the recreation use and benefits associated with the existing system; (2) the recreation use and benefits derived from any action returning the lower Snake River to a more natural state; and (3) estimate the non-use values for a more natural river and for salmon.

Answer. The surveys are being developed by a consultant who is a nationally recognized expert in this area. Federal agencies, tribes, private economic consultants, and other experts in conducting contingent value surveys have been involved in the development and review process. The surveys in question are undergoing rigorous quality control/quality assurance reviews by experts at the Corps' Institute for Water Resources and at the Corps' Headquarters office. In addition, a peer review is concurrently being performed to further enhance the technical credibility of the surveys. This overall process is being managed by the Walla Walla District office. Following these reviews, the Walla Walla District will submit the surveys to the Northwestern Division office, where they will be further evaluated to ensure compliance with OMB guidelines. The surveys will not be approved nor will a formal survey be conducted until these various quality control/quality assurance processes have been successfully completed.

LOWER SNAKE FEASIBILITY STUDY

Question. Is the current "PATH" (Plan for Analyzing and Testing Hypotheses) process capable of resolving the ambiguities or uncertainties surrounding the scientific data on salmon survival?

Answer. The uncertainties associated with salmon survival will not be completely resolved based on available information. Given enough time, we believe PATH could reduce the critical uncertainties associated with salmon survival and overall recovery estimates. However, based on preliminary results for spring/summer chinook analysis, one of the PATH conclusions is that the "key uncertainties are unlikely to be resolved with existing data."

Question. Will the data allow definite conclusions to be reached on salmon survival from the various recommended alternatives?

Answer. The PATH process will reduce the degree of uncertainty, but it will not result in any definitive conclusions. Current scientific information and analyses are not likely to point to a single alternative as the only means of satisfying survival

and recovery goals for Columbia River listed stocks. Preliminary PATH spring/summer analysis completed to date is consistent with this observation. However, the assessments of spring/summer chinook are incomplete and the analyses for other species have only recently been initiated. PATH is not scheduled to complete the analysis of fall chinook and steelhead until this coming fall. A critical element of the spring/summer chinook assessment, the weighting of alternative assumptions, will be carried out over the summer. The degree to which the final analysis will be able to eliminate or highlight specific actions depends upon the outcome of those steps.

Question. Please provide suggestions as to how the Corps can ensure that its Feasibility Study will contain the necessary scientific information that will meet its goal of providing "a sound and documented basis with which both federal and regional decisionmakers can judge the recommended solutions."

Answer. Biological information for the feasibility study is being compiled and analyzed through the PATH process. The approach, assumptions and products from this interagency effort are periodically reviewed by a panel of nationally recognized experts. We recognize that the PATH activities are behind schedule. We are working with the PATH and with others in the regional forum to explore options for expediting the PATH analyses so that adequate biological information will be available for use in making the 1999 long-term system configuration decisions.

A regional economic workgroup (DREW) is analyzing the economic and social effects of the alternatives. The DREW is looking at direct effects of dam removal on power, navigation, irrigation and other project uses. They will also examine the secondary economic and social effects on the community and regional industries. The economic information will be available for the 1999 decision if PATH meets its target schedules.

The Corps is examining the engineering and technical aspects for each of the alternatives. This information will be fully available for the 1999 decision.

QUESTIONS SUBMITTED BY SENATOR REID

Question. Dr. Zirschky, you represent the Administration in advocating the budget that was presented to Congress. Therefore, I know we are on opposite sides of the issue when I say I was extremely disappointed in the deep cuts that the President sent to us. As I am sure you gathered, earlier this week the administration is advocating a budget that is considered not only unpopular but unworkable.

Don't you see the dilemma that has been created by the budget cuts after the Congress expressly provided such strong support for the Corps program and projects?

Answer. Yes, I see the dilemma, and it is a cause of much anxiety. The President has requested the amount for water resources that he believes is affordable within the ceiling for domestic discretionary spending.

Question. What is your rationale for allowing the projects to be further drawn out and thus costing the local cost-share partners more in the long run?

Answer. The amount that the President believes can be made available for water resources cannot fulfill the needs of all ongoing projects. This left me with a very difficult choice. I could either have selected some projects to fund at the optimal rate and not funded others, or funded them all at a reduced rate. I did not want to pick winners and losers. Indeed, I directed the Corps to do away with an existing Army list of high priority projects. There were some Administration-wide projects that did get consideration. Thus, my rationale was that within the funds available I had to work with, I was going to try to be as fair as possible and keep projects going as best I could.

DIVISION OFFICE SALARIES

Question. I understand that a percentage of the amount that is appropriated for a specific project goes to the salaries of officers and personnel at the Division offices for their activities that are completely unrelated to the projects themselves. Nevada, along with other states that do not have a division office, as well as any project manager, should be extremely concerned. If this is an accurate portrayal of the situation, I intend to propose that those salaries should be drawn from the General Administration account for the Corps. Your comments?

Answer. The costs of operating the division offices, including salaries for civil program team members, are paid from the General Expenses appropriation account, which is the "general administration" account for the civil works program. If a division also has a military program mission, payment of operating costs is shared with the Operation and Maintenance, Army, appropriation account. Title I of the Energy

and Water Development Appropriations Act, 1998, Public Law 105–62, prohibits the use of project funds for the activities of the Headquarters and the division offices.

LAKE TAHOE BASIN

Question. Given all the restoration work needed immediately at Lake Tahoe and the many nonfederal agencies involved in the lake restoration, could you explain the reprogramming request of $750,000 that was appropriated for the Lake Tahoe Basin in fiscal year 1998?

Answer. The only funds that have been reprogrammed this fiscal year from the Tahoe Basin GI study have been $100,000 to fund our efforts in the Tahoe Basin Federal Partnership which has the objective to operate and protect the extraordinary natural, recreational and ecological resources within the Lake Tahoe Region and the economies that depend on them. This effort is compatible with the on-going reconnaissance study for which funds were appropriated. Moreover, not all of the appropriated funds will be expended this fiscal year in the Tahoe Basin study due to extended effort to define an appropriate feasibility study plan and identify a willing cost sharing partner. We completed an initial reconnaissance report in July 1997 but were unable to find a sponsor able to cost share continued feasibility studies. We are currently expanding the scope of the reconnaissance study and expect to sign a feasibility cost sharing agreement in September 1998 dependent on identification of a cost sharing sponsor. We are continuing to work with the local communities on other Tahoe Basin studies under the Section 206, Aquatic Ecosystem Restoration program, and under the Section 208, Clearing and Snagging program for flood control.

Question. I understand that a deputy project manager has been appointed to be stationed in Las Vegas. I appreciate the Corps' recognition that the Tropicana and Flamingo flood control project is of vital importance to the Las Vegas valley.

Answer. In response to the unprecedented growth of Las Vegas during the design of this project, and the attendant dynamics of coordinating the expanding infrastructure of roads, water, power and other utilities, combined with the pressures of private development, we felt it was appropriate to appoint a deputy project manager to ensure the efficient implementation of this important flood control project.

Question. What is your best estimate for completion of the feasibility study in the South Coast Restoration Project?

Answer. The Rhode Island South Coast Habitat Restoration and Storm Damage Reduction feasibility study is scheduled to be completed in June 2000.

Question. What steps is the Corps taking to minimize the time between the completion of the feasibility study and the implementation of an action plan to address beach erosion in Rhode Island?

Answer. The feasibility study is evaluating the optimum schedules to conduct the preconstruction engineering and design effort for the implementation of beach erosion measures in Rhode Island. This would include identification of any separable measures for which construction could be expedited. Nevertheless, any measures recommended for further effort must comply with the Administration's shore protection policy in effect when the feasibility study is completed.

QUESTIONS SUBMITTED BY SENATOR BYRD

IMPACT OF THE PROPOSED FISCAL YEAR 1999 FUNDING LEVEL

Question. The fiscal year 1999 budget request for Corps construction is $784 million, a decrease of some $685 million, or 47 percent, below the fiscal year 1997 level. Dr. Zirschky's statement suggests that such a reduction is appropriate due to the accumulation of unexpended balances. I would note, however, that funds provided to the Corps in the fiscal year 1997 supplemental, and in the fiscal year 1998 regular appropriations bill, are for specific projects and purposes. It is incumbent upon the Corps to execute the program which is enacted by Congress. If Congress were to approve the proposed budget for fiscal year 1999, in all likelihood, the Corps would need to undertake massive reprogrammings. I do not believe that is an effective way to manage a program, and hope that this Subcommittee will provide sufficient resources to avoid significant disruptions in fiscal year 1999.

What effect will this constrained funding level proposed for fiscal year 1999 have on project schedules—will they have to be stretched out? By how much?

Answer. There are 139 projects with established completion dates in the President's fiscal year 1999 budget. These projects have slipped an average of 14 months from the completion dates in the President's fiscal year 1998 budget request. Differences range from a stretch out of 120 months to one project completing 24

months sooner than scheduled last year, and 43 projects have no change in their completion dates.

Question. The budget reduction presumes that the necessary funding to address project requirements in the out years will be forthcoming once the Corps reduces its unobligated balances. Do the outyear planning assumptions for the Corps of Engineers assume an increase? If not, how will the corps be able to address the future costs associated with the projects in process?

Answer. The current outyear planning assumptions for the Corps of Engineers Construction, General program includes stable construction funding about $1 billion per fiscal year. The funding and completion schedules for projects included in the President's fiscal year 1999 budget have been developed in accordance with these funding assumptions.

Question. Will there be further delays and subsequent additional cost increases if the necessary funds are not forthcoming in the out years?

Answer. No, the projected delays include the assumed outyear funding levels of about $1 billion per year.

MARMET LOCK AND DAM

Question. Last year, Congress provided $1.8 million for initial pre-construction activities associated with a major lock replacement program at Marmet Lock and Dam along the Kanawha River. This project has been supported by the Corps, and was authorized in the 1996 Water Resources Development Act.

Funds made available in fiscal year 1998, and proposed for fiscal year 1999, will allow the Corps to continue the necessary real estate acquisition. However, the fiscal year 1999 budget does not include the funds necessary to proceed with detailed engineering and design. What activities does the Corps anticipate completing in fiscal year 1998? How many homes will be acquired?

Answer. In fiscal year 1998, advanced engineering and design will continue, with completion of the design memorandum for sewer relocations, the geology and foundation draft design memorandum, and the draft lock design memorandum.

Preliminary deed research on all tracts have been completed and legal descriptions have been prepared for twenty-seven tracts. Ten homes are scheduled for acquisition in fiscal year 1998, and for seventeen tracts titles and appraisals are being completed and hazardous waste investigations are being updated.

Question. How many homes are expected to be acquired in total? How long have these people been waiting? Are there willing sellers, or is condemnation contemplated?

Answer. There are approximately 200 tracts of land containing 176 single family residences, 53 residential mobile homes, five apartment buildings containing 13 apartments, and 10 businesses. This totals 252 displacements as the result of the Marmet project. Since a public meeting in 1989, local residents have been aware of the Corps' plan to modernize the locks at Marmet and of the fact that their properties could be required for the project, depending upon the selected plan. The selected project was presented to local residents at a public meeting in 1993.

Based on discussions with landowners at the public meetings, the Corps expects a typical percentage of condemnations, which historically is about 10 percent of tracts. A better estimate will be available once negotiations have been initiated.

Question. So, if there are some 250 properties to be acquired, would you agree that the fiscal year 1998 funding is just the beginning—that there is still significant progress that must be made in the acquisition program before the project will be able to proceed with construction?

Answer. Yes, I agree that the fiscal year 1998 effort is just the beginning. The Corps is scheduled to acquire five percent of the tracts in this fiscal year.

Question. The budget request for fiscal year 1999 is just $1.5 million. What funding level has been identified as capability for fiscal year 1999?

Answer. Subject to the qualifying language, the fiscal year 1999 capability for the project is $9,000,000 to continue real estate acquisition and engineering and design activities.

Question. On previous occasions, the Corps had estimated it would take four years to complete the necessary land acquisition. What annual funding level did this presume? At the level proposed in the budget, what will be the time necessary to complete the land acquisition?

Answer. The four year schedule assumed a funding level of approximately $6,500,000 per year for real estate acquisition. At a funding level of $1.5 million per year, acquisition would take approximately 18 years to complete.

Question. What funding levels for Marmet for fiscal year 1999 were proposed by the District? What funding levels were included in the Corps' request to OMB for fiscal year 1999?

Answer. The fiscal year 1999 funding level proposed by the Huntington District was $8,960,000. The Corps request to OMB was for $10,960,000 for real estate acquisition and continuation of engineering and design.

Question. If funds are not provided in fiscal year 1999 for engineering and design for Marmet, what will this do to the project schedule?

Answer. The current project completion schedule of 2009 reflects no funds being available in fiscal year 1999 for engineering and design. If the fiscal year 1999 project capability amount of $9,000,000 is provided for real estate and engineering and design, the project completion schedule could be advanced one year.

Question. What will happen to the people who are working on this project in the Huntington District? Would work be stopped?

Answer. Approximately 8 to 10 people currently are working on engineering and design. They would be assigned to work on other projects, and engineering and design tasks for the Marmet project would be terminated in a manner that minimizes disruption of the work.

GREENBRIER RIVER

Question. Recently, the Corps completed an updated evaluation report to provide a more accurate assessment of flood control options for the Greenbrier River basin. In that report, the Corps does not endorse a particular option, but rather, identified the various benefits, costs, and procedural requirements associated with each of the alternatives. If a non-dam alternative is supported locally, and a cost-sharing partner comes forward, what further steps would be necessary for the project to proceed? Are more studies necessary, or is the Corps ready to proceed to detailed planning and design so that project implementation can begin?

Answer. At each location in the Greenbrier River Basin where a cost sharing partner comes forward, we would prepare a Project Management Plan and execute an agreement to share design costs. As the first part of design we would prepare a Detailed Project Report to support a project cooperation agreement. The level of effort to prepare the Detailed Project Report at each location would depend on the extent of the work already accomplished. Additional detailed design, including plans and specifications, would be needed after completion of each Detailed Project Report.

TUG FORK PROJECTS

Question. Last year, Congress provided $12.1 million for ongoing activities in the West Virginia areas that are part of the Levisa/Tug Fork flood protection program. No funds are included for ongoing flood protection actions underway in Hatfield Bottom and Upper and Lower Mingo and Wayne Counties, nor to initiate flood proofing and acquisition in approved areas in McDowell County. Why are no funds included in the budget for the Hatfield Bottom and Lower and Upper Mingo County components of the Tug Fork project?

Answer. No funds are included in the Administration's budget request for the Hatfield Bottom and Lower and Upper Mingo County elements because these elements are not economically justified.

Question. Have Upper and Lower Mingo County identified the necessary cost-sharing to comply with their particular authorizing requirement?

Answer. Yes, both the Lower Mingo County project and the Upper Mingo County project involve cost sharing. The County Commission of Mingo County has signed cost-sharing project cooperation agreements for these projects.

Question. What funding is necessary in fiscal year 1999 to keep these projects on schedule?

Answer. Subject to the qualifying language, fiscal year 1999 funding capabilities to continue work on these projects are $1.6 million for Upper Mingo County, $3.6 million for Lower Mingo County, and $300,000 for Hatfield Bottom.

Question. What funding is necessary to initiate flood proofing and acquisition in McDowell County and to continue the effort in Wayne County?

Answer. Sir, again subject to the qualifying language the fiscal year 1999 capability to initiate efforts in McDowell County is $5,000,000 and the capability to continue efforts in Wayne County is $1,800,000.

Question. Last year, Congress provided $400,000 for an early flood warning system for the Tug Fork valley. What is the status of this effort? Has a cost-sharing partner been identified?

Answer. System design is currently under way. The Corps is discussing project sponsorship with both the State of West Virginia and the Commonwealth of Ken-

tucky. Implementation of the system is scheduled for completion in fiscal year 1999 subject to identification of a cost sharing sponsor.

STATEWIDE FLOOD CONTROL PLAN

Question. In fiscal year 1998, Congress provided $400,000 for the Corps to work with the State of West Virginia in the development of a statewide assessment of flood control activities and needs. By involving Federal, State, and local authorities involved with flood protection and response, this assessment will help to ensure that the highest priority needs receive attention and that efforts among the different players are coordinated. What is the current expectation for how long it will take to complete this assessment?

Answer. The Corps is currently negotiating a cost sharing agreement for this assessment with the State of West Virginia. The agreement is scheduled to be executed in April 1998. If funds were available, it would take approximately twenty-six months to complete the assessment after execution of the agreement.

Question. Are additional funds necessary in fiscal year 1999 to complete this undertaking? If so, how much is required?

Answer. Yes, additional funds of $624,000 are necessary to complete the defined work tasks.

MOOREFIELD, WV AND PETERSBURG, WV

Question. In 1990, Congress authorized construction of flood control protection projects in Moorefield and Petersburg, West Virginia. These areas suffered considerable damage as a result of flooding in November, 1985, and the communities have been working to improve their flood protection ever since. Both projects are now completed, and I will be participating in the dedication of the Moorefield project at the end of April. Both projects have been faced with final costs higher than originally expected due to high land acquisition costs, as well as damages stemming from flooding during the construction phase. Dr. Zirschky, do you have any flexibility to extend the repayment period for these projects?

Answer. No, sir. The Corps does not have any flexibility to extend the repayment period for the Moorefield, West Virginia, and Petersburg, West Virginia projects.

Question. Are you able to do this administratively, or is legislation required?

Answer. In order to extend the repayment period for the non-Federal share of the costs of these projects, legislation is required.

Question. If the extension period were to be provided, and Congress were to direct that this be done interest-free, would there be any further cost increases for either of these projects?

Answer. There could be, sir. Until all construction is completed and all final project costs, including settlement of construction claims, and non-Federal credits are determined, both the Federal and non-Federal costs could change.

Question. Are there any instances in recent years where the Corps has been directed to waive any additional amounts owed to be repaid after a project has been completed?

Answer. No, sir. There are no instances in recent years where the Corps has been directed to waive any additional amounts owed or to be repaid after a project has been completed.

BLUESTONE DAM DRIFT AND DEBRIS

Question. Section 357 of the 1996 Water Resources Development Act included a provision for the Corps to address drift and debris accumulation above the Bluestone Dam. In last year's Energy and Water appropriations bill, Congress provided $475,000 to begin design of the debris removal elements. What is the status of this effort? Are additional funds necessary in fiscal year 1999 to complete the planning and design?

Answer. The debris removal effort has four components. The first is limited removal of impounded material. The second is a public awareness program to address disposal of manmade trash into the waterways upstream of the dam. A third component, removal of debris downstream of the dam, is performed by the Park Service and the West Virginia Division of Environmental Protection, and the Corps is not authorized to participate in this effort. For the fourth component, the multi-level intake structure, development of a hydraulic model currently is under way and project design will begin later this fiscal year. Subject to the qualifying language, an additional amount of $420,000 could be used to complete the planning and design of that feature.

Question. Previously, the cost estimate to complete the debris removal component of this project was $7.5 million. Is this still an accurate cost estimate? When will the Corps be ready to begin construction on this project?

Answer. Yes, apart from $1.6 million used for early testing and analysis of alternatives, $7,500,000 is an accurate estimate to complete the debris removal effort. Construction of the multi-level intake structure would cost on the order of $5 million, and design and construction management for the structure and implementation of the other components together would cost on the order of $2.5 million. If $420,000 were provided, the Corps could finish design before the end of fiscal year 1999 and be ready to advertise and award a construction contract.

Question. On a different matter at Bluestone Dam, there are interests in West Virginia that have proposed the construction of hydropower generating capacity at this location. Their proposal is an interesting one, in that they propose non-Federal financing for the project elements, to be done in conjunction with the Corps' standards and requirements. It is unclear yet whether the Corps has authority to pursue this project, or whether special authorization will be necessary.

Dr. Zirschky, you will be meeting with these interests to discuss this proposal in April. I look forward to hearing from you after you have had a chance to review the project proposal and evaluate the various options which may or may not be available. I am interested in ensuring that my constituents have an accurate and complete picture of the Corps' authorities in this regard.

Answer. Yes sir.

ROBERT C. BYRD LOCK AND DAM

Question. Last year, Congress appropriated $5.4 million for dam rehabilitation and construction of mitigation responsibilities associated with this project. Additional funding is anticipated as being needed in fiscal year 1999 to keep this project going. What funding is included in the budget for this project? Is this amount sufficient to keep pace with anticipated progress on the mitigation work at RCB lock and dam?

Answer. The President's Budget requests $7,000,000 to continue with efforts at the Robert C. Byrd Locks and Dam project. This amount is not sufficient to provide for uninterrupted efforts on the ongoing mitigation contract but is sufficient to enable the exercise of contract options in time to avoid delay costs.

Question. What funding would be considered to be the "approved capability" to allow work on this project to proceed without disruption?

Answer. Subject to the qualifying language, the fiscal year 1999 capability for the project is $10,600,000.

QUESTIONS SUBMITTED BY SENATOR MURRAY

MINIMUM DREDGE FLEET

Question. On August 12, 1997 I wrote to Dr. John Zirschky, along with five other Northwest Senators, asking the Corps to address several issues when it issues its recommendation to Congress on the future of the Minimum Dredge Fleet. We restated this request on November 7, 1997 in the combined Northwest Delegation comments on the Minimum Dredge Fleet study. Quoting from the November 7 letter, "we asked that the study include certain analysis to allow Congress to evaluate Corps recommendations regarding the future of the fleet. We asked that the analysis include an examination of responsiveness to routine and emergency dredging requirements, industry competitiveness, a comparison of dredging costs and industry capacity."

How does the Corps plan to comply with this repeated request? If the Corps does not plan to comply with this request, why not?

Answer. I appreciate the high level of interest and support that you and other members of the Northwest Delegation have given to the Corps Minimum Dredge Fleet. The Corps is currently working on a draft final report that will recommend the appropriate configuration of Corps hopper dredges. The issues of responsiveness to routine and emergency dredging requirements, industry competitiveness, dredging costs and industry capacity will be addressed in this document.

DREDGING COST, CAPACITY AND RESPONSIVENESS

Question. The presentation of the eight options in the recent Minimum Dredge Fleet study did not include the kind of analysis described in question #2. There are indications that the Corps will release proposals for changes to Minimum Dredge

Fleet policy this summer. What data and analysis is the Corps using to develop these proposals? How will cost, capacity and responsiveness be examined?

Answer. The data that is being used for the analysis of proposals includes hopper dredging contract data from fiscal years 1994–1997, Corps hopper dredging data, and dredging data from the dredging industry for non-Corps hopper dredging work. These data are being used to analyze each option by assessing risk to navigation, risk to the industry, and estimated annual cost. The goal is to optimize the configuration of the Corps hopper dredges and identify other management initiatives that will ensure a viable, competitive private hopper dredge industry while sustaining our nation's capability to respond to peak workloads, and emergency and national defense needs. The options analysis will seek to balance risks to navigation and risks to industry with cost considerations and improved competition. In seeking this balance, there will be opportunities to implement innovative contracting methods, improved scheduling procedures, and new management initiatives that will improve responsiveness and protect the interests and needs of ports and maritime users.

DREDGING OBJECTIVES

Question. Included in the November 7, 1997, Northwest Delegation comments on the Minimum Dredge Fleet Study were a list of questions. To my knowledge, the Corps has not yet responded to these and other questions raised in comments made by stakeholders. I will restate them here, with some additional questions.

First, is the Corps primary objective to keep navigation channels maintained at authorized depths at all times? It appears that the guiding principal of the study considers maintenance of channels and maintenance of the dredge industry as equal goals. Is that correct, and if so, why?

Answer. The primary objective of the minimum dredge fleet study is to evaluate various options and recommend the future disposition of the four hopper dredges in the Corps minimum dredge fleet. These options focus on risk to navigation and risk to industry. The options seek to balance the risks with cost considerations and improved competition, long-term viability of the private hopper dredges, and the ability to be responsive to peak workloads and emergency and national defense needs. In seeking this balance, there will be opportunities to implement innovative contracting methods, improved scheduling procedures, and new management initiatives that will improve the ability to protect the interests and needs of ports and maritime users and ensure a competitive bidding environment.

OPTIONS

Question. Second, has the Corps completed a detailed analysis of the range of possible impacts of the eight study options and any new options on navigation in the Northwest and the rest of the nation? Please explain how the four Corps hopper dredges would be impacted under each scenario, including any new options developed after the original eight. Also, does the Corps plan to propose a major overhaul of the McFARLAND under any scenario?

Answer. The Corps is in the process of refining existing options and developing additional options, and these are not completed at this time. When the draft report is completed, the impacts to the Corps hopper dredges under each scenario will be addressed. The Corps is currently seeking authority to perform a major overhaul of the McFARLAND.

Question. Third, exactly how does placing dredges on standby status provide low risk to navigation?

Answer. Currently Corps hopper dredges schedule work in navigation projects at the beginning of the fiscal year, and this dredging must be accomplished to ensure the viability of the ports involved. Once these schedules are developed, these four dredges are literally booked for the year, and are only available for unforeseen work at the expense of another scheduled project. Experience has shown that with the current method of scheduling work, peak workload requirements place demands upon the dredging resources available and dredging reassignments must be made. Often the reassignments include termination of ongoing dredging operations, or delay of completion and/or initiation of scheduled work. These assignment changes can result in annual dredging work being postponed until the next year because of environmental dredging windows closing before the dredge can return.

Question. Fourth, has the Corps developed specific predictions for the cost of maintaining dredges in standby? If so, please describe these predictions. If not, why not? Similarly, has the Corps developed contractual and procedural frameworks and vessel operations frameworks for dredges in standby? If so, please describe these frameworks. If not, why not? Please describe how these predictions and frameworks support the low risk conclusion.

Answer. We have predicted that the standby costs for each hopper dredge will be approximately 25 percent less than current annual costs. The procedural framework for each dredge will be slightly different, as each dredge operates differently in each coastal region. However, the basic concept is predicated upon the premise that the crew size on each dredge can be reduced to a level that reflects a crew capable of operating for a two or three week time-frame, and be ready to mobilize within a 72-hour response time. We have established a scheduling and communication process that has greatly improved our ability to anticipate hopper dredge shortfalls and peak workload periods well in advance of experiencing these impacts. This process has demonstrated its applicability with the current dredging requirement challenges. The Corps districts and industry have been able to use this process to better plan and schedule work, and anticipate potential problems. The ability to call out the WHEELER when shortfalls in capability have occurred this year clearly demonstrates the process reducing risk to navigation impacts. When a need arises, a Corps dredge can be called out, one that is standing by ready to respond, and no other project is impacted. The ability to manage the inherent variability associated with dredging requirements, with a Corps hopper dredge in a standby mode, will reduce the risk to navigation and improve the reliability of our ports.

FUTURE SUPPORT FOR MAINTAINING DREDGES IN STANDBY

Question. Fifth, does the Corps believe that Congress and future administrations will support maintaining dredges in standby? If so, please describe the key rational and cost projections for maintaining Corps dredges in standby while using industry hopper dredges for work now performed by Corps hopper dredges. Would such a scenario increase the cost of the Corps dredging program? Please explain.

Answer. Yes, we believe that Congress and the Administration will continue to support maintaining dredges in standby. While the concept of managing the navigation program with hopper dredges in standby, rather than scheduling them for work, is a culture change, the concept of funding equipment to be ready to respond to unforeseen conditions is an integral part of Government, e.g. fire engines, oil spill contingency vessels, Coast Guard search and rescue vessels, to name a few. We believe that experience will show that these hopper dredges will be needed periodically to support peak workload dredging requirements and emergency and national defense needs. In fact the WHEELER, which is in a ready reserve status, has demonstrated this reality for both scenarios, peak workload requirements in the Mississippi River and emergency dredging support in the Military Ocean Terminal at Sunny Point, North Carolina. To properly evaluate the cost to the navigation program of the standby concept, requires looking beyond the net change from status quo. There are several facts that must be considered in evaluating the cost to the navigation program.

First, some of the work normally performed by the Corps hopper dredges can be performed by industry at less cost. From the long-term perspective, industry has not had a sufficient reliable workload that can be offered as security to lending institutions for the purpose of financial investment in vessel replacement or vessel expansion.

It is clear from previous peak workload experiences that, if there were less industry hopper dredges, there would be additional projects that would not be dredged during the peak workload periods and ports would be impacted. Moreover, when Corps dredges have scheduled their annual workload, and the remaining hopper dredging workload is minimal, industry dredges either shut down or seek work outside the United States. This has resulted in diminished capability when unforeseen requirements occur. The ports have suffered from this condition, ongoing dredging operations have been disrupted, and unforeseen dredging is performed at an increased cost. If industry can rely on a steady workload, even when the dredging requirement is diminished, industry utilization will tend to become more constant, income security will stimulate investment, and capability will be ensured.

In addition, because there is a Corps hopper dredge capability sustained to respond to peak workloads and emergencies, industry does not have to expand their fleet to accommodate the unforeseen, and the increased cost of underutilized excess vessels is not burdened upon the industry. The net result will be a cost effective standby fleet, ready to respond and ensure reliable navigation channels.

AUDITS AND INVESTIGATIONS OF DREDGING CONTRACTS

Question. On October 13, 1997, the Washington Post reported on a Army Audit Agency audit of industry bids. I am told that the Department of Justice also is examining the issue. Please report on these and other federal processes underway related to the Army Audit Agency and Department of Justice audits and investiga-

tions. Are you concerned about the questions raised, including identical line item bids, limited competition, complimentary bids, bid rotation, and winning low bidder subcontracting projects to higher bidders? Please describe the Corps concerns related to each of these questions.

Answer. As a result of the Army Audit Agency report dated September 12, 1995, reported in the Washington Post, the Department of Justice was asked to investigate the issues raised concerning the standard collusion indicators listed in your question. As a result of the findings in the AAA report on industry bidding practices, the Corps has improved the reporting of subcontracting information through the Dredging Information System and has developed a methodology for increased oversight of bidding practices by the dredging industry. The methodology will seek clarification from industry bidders who submit identical line item bids or bids which appear to be excessively high. A report will be published each year documenting the procurements with identical line item bids, bids that were determined to be potential complimentary bids, and the distribution of work by each company performing work under a Corps dredging contract. Industry will be constantly reminded of our concerns for competition, and regional dredge scheduling meetings will consistently have reports of previous bidding practices. Industry will be asked to submit their suggestions for improvement of competition, including innovative procurement practices, and improved workload packaging.

We are aware of the potential for collusion with dredging contracts and will seek to improve monitoring and oversight of this issue.

PROCESS AND METHODOLOGY OF THE MINIMUM DREDGE FLEET STUDY

Question. Some concerns have been raised about the process and methodology of the Corps Minimum Dredge Fleet study. Did the study meet other established Corps Policies and Practices as a matter of course for developing policy changes? If not, why not?

Answer. Yes, this study was undertaken in a manner consistent with other Corps policy development processes.

COMMENTS MINIMUM DREDGE FLEET STUDY

Question. Please provide a copy of each comment on the Minimum Dredge Fleet study to the Committee for the hearing record or the committee files. This will help Congress evaluate future proposed changes to the Minimum Dredge Fleet.

Answer. A copy of each of the 48 letters commenting on the Minimum Dredge Fleet study follows:

DUNES CITY,
Westlake, OR, October 22, 1997.

Corps of Engineers Minimum Fleet Comments,
Attention CECW–OD,
Washington, DC.

Thank you for the opportunity to comment on the "Draft Minimum Dredge Fleet Study".

Maintenance of the navigation channel and harbor in the Port of Siuslaw is extremely important to the economic health of our community. It is with the perspective of maintaining this important activity that we reviewed the Corps' draft study.

We know our community and the Northwest best. We believe that maintaining both federal dredges in active, operating status is critical to keeping our channels and harbors open. Six of the eight options call for retiring at least one of the federal dredges based in the Northwest, yet there is no analysis that demonstrates that we will continue to have our dredging needs met in a timely, cost-effective manner under those options.

We want to keep costs down, make sure there is adequate capacity to meet our routine needs, and ensure that dredges will be responsive enough to meet our emergency dredging requirements. The study does not provide any basis for us to believe those needs will be met under any of the options that retire federal dredges or place federal dredges on standby.

Therefore, we must reject all options that decrease the active role of the federal dredge fleet.

Sincerely,

ROBERT B. WARD, Jr.,
Mayor.

PORT OF BENTON,
Richland, WA, October 21, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

Thank you for the opportunity to comment on the "Draft Minimum Dredge Fleet Study."

Maintenance of the navigation channel supports trade and other forms of commerce, which is extremely important to the economic well-being of the Tri-Cities. The Port of Benton is a very important link to the dismantling of decommissioned nuclear submarines. The spent reactors are barged from Bremerton along the West Coast of Washington and through the mouth of the Columbia River to the Port of Benton's barge slip, where they are off-loaded for burial on the Hanford Reservation. This year alone, nine shipments have been or are scheduled to be made. It is with the perspective of maintaining this important activity that we reviewed the Corps' draft study.

We know our community and the Northwest best. We believe that maintaining both federal dredges in active, operating status is critical to keeping our channels and harbors open. Six of the eight options call for retiring at least one of the federal dredges based in the Northwest, yet there is no analysis that demonstrates that we will continue to have our dredging needs met in a timely, cost-effective manner under those options.

We want to keep costs down, make sure there is adequate capacity to meet our routine needs and ensure that dredges will be responsive enough to meet our emergency dredging requirements. The study does not provide any basis for us to believe these needs will be met under any of the options that retire federal dredges or place federal dredges on standby.

Therefore, we must reject all options which decrease the active role of the federal hopper dredge fleet.

Sincerely,

BEN BENNETT,
Executive Director.

PORT OF LEWISTON, ID,
October 24, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

Thank you for the opportunity to comment on the "Draft Minimum Dredge Fleet Study."

Maintenance of the navigation channel and harbor in our port is extremely important to the economic health of our region. It is with the perspective of maintaining this important activity that we reviewed the Corps' draft study.

We know our community and the Northwest best. We believe that maintaining both federal dredges in active, operating status is critical to keeping our channels and harbors open. Six of the eight options call for retiring at least one of the federal dredges based in the Northwest, yet there is no analysis that demonstrates that we will continue to have our dredging needs met in a timely, cost-effective manner under those options.

We do not agree with making a decision on these options without analysis. The study provides no analysis of the viability of the standby concept. The study simply defined standby status. It did not analyze whether the dredges can actually be maintained to that standard over the long run. It did not address whether Congress is likely to fund the additional costs over the long term. It did not discuss whether contracting procedures allow dredges to be called out of standby in 72 hours if a private contractor does not perform.

We encourage the Corps to conduct the kind of analysis that will appropriately answer the key questions. We expect that all options other than the status quo will require Congressional approval. Until we see an acceptable analysis that addresses the above concerns, we will be recommending that our Congressional delegation reject any proposed changes to the operating status of the Corps dredges.

We want to keep costs down, make sure there is adequate capacity to meet our routine needs, and ensure that dredges will be responsive enough to meet our emergency dredging requirements. The study does not provide any basis for us to believe

those needs will be met under any of the options that retire federal dredges or place federal dredges on standby.

Therefore, we must reject all options which decrease the active role of the federal hopper dredge fleet.

Sincerely,

DAVID R. DOERINGSFELD,
Manager.

PORT OF CLARKSTON, WA,
October 24, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

Thank you for the opportunity to comment on the "Draft Minimum Dredge Fleet Study".

Maintaining the navigation channel in the Snake River is vital to the health of our port and our community. Family farmers would suffer greatly without the cost-effective transportation afforded by the river system. Grain from our Palouse and Camas Prairie regions is barged to Portland for shipment overseas. In 1996 more than 28 MILLION tons of products were exported through the Columbia River ports.

It is essential to keep both federal dredges the Yaquina and the Essayons in active operating status to keep our channels and harbors open. Many times in the past, these dredges have been needed for emergency dredging in addition their active maintenance responsibilities.

Keep the federal hopper dredge fleet in operation.

Sincerely,

MACK LAVIK FUNK.

STATE OF LOUISIANA,
GOVERNOR'S TASK FORCE ON MARITIME INDUSTRY,
St. Rose, LA, October 30, 1997.

Maj. Gen. RUSSELL L. FUHRMAN,
Director and Asst. Commander of Civil Works,
U.S. Army Corps of Engineers, Washington, DC.

DEAR GENERAL FUHRMAN: Following our recent meeting in Washington with you and our subsequent meeting with Barry Holliday, we have compiled the following list of information we require. Our list is comprised of input from the Pacific Northwest, the East Coast, and the U.S. Gulf Coast which were represented in our recent meeting.

(1) The revised Minimum Dredge Fleet Study of 1994 (Step 2);

(2) The Army Audit Agency Report to Dr. Zirschky on the Minimum Dredge Fleet Study of 1994 (Step 2);

(3) The USACE New Orleans District Study on the cost to the maritime industry on loss of draft on the Mississippi River and the Mississippi River-Gulf Outlet. Comparable studies or data related to channels and harbors in the East Coast, the Pacific Northwest, and the U.S. Gulf for fiscal year 1994–fiscal year1996;

(4) Detailed schedule of work, repair and idle time on all the private sector hopper dredges for fiscal year 1993–fiscal year1997;

(5) Accurate data as to the daily production of the USACE hopper fleet in cubic yards per day or per hour for fiscal year 1990–fiscal year1996;

(6) Accurate data as to the daily production of all the private sector hopper dredges in cubic yards per day or per hour for fiscal year 1990–fiscal year1997;

(7) Data used to compile options 1 through 8 of the U.S. Army Corps of Engineers Minimum Dredge Fleet presentation;

(8) Copies of the Army Audit Agency Report in 1995 on bid rigging and their investigation into the private dredging sector.

(9) An analysis of the 1996 and 1997 dredging emergencies in the East Coast, the Pacific Northwest and the U.S. Gulf. This should include the loss of project dimension, the bid advertisements, the responses, and the total number of dredges that responded in the hopper, cutterhead and ladder type dredges.

Since the new extension date for our reply and comments is November 7th, we would appreciate an indication as to when we can expect to receive this data. Hopefully, this information can be sent to us in a timely fashion which would allow us

time to review the data and then properly respond. Anticipating that this data will take a period to prepare, what we would like to propose is that if we receive the data by November 15th, thence we will be able to respond to you by December 1st. We think that a two (2) week interval with the Thanksgiving holiday in that period would be sufficient. We hope this is workable, as it is important for us to review and evaluate the data in order to properly respond to you on the Minimum Dredge Fleet.

Rather than have copies mailed to all of our participants, what I would request is that two (2) copies be mailed to Mr. Dan James, PNWA for the Pacific Northwest area, a copy to Mr. Dennis Rochford, Philadelphia Maritime Exchange for the East Coast, and a copy to myself. We will distribute the data to the balance of our members. We are hopeful that this information is available to us, and if not, please let us know what information is going to be able to be distributed and what information is not for whatever reasons.

If there is any clarification needed, please have one of your staff contact me, or if you want, we can just deal directly with Harry Holliday on this information flow.

Yours very truly,

GEORGE E. DUFFY,
Chairman.

SCHWABE, WILLIAMSON & WYATT,
Portland, OR, November 3, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

CLARIFICATION OF VIEWGRAPH PRESENTATION OF DRAFT MDF STUDY

As a participant in a large conference call on October 8, during which the Corps presented its 27-page outline-viewgraph, I first thank the Corps for extending its comment period. Second, I understood from that teleconference, and from comments from participants in an October 22 meeting at Corps HQ, that the outline-viewgraph approach is one the Corps will use as it examines and evaluates its options, and then later explains its decision.

Part One of my comments, submitted herein, addresses points that I believe will strengthen the Corps presentation. In some cases, people newer to this issue may rely only on this slide presentation, so it should be as complete as is practical for a set of slides. I plan to submit other comments addressing such issues as the issues of lack of data, weaknesses of the risk assessment, comments on the various options, etc. In other words, these comments do not argue for or against any option. Instead, they suggest steps to clarify the Corps presentation of its options and later explanations of why it chose a particular solution for the Corps dredges.

Before turning to the slides in order, I will address a fundamental shortcoming in the Corps presentation, as evidenced in Slide #9: "The Challenge." The Corps lists in bold print what the dredging industry "wants"—but implores the "wants" of other stakeholders. Someone reading this slide might think that the Corps cared only about addressing the "wants" of private industry, rather than the interests of all impacted parties.

Slide #9: "The Challenge": The Corps should add bullet sentences setting out the "wants" of: ports; domestic and international shippers; state and local governments; and maritime unions.

Returning to the slides in order, I suggest the following changes or additions:

Slide #4: "Interested Parties": Add as separate parties: Domestic and International Shippers; Fishing Industry; and Local Governments.

Slide #5: "Dredging requirement": Add a statistic that describes the Corps hopper work as a percentage of the total O&M dredging requirement.

Slide #6: "Hopper Dredge 'Requirement'": Add a footnote here that explains factors limiting attempts to even out the monthly hopper dredge work: the months when environmental dredging windows limit dredging; the months of the recent Mississippi River floods; etc.

Slide #7: "Hopper Dredge Requirement by Region": Add two items here. The first would show the hopper dredge requirement as a percentage of the total dredging requirements per region. The second would show the percentage of total hopper dredge work performed by Corps hopper dredges per region.

Slide #8: "19 Hopper Dredges": Add the year each Corps and private dredge entered service, plus the years of any major overhaul or upgrade. Also, I am told that the private dredge Long Island is not sufficiently maneuverable to perform harbor

entrance or channel work. If this is so, and it is used only for beach nourishment, that fact should be noted on this slide. Include, for example, how much (if any) harbor and channel work the Long Island has performed in the past three years.

Slide #9: "The Challenge": Covered earlier.

Slide #10: "Hopper Dredge Quantities: Atlantic and Gulf Regions": Add a footnote reminding viewers that this total is 80 percent of the total hopper dredge requirement.

Slide #11: "Guiding Principle": This slide should include the American shipper, more than the American taxpayer. Shippers pay the costs of dredging through the HMTF. The American taxpayer, as represented by each Member of Congress, created both the rivers and harbors system, and the current method to find their O&M that did not tax the general population. Second, I ask that you include the underlined phrases in the second part of the principle: "* * * while sustaining our nation's capability to respond to peak workloads, [and] to emergency and national defense needs, and to a lack of competition."

Slide #12: "Risk to Navigation": In the "HIGH RISK" section, add after the phrase "* * * no capability to perform unforeseen, time-sensitive work" the following sentence: "A fully utilized private industry dredge fleet has less interest in performing small jobs when contracted to larger jobs." At the end of the HIGH RISK section, add the sentence "Increasing environmental restrictions on timing of dredging."

Slide #13: "Risk to Industry": How is the term "minimal" utilization defined? What level constitutes minimal use? How does the percentage the Corps adopted as constituting "minimal utilization" compare to that used in other capital-intensive industries? The Corps should explain how it arrived at its "minimal utilization" percentage, and provide comparisons used elsewhere in the USG and private industry for similar capital-intensive industries. A critic of the private dredge fleet also might add in the "LOW RISK" section the sentence that "Without Corps dredges as measuring stick to help estimate O&M dredging costs, Corps O&M estimates may rise over time." A critic also might add another sentence to the "LOW RISK" summary: "No competition from Corps dredges for certain work."

Slide #14: "Current Limitations on Corps Hopper Dredges": Clarify that the "Ready Reserve" status of the Wheeler (per Congressional direction) differs from the proposed "hot standby" status now proposed by the Corps.

Slide #16: "Standby Status": Explain the meaning of "ready to respond in 72 hours." Does it mean "respond first and talk later"? How will appeals by private dredgers be handled after a Corps decision to activate a Corps dredge? How will current procedures be changed to reflect an "act first, talk later" approach? Can a District Engineer make the final decision to utilize a Corps dredge, or must it be processed and blessed by Corps HQ?

Slide #17: "Option One: Fully use Corps hoppers": Provide some detail to clarify the first and third "Implication," adding to the phrases "expanding on Government costs increase slightly due to * * *" and to the phrase "annual program costs are lowest because * * *"

Slide #20: "Option 4: Wheeler and Yaquina retired": Explain whether or not the Wheeler and Yaquina will be sold, and, if so, to U.S. dredging companies. What will the criteria be for such a sale, for a sale would prevent restoration of the status quo if this experiment fails. Also, explain whether or not the Corps plans to rehabilitate the McFarland to expand its capabilities under this option.

Slides #23 and #24: "Options 7 and 8": The term "low navigation risk" is used, with no explanation of factors leading to this conclusion. Without any explanation, the statement represents only a Corps conclusion. Use of a graph is misleading, as it conveys a quantifiable determination, where none was used, as I understand. Without any quantifiable statistics to mark such graphs, they should be dropped from all slides.

Slide #25: "Risk Analysis": A new descriptive slide should precede this Slide #27, on which the Corps would describe what factors were used in its risk analysis. Without such explanation, a viewer has only a Corps conclusion (low, medium, high), with no explanation of how such a conclusion was reached. Without a quantifiable set of numbers to justify use of graphs, they should be omitted from all slides.

Slide #26: "Summary and Conclusions": Add as another guiding principle: "Protect taxpayers and their investments in ports and channels by maximizing real competition for hopper dredge O&M work." Separately, does the term "competitive private fleet," as used in this slide, mean competitive in global markets, or competing among various private dredge companies for available hopper dredge work. Reference to "competitive private fleet" should be explained in an earlier slide, if the Corps means that more private competitors will compete for available Corps work. The Corps should explain how changes in the status of the MDF will promote more competition, or justify why removing a competitive element provides better protec-

tion (e.g., "the best deal possible") for the American taxpayer. As competition is important, this opaque reference should be amplified in earlier slides. Otherwise, it should be dropped from the conclusion slide, as no explanation of how competition is maintained or expanded was offered in any earlier slides.

Thank you for this opportunity to comment on how to make the presentation of the material regarding your MDF options clearer and more complete. As noted above, I will comment later regarding other aspects of the draft study.

Sincerely,

WALTER H. EVANS III.

SCHWABE, WILLIAMSON & WYATT,
Portland, OR, October 31, 1997.

Maj. Gen. RUSSELL L. FUHRMAN,
Director of Civil Works, U.S. Army Corps of Engineers,
Washington, DC.

DEAR GENERAL FUHRMAN: During the past decade or so, I represented a number of Pacific Northwest ports. In advocating their interests, I was involved with issues concerning the Corps' Minimum Dredge Fleet (MDF). Over this long period, I sat through many meetings with local port managers; State of Oregon officials, Corps District officials, Corps headquarters staff, and the DCA and its representatives working to resolve MDF issues.

As a result, I have heard various points raised and questions asked about the Yaquina and its strengths and its shortcomings. I have several informational questions about the Yaquina (and the Essayons, in some cases), and request factual information. As you know, outside parties interested in the MDF have until November 7 to comment on the options laid out by Corps HQ concerning the Future of the MDF. I hope the Corps can provide me with most answers ASAP. In advance, I thank you for your prompt attention to these questions.

1. *Efficiencies*.—Has the Portland District taken steps to increase the efficiency of the Yaquina? If so, how was this accomplished? What has been the impact on her operating costs? Have any increased efficiencies been in place long enough to be reflected in the most recent statistics gathered and relied upon by Corps HQ? Are other steps now underway or contemplated to increase further the Yaquina's operating efficiencies? What is the anticipated impact of any such proposed further changes?

2. *Plant Increment Costs*.—In several meetings in past years, the issue of plant increment costs has been discussed among the various parties. Can you explain its precise purpose and operation? How does it impact daily rates for the Corps dredges? What is the size of this fund today? Where and how is the money segregated? How is continuation of this account justified if the Corps has no plans to replace its dredges? Does the Corps have the flexibility to cease imposing this cost? If not, what specific statute or Corps regulation prevents it? If so, has serious consideration been given to waiving this cost? Do you know if Corps HQ included termination of this fund as it developed its options, and factored into its equations the impact from so doing? What would be the separate impact on the Yaquina if the Corps removed the plant increment costs from its daily rate calculation?

3. *Seaworthiness*.—My next question is more subjective, at least to a nonprofessional. I believe that the Yaguina and the Essayons both are classified as self-propelled vessels, with ship's hulls. I believe that the two private Manson dredges, the Newport and the Westport, are barges rather than vessels. Am I correct? Are they self-propelled or are they moved by a tug? How does this impact their transit time to an emergency job? How does their shape as a barge affect their seaworthiness in rough seas? Can you say that, in operating in rough seas, these two private dredges, when compared to the two West Coast Corps Dredges, are more seaworthy, equally seaworthy, or less seaworthy? If they are less seaworthy, could this impact their emergency responsiveness, or their ability to complete a job in a short, environmentally driven dredging window? Are these private dredges less able than their Corps' counterparts to work in rough seas that typify the Northwest coastal sea conditions during much of the year? I also am interested in whether the Northerly Island is a barge or a ship, and how its seaworthiness and usefulness in rough seas compare to the Yaquina.

4. *Repair*.—Can you provide the repair experience of the Westport, the Newport and the Northerly Island when traveling to or working on Corps projects in West Coast ports in recent years? What was the District's experience when private dredges performed O&M work at the smaller West Coast ports? Any concrete exam-

ples will assist me in responding to the Corps HQ initiative. Can you give me the ages of these smaller private dredges, and their expected productive life?

5. *Emergency Response*.—Does the Corps keep track of "emergency" responses over the past several years, where the availability of Corps dredges provided quick relief to the impacted port or river? If so, can you please provide examples. How has the Corps dredges' prompt response saved money for the served port or river? Put another way, were certain damages avoided because of the quick Corps dredge responses? Do we know what those savings or avoided costs are? I am told that either the New Orleans District or the private sector in New Orleans calculated the costs of a loss of draft when shoaling occurs in the Mississippi channel. I have heard a statistic that each foot of lost draft due to shoaling costs an average of *x* dollars per vessel per voyage. "Light-loading" a vessel by a sufficient amount to clear the shoal costs each vessel an amount of "lost" cargo the vessel could not load, due to the impaired clearance. If calculations have been done on the impact on a typical Columbia River vessel due to loss of authorized depth from shoaling, I would like to know the impact. I also would welcome such data as it pertains to Coos Bay or other West Coast ports where significant dredging requirements exist.

6. *Bidding Competition*.—Can the Corps provide data covering the past several years showing the number of private bidders that sought work when the Portland District made it available? Please also provide data from other West Coast Districts for such contracts. Please provide data comparing those bids with the Corps estimate of each job. How do you interpret the impact of a limited number of private bidders on the job costs?

7. *Environmental Benefits*.—Over the years, one environmental argument favoring retention and use of the Corps dredge fleet stresses their usefulness as environmental "platforms" for research into improved dredging techniques or other environmental research. Supporters say the Corps can provide more such environmental enhancements than can private dredges, and so forth. Can you please cite examples of how Corps dredges have provided such environmental enhancement or research in carrying out their tasks. The number and nature of environmental restrictions should increase in the years ahead. In view of that, are the private dredges that might replace the Yaguina as able to respond to unique environmental requirements as is the Yaquina? How will such environmental research and testing be replicated by private dredges? Have cost estimates calculated whether private dredges will be willing to perform such research at the same cost as that of Corps dredges? Does a Corps dredge provide more flexibility for such tests and experiments than does a private dredge?

8. *Emergency Assistance*.—In an emergency, I am told that the Yaguina can dredge as deep as 55 feet. Can you describe how this provides back-up capability for the Columbia River (or San Francisco harbor or elsewhere) to help in an emergency. Do either of the smaller private industry dredges have the capacity to dredge as deep as 55 feet for the length of a normal dredging job? Has this extra capability of the Yaquina helped control dredging costs and/or assisted in meeting the requirements of limited dredging windows?

9. *Remaining Debt*.—Has the cost of the Yaquina been repaid to the government? If not, please describe the repayment schedule to pay for the Yaquina. If the Yaquina is mothballed, how will the remaining costs be calculated and repaid? Did the Corps include close costs in its cost calculations developed in the MDF study? Has the cost of the Essayons been repaid? If not, how will the remaining debt be paid if the vessel is on standby?

10. *New Construction Starts*.—Were new West Coast port or channel projects approved by Congress in WRDA 96, or are any West Coast projects expected in the proposed WRDA 98? If so, how will this impact on the availability of private dredges to do O&M work on the West Coast? Are other military dredging, or beach replenishment projects for the West Coast now in the contract pipeline or final review that could impact on the availability of private dredges to do routine O&M work?

11. *Mobilization and Transportation Costs*.—Corps officials speak of increased competition from private dredges that should result from removing the Yaquina from service. How are costs calculated to transport a private dredge to compete for small port O&M work? What would be the anticipated impact on the bid of a private dredge that must be moved to the West Coast to compete for small port O&M work? Is it realistic to expect that more private competitors will seek the West Coast small port O&M work when such transportation costs are factored into their bids? Will lack of new competition leave most West Coast work for smaller ports with one private company as the only likely bidder? How can the Corps encourage more competition from other private dredging companies for smaller jobs in West Coast ports without raising the costs to these ports?

12. *Transfer of the Essayons*.—With the Wheeler on ready reserve, are the chances increased that the Essayons will be transferred to the Gulf periodically to perform work? What would the impact be on maintaining the Columbia River channel from a lengthy transfer of the Essayons to the Gulf? What policies have been adopted by Corps headquarters to govern such a transfer? Are procedures in place to protect the Columbia River's critical dredging needs from such a transfer? How can the Corps prevent the dredging needs of the Mississippi from competing directly with dredging needs of the Columbia—when both are significant, and both need the Essayons? In other words, when both systems need more dredging capacity and there are too few dredges available, how does the Corps decide whether Mississippi or Columbia system shippers suffer?

13. *Unique Yaquina Strengths*.—Is the Yaquina the most heavily built of the four Corps dredges? How has this benefited its operation? I was told once that the Yaquina can touch bottom on a shoal, move side-to-side to create a trench, and then begin dredging. At the time, this was cited to me as a strength. Is it a strength? Are there circumstances where this helps her perform her duties? Can either of the small private hopper dredges that have done work in the Northwest also do this? How important is it? How does the maximum daily dredging volume of the Yaquina (in a realistic operation) compare with the other "small" private hopper dredges? Can the Yaquina dredge as much as any of the private medium-sized hopper dredges? If so, which ones?

Several of my specific questions stem past discussions some years ago and my recollection may not be precise. Nevertheless, I hope they allow you to respond with specifics.

In view of the short time in which I have to respond to Corps headquarters, I will appreciate your prompt attention to these questions.

Thank you for your assistance and for the information provided by your staff.

Sincerely,

WALTER H. EVANS III.

SCHWABE, WILLIAMSON & WYATT,
Portland, OR, November 6, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

DOES DRAFT MDF STUDY MEET OTHER CORPS POLICIES AND STANDARDS?

Interested parties welcome the opportunity to comment on the proposed draft minimum dredge fleet (MDF) study announced by the Corps on October 8, 1997. In my opinion, however, the short "viewgraph slide" format, devoid of supporting analysis or data, falls short of meeting the standards adopted in a recent Corps initiative addressing various aspects of Corps service, including improving customer friendliness and developing greater customer partnering. In my opinion, the draft study also failed to meet descriptions used by ASA Lancaster and General Ballard in describing it.

Providing a report in draft form for comment is an element of openness and customer friendliness. Nevertheless, failure to supply the analysis that formed the basis for the conclusions, or even to supply data used in the analysis, damages this improved relationship with impacted parties: ports, shippers, state and local governments, maritime unions, and the private dredge industry. Stating conclusions without supporting materials erodes confidence in the processes used to reach these conclusions. Using graphs to illustrate risk when (apparently) the graphs do not display numerical or quantifiable factors or elements can mislead a casual reader into thinking that such graphs resulted from "number crunching."

To illustrate how this "slide show viewgraph" rendition of the study falls short of commendable Corps goals, I analyzed two recent Corps documents. The "Corps Vision Statement" was one. The recent Corps statement extending the comment period on the MDF study was the other, one where General Ballard's statements about the study are not matched by the product itself, in my opinion. Lastly, I looked at ASA Lancaster's response to Senator Murray's questions at an appropriations committee hearing about the MDF study to see how the draft study matched up with his comments.

These documents are only illustrative Corps documents I chose to make a point. When the Corps sets out laudable goals and procedures, and its leaders make clear statements, the Corps raises the bar. As a customer, I want to encourage the Corps to meet these goals and visions.

NOTICE OF EXTENSION OF TIME FOR MDF STUDY COMMENTS

On October 16, the Corps issued a two-page statement extending the comment period on the draft MDF report to November 8, 1997. In it, the Corps stated:

"The options were developed by the Corps of Engineers based on comments and concerns expressed by the ports, maritime users and the dredging industry."

Does this statement refer to comments made over the years informally to Corps officials? I am unaware of any formal request for, or systematic collection of, comments, observations, concerns, ideas, etc. regarding the MDF. This opportunity to comment on your draft study is the first opportunity with which I am familiar. How complete is the record of collected "comments and concerns" the Corps used for its analysis? Does data developed by the Corps for the MDF study reflect the "comments and concerns" of the three groups cited in that statement: ports, maritime users and the dredging industry? Did "maritime users" include comments solicited by the Corps from shippers and other stakeholders? Are these "comments and concerns" from all stakeholders available for review by the public? If not, they should be, for many impacted stakeholders want the opportunity to review this material. Without it, the Corps conclusions will be suspect in the eyes of many stakeholders.

In describing the MDF study in the statement extending the comment period, General Ballard is quoted as stating:

"We have attempted to focus the options on the varying degrees of risk to the viability of the navigation projects and the investment and income risk to the dredging industry, and to balance those risks with costs considerations and improved competition, the long term viability of the industry, and the ability to respond to time sensitive and emergency dredging needs. * * * (i)n seeking this balance, there will be a compromise. But some of the new, innovative contracting methods and improved scheduling techniques being implemented will offer an improved competitive bidding environment and a higher level of responsiveness to protect the interest of the nation's ports and the Corps' maritime partners."

Does "varying degrees of risk" to the navigation projects mean that these were quantifiable risks? Were they, instead, only Corps' conclusions? What does the term "viability of the navigation project" include in its elements? Did it, for example, include impact on shippers and on the local community, or only on the specific project use?

Next, what is the IRR for the private dredging companies that the Corps used to calculate the "investment and income risk to the dredging industry?" What elements entered the Corps calculation of "long term viability of the industry?" All the investment and income data regarding the private dredging industry and relied on by the Corps should be available for review by all interested parties.

Two phrases in General Ballard's statement address critical concerns of the Corps dredge beneficiaries. First, what elements were evaluated and analyzed in balancing "costs considerations and improved competition?" Second, what elements were used to calculate and analyze "time sensitive and emergency dredging needs?" Corps partners are eager to learn how the drain report meets these standards set out by General Ballard, but they saw no supporting information.

In the statement, General Ballard also refers to "innovative contracting methods and improved scheduling techniques." The draft provided interested Corps partners with no operational details about these changes, nor how these changes will protect ports. Without these explanations for evaluation, ports are reluctant to endorse several of the eight Corps options. Many ports and their customers wish to review the analyses used by the Corps to develop these new "innovative contracting techniques and improved scheduling techniques" before commenting. Ports will welcome your description of how these changes will benefit ports and maritime users.

Lastly, General Ballard noted that these changes referenced in the paragraph above will "improve competitive bidding and a higher level of responsiveness." Along with capacity and emergency response, these are elements critically important to Corps partners benefiting from Corps dredging services. The comments by General Ballard raise these critical elements, yet no data in the draft report explain their operation under any of the eight options. Viewgraph #11 "Guiding Principles" uses the term "best deal possible for the American taxpayer." These same taxpayers want real competition from the private sector for dredging contracts. Taxpayers want to prevent conditions that limit competition, and these same taxpayers know that the existence of the Corps fleet can help avoid non-competitive conditions.

CORPS VISION STATEMENT

In the introduction to the Corps of Engineers "Strategic Vision" statement, General Ballard makes a strong and clear comment: "Visions don't mean anything without a burning commitment from the entire Corps organization to make it happen."

How does the draft MDF study mesh with this Vision Statement? Perhaps a new slide should be added to the Corps dredge new study options. This slide could be called "Integrating MDF Future with Corps Strategic Vision." In it, the Corps would explain how development of this study and the results of the options mesh with elements of the Corps vision. A review of one sub-strategy raises questions whether or not it meets the standards set out in the vision statement.

Under the Strategic Vision Sub-Strategy "Satisfy the Customer," who is the Corps customer? In the civil works division, are Corps customers the project beneficiaries, the projects themselves, and the general population? In this context, is the Corps customer also the shippers whose fees fund the HMTF?

Is the private dredge industry a Corps customer? Is not the private dredge industry a supplier of services to the Corps? Could an argument be made that, as a supplier of services with whom the Corps contracts, the private dredge industry should be treated the same as suppliers to the Corps of other outside services: copying services, computer services, construction services, accounting services—other services where the Corps contracts with outside entities, (Here, I realize that a statute drives the outside dredge contracting.) Does the Corps consider all its service providers and suppliers to be its customers?

Under the Corps Vision Statement, Sub-Strategy "Satisfy the Customer," Item #2 talks about "customer based performance measures that allow us (Corps) to institutionalize customer feedback." The draft MDF report, however, overlooks this goal. On an ad hoc basis, parties to this debate always have been able to express their views to Corps officials at the District and HQ level. To help implement the Corps vision, any new Corps MDF plan should include ways to measure customer based performance measures, regardless of what option is adopted.

In addition, the Corps should explain how each Corps dredge, if retired from service because the Corps selects a certain option, later can return to active service if experiences over several years provide evidence that the chosen option has not worked, for whatever reasons. The Corps should make clear to stakeholders which options preclude any return to the status quo, with Corps dredges available for active service. The Corps draft study omitted a description, for example, of alternatives available to impacted ports if MDF Option #8 were chosen, but then failed miserably. Where the Corps envisions no return to service ever by a retired Corps dredge, that option should provide an analysis of alternatives to the port if the selected option fails.

Item #8 in this sub-strategy calls for appointing advocates for customers and developing other partnerships to "better understand the customer's interests and concerns." The draft study omits this element. Inasmuch as the Corps already meets on a regular basis with the private dredge industry, any new MDF plan should create a forum to hear on a regular basis from port customer partners on issues relating to cost and competition, emergency response, capacity, and other concerns. Such a forum would help the Corps address both items #2 and #8.

Item #9 in this sub-category calls for developing "innovative procedures to tighten the partnership between customers and the Corps." First, as noted, the Corps HQ doors always are open to all voices in the debate over the MDF's future. Also, the ability to comment on a draft report is a step toward greater involvement that all parties welcome. Yet, in evaluating alternative options for the future of the MDF fleet, the Corps should consider how best to "tighten this partnership between customers and the Corps." As presented to its customers with scant analysis and supporting material, this study moves in the other direction. Benefits to the Corps and its customers from such partnering should not be jeopardized for example, by presenting conclusions relating to risk without the data and analysis used to calculate risk.

ASA LANCASTER'S RESPONSE TO SENATOR MURRAY RE MDF STUDY

During Senate Appropriations Committee hearings, Senator Murray asked ASA Martin Lancaster:

"When will the Corps release its Minimum Dredge Fleet Study? Will it include an analysis of current and recent peak dredging seasons? What process does the Corps plan to carry out to provide Congress and interested stakeholders the opportunity to comment on a draft report before it is final?"

ASA Lancaster responded:

"The Minimum Dredge Fleet study will be completed in July 1997. The study will include an analysis of dredging requirements including peak hopper dredge seasonal demands. The draft study will be coordinated with the Dredging Contractors of America, ports and other stakeholders, as well as interested committees and members of Congress."

It appears that the Secretary's assurance that the study would include an "analysis" is addressed only by three pie charts and two bar graphs. The illustrations, on pages 5, 6 and 7 of the viewgraphs, all use the term "requirement, but contain little "analysis." One page contains a pie chart with the breakdown of dredging requirements between hopper dredges and all other" and the division between industry and hopper work. On the next page, a bar graph illustrates the monthly workload for hopper work over a three year period. The third page has a simple pie chart showing percentages of hopper dredge work in the four regions. Beyond this, page 10 of the study contains bar graphs illustrating the three-year monthly averages for hopper work on the East and Gulf coasts.

These pie charts and bar graphs do not meet many stakeholders' understanding of "analysis," as used by ASA Lancaster. Failure to include more than these cursory charts damages the Corps' case for making changes in the MDF. Charts and graphs can be an effective communications tool when making an oral presentation. While they can summarize data in an understandable format, they do not substitute for analysis. The pie chart on page 7 showing only hopper dredge work by region focused attention on a box that stated that when two of the four regions' percentages are combined, they equal 80 percent of the work. Such "analysis" falls short of usual Corps standards.

CONCLUSION

These comments do not examine or catalogue all past Corps initiatives regarding customer partnering and customer interaction to see how the draft MDF measures up to the standards and policies set out in each. Those initiatives have been welcome, and indicate how the Corps is changing the way it does business; Across the board, these initiatives benefit all parties, including the Corps. Here, the Corps provided a draft document for comment by impacted parties, a welcome procedure. Yet the draft report, without more material available to the public fell short of the standards the Corps set for itself in recent policy statements, in my opinion.

I hope that the Corps will correct such deficiencies as these by providing the analyses used to reach its conclusions. Where available, all supporting data also should be made available to interested parties.

Lastly, the Corps should extend the comment period so all parties have the benefit of the analysis used by the Corps.

Thank you for the opportunity to comment on this aspect of the proposed MDF study.

Sincerely,

WALTER H. EVANS III.

CONVENTION & VISITORS ASSOCIATION,
Lane County, OR, November 4, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

Thank you for the opportunity to comment on the Draft Minimum Fleet Study. The active role of the federal dredge fleet is very important. I am particularly concerned that an active dredge remain available for the Port of Siuslaw in Florence, Oregon. Maintenance of the navigation channel and harbor is critical to the economic health of Florence.

Timely, cost-effective access to dredging must be maintained. The Study does not ensure this access under the scenarios calling for retirement or standby status for federal dredges. Please reject all options that decrease the active role of the federal dredge fleet in the Pacific Northwest.

Sincerely,

KARI WESTLUND,
President/CEO.

PORT OF PORTLAND, OR,
November 6, 1997.

U.S. Army Corps of Engineers,
CECW–OD,
Washington, DC.

The Port of Portland is pleased to provide the following comments on the "Draft Minimum Dredge Fleet Study" released recently by the Corps of Engineers. I also

want to emphasize the Port's willingness to work on a solution on dredging policy that truly addresses the problems of the navigation system. Ocean shippers pay 100 percent of navigation maintenance costs through their harbor Maintenance fees and they deserve a system that meets their requirements at all times.

As a general perspective, I am disappointed at what appears to be a lack of analysis behind the recommendations listed in the study. For example, we see little to help examine private sector dredging capacity, hopper dredge use during the year or overall dredge capability during peak demand periods. Because of our concerns for quick response to dredging emergencies, this type of information is critical.

Thus, I cannot support any of the options outlined in the report. I understand there will be an opportunity to review further details about the Corps analysis of the Minimum Dredge Fleet and management alternatives, so I file these preliminary comments and will plan to comment later when more details are available from the Corps.

Recommendation.—The Guiding Principle in the study lists important goals of savings for the taxpayers and ensuring a competitive private hopper dredge industry. These goals, in our judgment, must rank behind the Corps primary navigation role of assuring that navigation channels are maintained at authorized depths at all times.

To meet the needs or the nation's manufacturers, producers and shippers, assuring adequate channels for trade is the clear priority for the Corps dredging mission. Without this priority ranking, navigation safety and the effectiveness of our national transportation system is degraded.

Recommendation.—The list of four interested parties in this discussion is incomplete. Prominent by omission are shippers and shipping lines.

Recommendation.—The study reveals little analysis of the capabilities of the private sector to meet dredging needs. We had expected to see research into the supply and demand of private dredges, the number of bids for Corps contracts, a comparison of successful bids versus Corps estimates and an overall assessment of industry competitiveness. Lack of this information underscores our ongoing concern over what we view as the lack of industry capacity in our region.

Recommendation.—The study results rely heavily on the concept of "standby" status for Corps dredges. Missing in this analysis are several key points, including particularly the willingness of Congress to finance such a program. In today's climate of shrinking federal budgets, we believe the task of generating federal dollars will prove to be formidable. The challenge the Corps will face is how to justify what appears to be minimal use of expensive and labor-intensive capital equipment.

A second related question is how to assure sustained, regular maintenance and operational reliability of dredges in a standby mode. We know from our own dredging operations that maintaining an idle dredge is an expensive and time-consuming operation, but without this maintenance the standby mode will not work.

Recommendation.—While the description of standby status calls for the capability to respond in 72 hours, what is missing is a complete definition of what constitutes an emergency for call out from standby and how this response time will be accomplished. How will current Corps procedures be changed to assure the short call out time for government dredges can be met under this option. We would seek assurances of a practical system to provide certainty for this rapid call for Corps dredges. How will navigation emergencies be defined to assure that response can be triggered promptly? Who in the Corps will have this responsibility: a district engineer or Corps headquarters? How will the Corps respond to appeals by private dredge operators to block such activation? We will look to the Corps for further clarification that quick response time can assure safe navigation.

In light of these concerns, we strongly encourage the Corps to re-examine its reliance on standby options.

The Port of Portland appreciates the opportunity to comment on the study and its preliminary recommendations. As I mentioned above, we also look forward to seeing further details of the Corps analysis. We plan to comment again in detail after we have had an opportunity to review this additional data.

Very truly,

MIKE THORNE,
Executive Director.

OREGON ECONOMIC DEVELOPMENT DEPARTMENT,
Salem, OR, November 6, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

As Manager of the Ports Division of the Oregon Economic Development Department, I appreciate the opportunity to comment on the Corps Minimum Dredge Fleet Study. I conveyed in a recent meeting with Major General Furhman, that we remain very willing to work with the Corps of Engineers and other dredging interests to achieve a position that assures safe, reliable navigation on our nations federally authorized waterways.

The State of Oregon's position on this issue has been consistent. Stated simply, we care that dredging gets done on time, at reasonable cost, and assures safe, efficient navigation. Towards this end, we continue to urge Congress to appropriate the funds necessary for a dredging program that allows us to maintain full channel depths at all times. While we believe that the Corps hopper dredge fleet is needed to achieve that end, we remain open to analysis, supported by data, which shows that the private sector can achieve these results.

Over the last several years we have asked the Corps to provide us with analysis that would show the ability of the private sector to meet the hopper dredging requirements. We were hopeful that this study would shed some light on the subject, unfortunately it has not. Without that analysis, we have no basis to abandon our belief that the Corps fleet is a necessary component of navigation and should be utilized at least at current (pre-1996 Water Resources Development Act) operational levels.

We recommend that each scenario set forth in the Study be analyzed as to its impact on dredging costs, ability to respond, and overall hopper dredge capacity to meet demand. A risk analysis applied to any scenario should at a minimum reflect these three elements.

There also seems to be a disconnect between the Corps stated mission on page 4 "to provide safe, reliable, and efficient waterborne transportation systems (channels, harbors and waterways) for movement of commerce, national security needs, and recreation," and the "Guiding Principle" as stated on page 12. That principal eludes to "getting the best deal for the American taxpayer and seek ways to ensure a viable private hopper dredge industry * * *." This is a difficult principal to understand because it appears as if the Corps has shifted its mission to add a policy of bolstering private industry while decreasing the focus on maintaining channels at authorized depths at all times.

At the end of the day, we need to know whether the private hopper dredging industry can handle the hopper dredge work if all or some of the Corps fleet were removed from service. The answer to that question should reflect well reasoned and thoughtful analysis based on complete data, which can support clear public policy decision making. We, and hopefully Congress, still await such data and analysis.

Thank you for the opportunity to respond, we stand ready to continue to work on future alternatives.

Sincerely,

KEITH A. LEAVITT,
Manager.

FLORENCE AREA CHAMBER OF COMMERCE,
Florence, OR, November 6, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

Thank you for the opportunity to comment on the "Draft Minimum Dredge Fleet Study."

The Florence Area Chamber of Commerce feels that the maintenance of the navigation channel and harbor for the Port of Siuslaw is extremely important to the tourism economy of our community. Since the mid-1980's the timber industry has seen a down-sizing effect, and commercial fishing has also been on the decline. However, recreational fishing has been on the upswing and serves as an important adjunct to our tourism based business. It is with the perspective of this important activity that our Chamber reviewed the Corps Draft Study.

We know our community of Florence and its surrounding area along the Siuslaw River best. Therefore, we believe strongly that maintaining both federal dredges in

active operating status is critical to keeping our channels and harbor open. Six of the eight options call for retiring at least one of the federal dredges based in the Northwest region, yet there is no analysis demonstrating that we will continue to have our dredging needs met in a timely, cost effective manner under these options.

We are interested in cost containment, but not at the expense of sacrificing adequate capacity to meet our routine needs for the Siuslaw system, and certainly not at the expense of losing our emergency dredging requirements. This study does not provide any basis for the Chamber to believe that these needs will be met.

Therefore, the Chamber of Commerce rejects all options that decrease the active role of the Federal Dredging Fleet.

Sincerely,

DAVID A. CAPEN,
President.

DISTRICT NO. 1–PCD, MEBA,
Jersey City, NJ, November 7, 1997.

Army Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

District No. 1—MEBA is the exclusive collective bargaining representative for the Marine Engineers on all of the Army Corps of Engineers vessels, and I'd like to express our concerns as to the future of the minimum dredge fleet.

The Army Corps of Engineers draft Minimum Dredge Fleet study dated October 8, 1997 only contains the options management is considering in order to develop a plan for the Minimum Dredge Fleet; it contains no data upon which an informative decision can be reached.

As you are aware, Public Law 95–269 requires the Corps to "carry out such work in the manner most economical and advantageous to the United States." Therefore, only the first option makes any sense, since this option gives the American taxpayer value for money already spent in building the Minimum Fleet Dredges and, by using the Corps dredges to their maximum capacity, the U.S. Government gets the best value for the dollar.

In view of the fact that the private industry has yet to demonstrate that they have the capability to perform the work in a timely manner and at reasonable prices, as stated in Public Law 95–269, and as can be seen by the various emergencies on the Gulf Coast this past year, as well as numerous other crises over the past ten years, it is apparent that to reduce the Minimum Dredge Fleet below its current level would jeopardize one or more sectors of the national water transportation infrastructure, which would result in the deviation of ships and cargos to our neighbors to the north/south resulting in additional job losses.

Additionally, Public Law 95–269 states that the Secretary shall retain a minimum federally owned fleet which is capable of performing emergency and national defense work and may exempt such amount of work as necessary to keep the federal fleet fully operational.

It should be noted that this study does not address the U.S. Army Audit Agency's report on industry bidding practices dated September 12, 1995, and had this report been available when the Water Resources Development Act of 1996 was being discussed, Section 237, Hopper Dredges (c) program to increase use of private Hopper Dredges might not have been included in this Act.

Further, if these allegations are true, then why would there be any consideration of eliminating one of the few checks remaining on the private industries' ability to inflate bids which could raise the cost of all of the alternatives, especially if one or more of the Corps' dredges were operating at less than status quo.

In closing, I feel that, by using option one, the Corps' would fulfill its obligations under Public Law 95–269 and thereby prevent the loss of not only the Minimum Dredge Fleet but, also, the loss of the highly skilled professional crew members manning these vessels. District No. 1—MEBA strongly urges that this option be adopted.

Sincerely,

JOHN HAARMANN,
Government Fleet Operations.

STATE OF LOUISIANA,
GOVERNOR'S TASK FORCE ON MARITIME INDUSTRY,
November 7, 1997.

Major General Russell L. Fuhrman,
Director & Asst. Commander of Civil Works,
U.S. Army Corps of Engineers, Washington, DC.

DEAR MAJOR GENERAL FUHRMAN: This is our response to the Minimum Dredge Fleet presentation. We hope you can appreciate that we are unable to make any other type of presentation. We include a copy of my letter dated October 30th requesting the information that will allow us to properly respond.

HISTORY

The U.S. Army Corps of Engineers released the original Minimum Dredge Fleet Study in July of 1991. The Maritime industry determined, after a detailed review, that the study contained false conclusions which were based on incomplete and inaccurate data. The U.S. Army Corps of Engineers decided to revise the study and it took over three (3) years to complete the revision of the 1994 (Step 2) study.

During Dr. Zirschky's first appointment, he reviewed the study and requested the Army Audit Agency to evaluate the study. The Army Audit Agency reached the same conclusion, the study was flawed. They reported this to Dr. Zirschky. The 1994 revised study was never publicly released. A new Minimum Dredge Fleet Study was ordered by Dr. Zirschky in October 1994 and was to be completed by October 1996. A decision was made by the U.S. Army Corps of Engineers to delay the study to include fiscal year 1996 dredging data. The study was to be completed by April 1997, but this again was delayed.

The Maritime industry has been waiting since 1991 for the release of a study providing detailed corrected data to properly evaluate the Minimum Dredge Fleet requirements. History has shown that the private dredging industry doesn't have sufficient capacity to respond to peak or emergency situations. Maritime interest has suffered lost revenues due to loss of draft due to lack of dredging capacity and capability to timely maintain ports at these project dimensions.

The slide presentation referred to as the 97 Minimum Dredge Fleet Report is a serious disappointment to the Maritime industry. This presentation as the previous studies were completed without the valuable input of the Maritime industry. This, again, is a serious shortcoming on behalf of the U.S. Army Corps of Engineers. It also displays the U.S. Army Corps of Engineers' total disregard for the U.S. Army Corps of Engineers "Partnering Concept" Program. Over the past seven (7) years, the Maritime Industry has had numerous meetings with the U.S. Army Corps of Engineers at the District Division and HQ levels to discuss this issue and obtain the required data to go to Congress in support of the U.S. Army Corps of Engineers hopper fleet. It is our opinion that the U.S. Army Corps of Engineers has failed in their mission to properly evaluate the dredging issue thru full study and presentation of the facts for comment and review.

COMMENTS

The 97 Minimum Dredge Fleet release does not address the capacity or capability issues so vital to maintaining our ports and harbors. Why has the U.S. Army Corps of Engineers rejected the dredging history since 1990? This release does not, in anyway, address the dollar cost to industry when a channel is lost due to insufficient capacity and lack of timely response to maintain project dimensions. The New Orleans District completed a study on this, and it should be completed and added to this data set. The lack of sufficient capacity has been clearly demonstrated on the Mississippi River in 1996 and 1997, as well as on the Mississippi River-Gulf Outlet which was the result of tropical storm Josephine. These facts have not been presented in this presentation.

It also includes a number of dredges which are very restricted in operation due to design or limited capacity. In particular, the Mississippi River qualified dredges should be analyzed on a separate data sheet. The U.S. Army Corps of Engineers does not address the need for an increased number and cost of dredges due to small daily capacity, i.e. the U.S. Army Corps of Engineers "Wheeler" equals to Island Class (NATCO) dredges.

The U.S. Army Corps of Engineers fails to detail the daily work schedule, repair, lay up or idle status of the private hopper dredge fleet. We were able to obtain this information from our local district thru fiscal year 1995. They acquired this information from the private dredges as the U.S. Army Corps of Engineers does not maintain this vital information. Why doesn't the U.S. Army Corps of Engineers maintain

this vital information, which is required to properly determine private availability and capabilities? Over a two (2) year period, three (3) large Mississippi River qualified private dredges operated between 85 to 95 percent of daily dredging operations. They were employed at times on other projects which prevented them from responding to our dredging emergency. The U.S. Army Corps of Engineers' scheduling has been a problem, and we support your addressing this issue.

Lack of this type of data, as well as other incomplete data and lack of details, caused a serious doubt as to the accuracy of this presentation. In particular, the high dredging requirements of the Atlantic and Gulf Coast areas should be presented as a total separate analysis. We also question the decision of not considering all data from fiscal year 1988 to fiscal year 1994.

The increased dredging cost by the private sector is not fully reviewed in the cost estimates. The total job cost is not considered. The lack of competitive bids by private sector has increased our dredging cost, especially in the Mississippi River and Mississippi River-Gulf Outlet. The number of options of operating the U.S. Army Corps of Engineers dredges yields the greatest savings as per the U.S. Army Corps of Engineers chart. We realize this is not practical, and in the real world is not an option.

The recent newspaper article on the private dredging and the Army Audit Agency investigation in fiscal year 1993 and fiscal year 1994 are a great concern to the Maritime industry. Since the U.S. Army Corps of Engineers had knowledge of this, was any consideration given to these issues in preparing this presentation? What is the time frame of the Army Audit Agency's investigation into fiscal year 1995, fiscal year 1996 and fiscal year 1997 contracts?

CONCLUSION

Based on the above comments, we must reject this presentation as being lacking in the above comment area. There is insufficient data to properly evaluate and/or make choices on the options presented. The U.S. Army Corps of Engineers should provide a copy of the previous Army Audit Agency's evaluation of the revised Minimum Dredge Fleet Study (1994 Step 2). In addition, we feel a more complete study should be undertaken immediately to have a full evaluation of this important issue. We would like to work with you to help prepare a report we can use to bring to Congress to show them the need to:

—(1) Improve and update the "McFarland";
—(2) Maintain the "Wheeler" in full operational service;
—(3) Maintain the "Essayons" and "Yaquina" operational; and
—(4) Ensure private dredging companies obtain their fair share of work, provide for reinvestment into the fleet, and a proper return on their investment.

Since this study is incomplete and lacks sufficient data, we most decline to respond to the options presented.

Yours very truly,

GEORGE E. DUFFY,
Chairman.

STATE OF LOUISIANA,
GOVERNOR'S TASK FORCE ON MARITIME INDUSTRY,
October 30, 1997.

Maj. Gen. RUSSELL L. FUHRMAN,
Director & Asst. Commander of Civil Works,
U.S. Army Corps of Engineers, Washington, DC.

DEAR GENERAL FUHRMAN: Following our recent meeting in Washington with you and our subsequent meeting with Barry Holliday, we have compiled the following list of information we require. Our list is comprised of input from the Pacific Northwest, the East Coast, and the U.S. Gulf Coast which were represented in our recent meeting.

(1) The revised Minimum Dredge Fleet Study of 1994 (Step 2);

(2) The Army Audit Agency Report to Dr. Zirschky on the Minimum Dredge Fleet Study of 1994 (Step 2);

(3) The USACE New Orleans District Study on the cost to the maritime industry on loss of draft on the Mississippi River and the Mississippi River-Gulf Outlet. Comparable studies or data related to channels and harbors in the East Coast, the Pacific Northwest, and the U.S. Gulf for fiscal year 1994–fiscal year 1996;

(4) Detailed schedule of work, repair and idle time on all the private sector hopper dredges for fiscal year 1993–fiscal year 1997;

(5) Accurate data as to the daily production of the USACE hopper fleet in cubic yards per day or per hour for fiscal year 1990–96;

(6) Accurate data as to the daily production of all the private sector hopper dredges in cubic yards per day or per hour for fiscal year 1990–97;

(7) Data used to compile options 1 through 8 of the U.S. Army Corps of Engineers Minimum Dredge Fleet presentation;

(8) Copies of the Army Audit Agency Report in 1995 on bid rigging and their investigation into the private dredging sector.

(9) An analysis of the 1996 and 1997 dredging emergencies in the East Coast, the Pacific Northwest and the U.S. Gulf. This should include the loss of project dimension, the bid advertisements, the responses, and the total number of dredges that responded in the hopper, cutterhead and ladder type dredges.

Since the new extension date for our reply and comments is November 7th, we would appreciate an indication as to when we can expect to receive this data. Hopefully, this information can be sent to us in a timely fashion which would allow us time to review the data and then properly respond. Anticipating that this data will take a period to prepare, what we would like to propose is that if we receive the data by November 15th, thence we will be able to respond to you by December 1st. We think that a two (2) week interval with the Thanksgiving holiday in that period would be sufficient. We hope this is workable, as it is important for us to review and evaluate the data in order to properly respond to you on the Minimum Dredge Fleet.

Rather than have copies mailed to all of our participants, what I would request is that two (2) copies be mailed to Mr. Dan James, PNWA for the Pacific Northwest area, a copy to Mr. Dennis Rochford, Philadelphia Maritime Exchange for the East Coast, and a copy to myself. We will distribute the data to the balance of our members. We are hopeful that this information is available to us, and if not, please let us know what information is going to be able to be distributed and what information is not for whatever reasons.

If there is any clarification needed, please have one of your staff contact me, or if you want, we can just deal directly with Barry Holliday on this information flow.

Yours very truly,

GEORGE E. DUFFY,
Chairman.

ALABAMA STATE DOCKS DEPARTMENT,
Mobile, AL, November 7, 1997.

U.S. Army Corps of Engineers,
CECW–OD,
Washington, DC.

The Alabama State Docks, on behalf of the Port of Mobile, the deepwater port of Alabama and the terminus of a 1,500 mile inland navigation system encompassing the Tennessee, Tennessee-Tombigbee, Black Warrier-Tombigbee and Coosa-Alabama waterway systems, has anxiously anticipated the release of and opportunity to comment on the Minimum Dredge Fleet Study.

Unfortunately, once again the process has not responded to the third and fourth partners' (the port and navigation industries) desire and need to have full understanding of the analyses behind the alternatives presented. To request that the ports choose (or rank order) alternatives based on the information provided to date is unacceptable.

In the way of background, shortly after I joined the port industry in 1991, I was introduced to the Minimum Fleet Study as a working member of the American Association of Port Authorities', Harbors, Navigation and Environment Committee. Despite numerous attempts to obtain full and direct involvement in the process, our successes were few and with minimal impact. Over time, through regional and national Corps/port partnership forums and verbal and written communication with Corps leadership, to include the ASA, our frustrations have been thoroughly articulated. Yet, to date, our desire to be a full participating partner continues to be stymied.

Our goal for the total (hopper) dredge fleet is simple. The total fleet must have the capability of providing navigation channels that are maintained at authorized depths at all times to ensure that navigation safety and the effectiveness of our national transportation system is not degraded. Over the last four years, the combined Corps and private fleet has been unable to achieve this goal satisfactorily. In two of those four years, the Port of Mobile and its users have been the victim of the fleet shortfall.

In the third year, we only narrowly avoided being tasked once again to operate in a degraded state while an ongoing dredge project using non-Corps assets was interrupted to divert the assets to a "higher priority" system. Even though this port does not use the Corps (hopper) fleet assets, it is ludicrous to think that reduction of the Corps fleet will not have further negative impact on the maintenance of the port's Federal Project. Even the concept of "standby" status is fraught with numerous risks which are unacceptable to any port tasked with providing full capability to the shipping interest it serves.

With these thoughts foremost in mind, we do appreciate the opportunity to provide comment on the "Study" material presented. We also look forward to the opportunity to comment on the full Corps analyses in the future.

Sincerely,

JOHN P. CAREY,
Chief Administrative Officer.

STEAMSHIP ASSOCIATION OF LOUISIANA,
New Orleans, LA, November 7, 1997.

Major General RUSSELL L. FUHRMAN,
Director and Assistant Commander for Civil Works,
U.S. Army Corps of Engineers, Washington, DC.

DEAR GENERAL FUHRMAN: Please find attached our Association's comments on the 1997 Dredge Report recently provided to us by the Corps of Engineers. If you have any questions or comments about the attached, please contact me.

Very truly yours,

CHANNING F. HAYDEN, JR.,
President.

STEAMSHIP ASSOCIATION OF LOUISIANA'S COMMENTS ON THE 1997 DREDGING REPORT
NOVEMBER 7, 1997

BACKGROUND

In November of 1991, the steamship industry commented on the Minimum Dredge Fleet Study (the 1991 Study) completed in July of that year. Noting several fatal flaws, the steamship industry (the users of federal dredging) urged that the 1991 Study be redone. After the Army Audit Agency agreed with industry's position, then Acting Assistant Secretary of the Army for Civil Works, Dr. John Zirschky, advised that a new Minimum Dredge Fleet Study would be undertaken, one which would not contain the defects of the 1991 Study. The new study was expected about two years from Dr. Zirschky's October 1994 decision.

Six years after the 1991 Study, and a year past the expected deadline for a new study, the steamship industry finds itself reviewing a document presented by the Corps of Engineers that does not meet the minimal requirements for a Minimum Dredge Fleet Study. Public Law 95–269 requires the minimum fleet analysis be based on:

—Capability, which includes suitability of the private dredges available and the dredging capacity of the combined Corps/private fleet;
—Reasonable price; and
—Timely response.

COMMENTS

General.—The recent document presented by the Corps (referred to here as the 1997 Dredge Report) took an inordinate amount of time to complete. Secretary Zirschky announced in October 1994 that the 1991 Study would be redone. Noting that there was about a year between the completion of the last fiscal year included in the 1997 Dredging Report and its release, if the 1991 Study had been redone in a timely fashion, it would have been completed in late 1995 and based on data from fiscal year 1988 through fiscal year 1994.

Despite the amount of time it took to finish, the 1997 Dredging Report, like the 1991 Study, was undertaken and completed without meaningful steamship industry input. While industry representatives have met with the Corps on several occasions, our input and dredging needs were not solicited during the preparation of the report.

Capability.—The 1997 Dredge Report touches briefly on dredge capacity but fails to consider the suitability of the hopper dredges in the private fleet—ignoring their age and the fact that several small dredges included in the Study are unsuitable

for use on the Mississippi River. The data set on which dredging requirements are determined is incomplete. Without complete data on dredging requirements no credence can be given to the 1997 Dredging Report's comparison of dredging capacity to dredging requirements.

It seems inconceivable that the Corps does not have all the data from its dredging contracts, yet the data set supporting the 1997 Dredging Report has gaping holes in it. In some cases, the amount of material dredged is not known. The incompleteness of the data casts doubt on the validity of the Corps' estimates of the nation's dredging requirements and the capacity of the combined Corps/private hopper fleet to meet those needs.

The 1991 Study was based on data from fiscal year 1988 and 1989. The 1997 Dredging Report is based on data from fiscal year 1994 through fiscal year 1996. Why did the 1997 Dredging Report not include data from fiscal year 1988 through 1996? Data selectivity implies an attempt to bias the conclusion.

Why is the methodology of the 1997 Dredging Report different from that of the 1991 Study? Though the steamship industry was critical of the 1991 Study, it was much more thorough.

If nearly 80 percent of all hopper dredging is on the Atlantic Gulf coasts, a capacity-versus-requirements analysis should have been done for that area.

The dredging capability used in the 1997 Dredging Report is not completely valid. The capability data for the private fleet is based on fiscal year 1991 information, and the dredging requirements are based on fiscal year 1994, 1995 and 1996. During part of those three years, the PADRE ISLAND and SUGAR ISLAND were out of the country, and the MANHATTAN ISLAND was in the shipyard for an extended period as the result of a collision. In addition, the WESTPORT, ATCHAFALAYA and MERMENTAU are too small for use on the Mississippi River. These three small dredges must be removed for the capability equation and would have been if the analysis of Atlantic and Gulf dredging capacity-versus-requirements (suggested above) had been performed. Thus, the chart on page 10 of the 1997 Dredging Report must be reconstructed to show the reduced private dredging capability by adjusting for the six private dredges mentioned here.

Finally, as noted below, the increase of single bidder contracts on the Mississippi River shows that there is not sufficient private hopper capacity to address the hopper dredge needs on the River.

Pricing.—The 1997 Dredge Report gives scant notice to the price of dredge work. Other than to state (without any empirical analysis given) that certain of the Report's options cost more or less than the status quo, pricing is ignored. Thus, the Study's authors failed to consider the effects of single bidder dredge contracts on the cost of dredging. If the authors had reviewed this aspect of pricing, they would have found the following (based on information Senator Murray requested and received from General Ballard):

[In percentages]

Fiscal year	Multiple bid contracts [1]	Single bid contracts [2]
1992	−11.62	+15.00
1993	−8.79	+23.97
1994	−8.90	+15.97
1995	−1.82	+16.04
1996	−11.98	+0.50

[1] Average difference between winning bid and Government estimate.
[2] Average difference between winning bid and Government estimate.

In addition, had the authors focused on pricing as required by law, they would have noticed a strong correlation between single bidder contracts and cost over-runs in the Mississippi River and Mississippi River-Gulf Outlet (MR–GO) projects as set out below:

Fiscal year	No. of single bidder contracts on Miss. River & MR–GO	Cost over-run on Miss. River & MR–GO
1992	2	$240,936
1993	5	1,251,577

Fiscal year	No. of single bidder contracts on Miss. River & MR–GO	Cost over-run on Miss. River & MR–GO
1994	8	2,635,921
1995	4	3,361.254
1996		(1)

[1] No cost over-runs.

And finally, had the authors of the 1997 Dredge Report considered pricing, they would have considered the implications of the uncompetitive activity recently alleged by an internal Corps' study.

In fact, the only pricing information in the 1997 Dredging Report shows that the least costly method of keeping the nation's navigation channels open, compared to the current situation in which the WHEELER is on ready reserve status, is to employ the Corps' hopper fleet 250 days per year. However, there is no empirical analysis of the cost associated with the eight options. Thus, readers cannot evaluate the conclusions drawn. In addition, the cost data presented for the various options raises the following question: Would additional savings be achieved if Corps' dredges worked more than 250 days? What would the savings be if, for example, the Corps' hopper fleet worked 300 or 325 days per year?

A risk analysis is not a requirement of a minimum dredge fleet study. However, if one is to be done, it should not be subjective, as is the case in the 1997 Dredging Report.

The risk analysis in the 1997 Dredging Report is incomplete. It does not consider the expected value of the outcomes. For example, if an undesirable outcome for the shipping industry has a low probability of occurring (say 5 percent), but a high cost if it does occur (say $20,000,000), its expected value is $1,000,000. If the countervailing risk to the dredging industry has a high probability of occurring (say 80 percent), but a low cost (say $1,000,000), its expected value is $800,000. In such a case, the low risk steamship industry alternative should be avoided because of the higher expected costs associated with it. Should the Corps wish to undertake a risk analysis, it must be done based on the losses to the ports and nation that are incurred when navigation channels are maintained at less than project dimensions.

Finally, no discussion of the price of dredging would be complete without noting, again, that U.S. taxpayers do not pay for dredging. That cost is borne by the shipping industry (the Corps' dredging customer) through the Harbor Maintenance Tax.

Timeliness.—The 1997 Dredging Report fails to consider, as required by law, timeliness as a criteria in the analysis of the nation's dredging needs. Timeliness is critical to any dredging evaluation. Regardless of the dredging capacity available, if dredges do not arrive on station in time to address rapid shoaling, the capacity has no practical value. This result occurs when private dredges arrive on station unable to work at full capacity, when dredging contracts are let and no private dredges bid, or when the low bidder for a contract is more than 125 percent above the government estimate.

For example, at the November 5, 1997 monthly Dredging Forum meeting in New Orleans, the Corps reported on four recent bids for which there were no bidders, or the bid was too high above the government estimate to be awarded. Needed dredging on the Calcasieu Ship Channel and the MR–GO has been delayed as a result. This is but one example of how not considering timeliness causes the 1997 Dredging Report to be fatally flawed.

CONCLUSION

For the reasons given above, our Association rejects the 1997 Dredging Report as a valid Minimum Dredge Fleet study, which the industry has been expecting since Secretary Zirschky's 1994 commitment to redo the 1991 Minimum Dredge Fleet Study. We respectfully request that the Corps of Engineers undertake, with all deliberate speed, a proper Minimum Dredge Fleet Study that addresses the concerns noted above, as well as our comments on the 1991 Minimum Dredge Fleet Study, and commits to having the new study completed and disseminated to the interested parties by the end of March, 1998. It is further respectfully requested that the Corps comply with the shipping industry's request to make available to us, in a timely fashion, the Army Audit Agency's (AAA) critique of the 1991 Minimum Dredge Fleet Study, the AAA report on uncompetitive pricing practices in the dredg-

ing industry, and the complete data set on which the 1997 Dredging Report is based.

BOARD OF COMMISSIONERS,
Roseburg, OR, November 6, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

We request your consideration of retaining the Corps hopper dredges (Yaquina and Essayons) in active service on the west coast.

We are particularly concerned with the possibility of losing the Yaquina which works in the Oregon coastal ports, including the Umpqua River located here in Douglas County. The maintenance dredging in the port and river has a significant economic impact on the coastal area of Douglas County.

Thank you for your consideration of this and other comments you have received in support of retaining the Yaquina and Essayons.

Sincerely,

DOUG ROBERTSON,
Chairman.

PORT OF WALLA WALLA,
Walla Walla, WA, November 7, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

The Port of Walla Walla appreciates the opportunity to comment on proposed option regarding prospective changes in the Corps Minimum Dredge Fleet, as set out in the Draft Report made available by the Corps on October 8, 1997.

As the Corps is aware, the Port of Walla Walla is on the Columbia-Snake River system. Last year our port loaded 114 barges of grain of which 90 percent goes to export markets.

As a Columbia-Snake River system upriver port, we benefit from shallow draft dredging. Our port also depends on O&M work on the lower Columbia River. Much of that vital work is performed by the Corps dredge Essayons. As an active member of Pacific Northwest Waterways Association, we also know the benefits from, and we support, the critical role played by the Corps dredge Yaquina in dredging smaller coastal ports.

Any government initiative aimed at lower dredging costs and a greater private sector role has obvious appeal to our port. In this case, however, we are concerned that adoption of any of several of the eight different Corps options will result in higher dredging costs, less ability to respond to emergencies, and a greater lack of peak dredging capacity. Any of these results could damage our port and our region. As a result, we oppose any changes in the stateus quo for the reasons detailed below.

LACK OF ANALYSIS

The Port of Walla Walla was looking forward to evaluating the various Corps options in your draft report to assess their potential impact on our port and on others on the Columbia-Snake system. The draft report, however, does not provide sufficient information for us to offer educated comment. Instead, the 27 "viewgraphs" that form the draft report contain generalities and conclusions without supporting analysis. As a result, we are compelled by this lack of supporting information to reject all options except maintaining the status quo. In summary, our port lacks sufficient material from the Corps to examine the potential impact of many of the options developed by the Corps.

Our port looks to services provided by the Corps dredges to see how they meet the standards critical to us. Those standards are:

1. *Cost and competition*.—How does any proposed change impact the potential costs of providing dredging services, particularly on the Lower Columbia River? How much real competition exists today among the private dredge companies? We are told of single private bids from time to time, including bids issued from the Portland District. What will the impact be from lessening competition by removing some of the balance now offered by the four Corps dredges? Importantly, how did the Corps reach the conclusions that the risk is "low" to Columbia River ports if private dredge

operators are allowed to perform all the Columbia River Dredging? How often do private dredge companies exceed 125 percent of the Corps estimate—a ceiling above which that now allows Corps dredges to perform the work? If Corps dredges are removed from service, and only one private dredge company bids on a Corps dredging job, what happens if the bid is excessive, but no Corps dredge is in service to perform the work? What if a private dredge breaks down while dredging in the Columbia River, and neither a Corps dredge (retired) nor another private dredge of equal capacity is available to replace it?

In summary, we see no evidence or analysis that shows how cost increases for dredging will be addressed under several of the Corps options. Without the backup availability of Corps dredges to step in to do the work, we predict that dredging costs will rise. The Corps MDF study provided no analysis that this prediction is erroneous. Removing Corps hopper dredges from service further depletes an already limited number of hopper dredges, thus creating even less competition.

2. *Emergency Response*.—Our region still recalls the impact of the Mt. St. Helens eruption, when the Columbia River channel was closed from debris and sediment that flowed into the channel from the eruption. Shoaling in the lower Columbia that lowers the channel depth could create serious problems, without prompt emergency dredging to remove the shoaling.

Shippers of grain and other products using Columbia River upriver ports want reliability in their transportation services to export markets. When water transportation is involved, channels must remain open, so fully loaded vessels can depart with U.S. exports. Our port cannot endorse any changes to the Corps dredge fleet that could reduce emergency assistance to reopen the Columbia River channel after shoaling that reduced the channel depth. We believe that removing Corps will meet these needs.

We do not have enough information from the Corps to make informed comments on this critical element. For example, we understand the Corps is considering changing in contract procedures to compel private dredges to move quickly from an existing dredging job to sites requiring emergency assistance. Where are these details of such changes? We cannot endorse this concept without supporting explanation providing more information. For example, how can the Corps prevent court challenges to such actions, either by the private dredge companies or by the beneficiary being served at the time by the dredge in question the Corps wants to move to an emergency?

What if a private dredge is working at a military channel or facility in California when a Columbia River emergency occurs. Will the dredge stay in California, under pressure from the military seeking completion of its work? The U.S. military may make a compelling case that its immediate dredging needs are for national security, while claiming that the Columbia River ports have only commercial cargoes at risk. If so, vital shipping down the Columbia River could be damaged.

Shipping delays caused by channel shoaling damage our system in two ways. First, shipments actually delayed at the time can be lost forever if overseas grain requirements, for example, can be met elsewhere. Second, and of equal importance, damage to the image of reliability of the Columbia River as an avenue to export markets can create a long term disaster for our river system. Any reputation of unreliability in meeting shipping needs of products that can get to market via other channels can devastate a port or a river system. Our shippers now using Columbia River ports might shift to Canadian ports if they experience delays or light loading requirements brought about by shoaling in the lower Columbia—when a Corps dredge now could respond immediately to solve the problem.

In summary, several Corps options remove Corps dredges from service, thus damaging emergency response capability. Under some options, the Corps dredges would be unavailable for emergency responses. Already, the private hopper dredge fleet is limited in number. We lack information about how the standby options would operate to provide emergency response. We oppose any options that could create channel depth problems in the lower Columbia, both for the immediate damage to shippers, but also for the damage to our reputation as a reliable conduit for shippers into global markets.

3. *Capacity*.—We are aware that insufficient hopper dredging capacity now occurs at certain times of the year. This lack of peak capacity is not only a Mississippi River issue, as it could have a serious impact on the Columbia System. If the Corps dredge Wheeler is retried, and Mississippi flooding occurs, there may not be enough capacity to meet their emergency dredging needs. The Essayons might be transferred to the Mississippi for emergency response, thus leaving the Columbia River system vulnerable to shoaling. Because of the lack of peak capacity now, when four Corps dredges are available, we question removing from service any of the four Corps dredges.

CONCLUSION

The Port of Walla Walla welcomes the spirit of openness characterized by providing a draft report for comment. We support this process, and believe it benefits both the Corps and its port partners. Our port regrets, therefore, that the draft MDF report was not more complete than the viewgraphs, for it erodes this cooperative spirit.

In conclusion, the Port of Walla Walla must oppose changes in the existing operation of the Corps dredges until more data is available for our review. The key elements must be met for us to support any changes in the current operation of the dredges. A short set of slides fails to give Corps stakeholders enough information to make informed judgments. Slides that set out Corps conclusions without backup analysis are inadequate. Use of graphs showing conclusions of risk ("low, medium, high") presume that the graphs represent quantifiable amounts displayed in graph form for easy comparison. We see no information that identifies how the Corps selected low, medium or high risk. Lastly, we were disappointed that one viewgraph ("The challenge"—viewgraph # 9) included only the "wants" of the private dredge industry, and omitted the "wants" of Corps customers such as ports and shippers.

We suggest that no further action be taken until more information is provided to your impacted customers, such as our port. Only then can we provide informed analysis and recommendations.

Thank you for your consideration of our port's views.

Sincerely,

JAMES M. KUNTZ,
Executive Director.

PORT OF VANCOUVER, WA,
November 7, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

The Port of Vancouver appreciates the opportunity to provide comments on the draft minimum dredge fleet (MDF) study released by the Corps on October 8, 1997. We welcome the cooperative relationship evidenced by providing stakeholders the chance to address strengths and weaknesses of a study before the Corps makes its final decisions.

The draft MDF study, unfortunately, falls short of the analysis required to make reasoned judgments about the impact of the eight options. We had anticipated a fully documented study that reflected thorough analysis of the critical issues. We expected sufficient material upon which we could base our analysis and comments. We see in slide # 3, for example, a statement repeating the Corps navigation mission. The study omitted an analysis of how the proposed changes in the MDF affect this critical Corps mission. The Corps navigation mission must not be compromised in an effort to meet the "wants" of the private dredge operators appearing on slide # 9. That slide, labeled, "The Challenge," misrepresents the challenge. We believe the challenge for the study is to determine whether the key Corps navigation mission can include a greater role for a few dredging contractors without compromising the mission.

Our port urges the Corps to reopen the comment period after making public for review by all parties the Corps' analysis used to reach your conclusions. Without this process, the Corps faces a difficult challenge in securing support from your customers—ports and shippers—for changes in the MDF.

Only with sufficient information can smart choices be made. We should be your partners in this effort, not your adversaries. Although the 27 pages of slides make a useful summary for outsiders new to the issue, they do not provide sufficient information or detail to be acceptable to your port partners.

In sum, the information is too general and vague to form the basis for such an important change in the operation of the Corps MDF. We urge that the Corps use this draft as a starting point, but now provide stakeholders with a fully documented study with analysis supporting these conclusions. We also see in the draft report nothing that examines the specific impact on American shippers, whose fees fund O&M dredging. Without such material, our port cannot accept any alternative to the status quo, for too many questions remain unanswered.

Our key issue is the level of service provided by the Corps, including effectiveness of emergency response and availability of adequate capacity. These are critical elements.

Naturally, a proposal that suggests ways to save on dredging costs and increase private sector work has an appeal to our port. With a sufficient level of detail, ports that now resist changes due to a lack of information might well have their concerns met and their confidence raised. For that to occur, however, we need more detail that demonstrates how the Corps reached its conclusions and recommendations.

Our port also will offer comments on a few areas where we see shortcomings in your draft study.

Emergency Response.—As did other Columbia River ports, our port suffered after the eruption of Mt. St. Helens, when debris and mud from the eruption swept into the Columbia River channel, blocking it to ship traffic. Corps dredges were at work promptly clearing the channel. Although private dredges also helped in the longer term, restoration of Columbia River shipping would have been delayed significantly without the Corps dredges. Columbia River ports and our shippers would have been damaged even more without the quick emergency response from the Corps dredges, or if we had to wait for the regular mobilization procedures for private dredges.

Emergency response is critical for two reasons. First, cargo is at risk whenever channel depth is lost. Vessels that must depart "light loaded" because of shoaling see their per ton costs increase significantly. Obviously, this translates directly into dollar losses. Second, any port or river system that acquires a reputation for not clearing shoals immediately faces a bleak fixture, as shippers and vessels may choose other pathways for export cargo. No shipper or vessel owner will continue to ship through a river system or port where authorized channel depth is not maintained at all times.

We also saw nothing in the slides implicating that the Corps considered and reviewed the needs of American shippers, who pay for dredging costs through fees deposited into the Harbor Maintenance Trust Fund. Shippers' needs should be part of any final MDF report.

A comparison also should be made between the total value of American goods exported through the Columbia River, the Mississippi River and the Delaware River systems and the cost of operating the four remaining Corps dredges. We think that the MDF provides minimal cost insurance for this country's exporters whose products compete in global markers.

Standby Option.—The conditions are not defined in the draft study under which any Corps dredge on standby would be activated under the 72-hour rule to provide emergency assistance. In the past, there have been instances where the private dredge owners protested use of a Corps dredge for emergency response, saying their private dredges were available. Under any new MDF plan, will the private dredgers be allowed an appeal of a decision to activate a Corps dredge?

Serving the Military.—The Corps also failed to explain under what circumstances Corps dredges would be activated from standby to provide emergency dredging for the U.S. military. Would the same standards for activation apply? Once working for the military, a claim of "national security" could be made by the military to protect against reassignment of a dredge to clear a commercial channel elsewhere. We worry that the Corps would be in the middle of a fight if it tried to free a Corps dredge from performing a military project to return to help clear shoaling on the Columbia system or elsewhere in the U.S.

Portland District Cooperation re Columbia River Conditions.—Currently, our port and the Port of Portland meet on a regular basis with District O&M staff and the bar and river pilots. We evaluate problem areas in the Columbia River channel, so that the Corps dredges can be directed to respond immediately to serious shoaling or other problems. Without the two Corps dredges available to provide this service, these sessions would be useless. A restrictive definition of "emergency" limiting quick responses would nullify the effectiveness of any standby option. Strict and rigid terms limiting Corps dredge activation might tie the hands of a D.E., even if a Corps dredge on standby is available.

Activation Decision.—Our port believes strongly that a decision to activate a Corps dredge should be made by the District Engineer. That decision should not be delayed by headquarters review. The 72-hour activation period would be less effective if it did not begin until after Corps headquarters approved activation. The 72-hour period should begin with approval by the D.E., although Corps HQ would retain authority to intervene if competing needs for the dredge was an issue.

We do see a role for Corps HQ, however, in evaluating which competing area deserves emergency servicing by dredges if a conflict arises. If the Wheeler is retired, and emergency shoaling threatens both the Mississippi and the Columbia channels, the Corps may have to choose where to provide the emergency capacity of the Essayons, or where to assign a large-capacity private dredge. Keeping the Wheeler on standby, at a minimum, will minimize this concern.

Adequate capacity.—From what we understand, all parties, including the private dredgers, have agreed that there has been inadequate peak capacity to meet dredging needs at certain times of the year. Environmental windows limiting dredging at certain times probably will grow, thus increasing the potential for problems from a lack of capacity. Dredging requirements cannot be managed over an entire year to a level of maximum efficiency. When environmental windows combine with the unpredictable nature of floods and freshets, they strengthen the arguments not to remove any of the current remaining Corps dredges. The Corps dredges can provide peak capacity relief, even where conditions do not create "emergency" conditions.

Competition.—We see no evidence that the options in the Corps draft study will increase competition within the private sector for Corps dredging work. Maintaining the existing level of competition is too low a standard to use when it is accompanied by such an increased level of risk to the ports and our shippers.

Competition only develops if dredge capacity and type are available from both Federal and private resources. In spite of the role of Corps dredges, competition today already is limited. In fiscal year 1997, for example, the Corps had ten potential contracts where only one private bid was received for hopper work—up from only two contracts with single private bidders in fiscal year 1992. At the same time, the number of hopper dredge bids with three bidders fell from 16 in fiscal year 1992 to 4 in fiscal year 1997. When all Corps dredging is examined, single bids rose from 13 in fiscal year 1992 to 33 in fiscal year 1997. That does not appear to indicate a healthy level of competition for Corps contracts from within the private dredge industry.

Even when faced with such limited competition, several Corps options call for retiring some of the remaining four Corps dredges. Without increasing private sector capacity, this will lead to less competition, not more, and to non-availability of critical dredging resources. The study also should examine the remaining useful life of the private hopper dredges, as the cost of repairs, etc., could result in companies removing some hopper dredges from service within a few years. This would reduce competition (and capacity) even more, unless more private dredges are added.

Costs.—With less competition among the private dredging companies, our port fears that O&M costs will rise. Overall, the Corps faces a future with declining O&M funds, from all that we hear. As a result, any actions that remove Corps dredges from service threaten to drive up the cost of O&M dredging at the very time when the Corps predicts declining O&M funding.

Increased dredging costs can result from several factors. Our port looked at the statistics provided to our Senator Murray by ASA/CW Martin Lancaster in response to the Senator's questions at an appropriations subcommittee hearing. One response provided summaries of all hopper dredge contracts from fiscal year 1992 through fiscal year 1996. ASA Lancaster responded with data showing that, during this period, there were 22 contract bid amounts where only one bid was received. Of these 22 cases, only one bid was received for less than the Corps estimate of the costs. (That bid, for work at the Norfolk harbor in the 45 and 50 foot area, was 27 percent below the Corps estimate.) The other 21 bids with only one bidder all were more than the Corps estimate—ranging as high as 55 percent and 46 percent above the Corps estimate. (Most were within 10–30 percent above the Corps estimates.)

Corps Response to Excessive Bids.—Currently, if private bids exceed 125 percent of the Corps estimate of the cost, a Corps dredge may perform the work. Under Corps options that retire Corps dredges or put them on standby, the Corps offers no conditions under which Corps dredges would be used. No slides indicated that a Corps dredge on standby would do the work if private bids exceeded the 125 percent ceiling. The Corps does not address how the Corps would respond if the Yaquina is retired and a single bid is received for small coastal port work—and the bid exceeds 125 percent. Without the Yaquina. the Corps options appear more limited.

If the Corps adopts an option that retires the Wheeler, the chances increase that the Essayons will move the Gulf in certain emergencies. As long as that does not create any problems, we support limited use of the Esseyons in this way. Without the Wheeler, and with the Essayons in the Gulf, if the Corps then puts out a bid for Columbia River work, and a single bid is received that exceeds 125 percent of the cost, it appears that the Corps is in a box—and the Columbia system might suffer.

Costs and Corps Bid Estimates.—Currently, actual hopper dredging experiences of the Corps MDF assist other Corps professionals in preparing its bid estimates. We are concerned that, if the Corps dredges are not used regularly for project work, the Corps hopper dredge estimates may creep upward, as the Corps will lack the "hands on" recent experience to counter the private industry claim that the Corps under-estimates the costs for various jobs. Without the reference provided by regu-

lar project work by the MDF, we could see bid estimates rise, thus eroding any cost savings for the program envisioned by these policy changes.

Improving the Partnership.—We offer two suggestions to improve the O&M dredging sector partnership between the Corps and its port and maritime partners. First, we see benefits from a one-time workshop that would bring together ports and maritime interests, O&M staff from the three districts that are home to the Corps dredges, and civilian dredging officials from Corps HQ. As a model, under AAPA sponsorship, our Columbia River Channel Deepening group met with representatives of other navigation projects in various stages of review and construction. Corps officials were important players in making this workshop a success. We saw benefits to all participants. We believe similar benefits could result from an O&M dredging workshop.

Second, we recommend creating a regular forum for sharing information about such issues as dredging needs, possible emergencies, dredge deployment plans, Corps and private dredge utilization and the like. This forum would assist the Corps, as do your regular meetings now held with the private dredging companies that look at common issues from their viewpoint. As noted, we already meet at the Portland District level, as do Mississippi maritime interests and the New Orleans District. These meetings benefit all participants, and we believe a national O&M dredging forum would provide similar benefits to the Corps and your partners.

In conclusion, we repeat that we believe that the options presented by the Corps represent only conclusions without useful supporting analysis. More importantly, the draft study fails to meet our port's concerns of emergency response, adequate capacity, costs and competition. Our review of the 27 slides shows that many options in the Corps draft MDF study actually damage the Corps' ability to meet these standards.

We believe that, if adopted, most options would lead to poorer emergency response, reduced peak capacity, higher O&M costs, and less competition. As such, we urge the Corps to pause in this process and provide more material for review. This report already was postponed for two years so more current data could be collected. A further delay will enable the stakeholders to provide useful analysis. The Corps also may find that good, useful information and analysis from the Corps will answer ports' concerns, so all interested stakeholders can move ahead as partners dedicated to meeting the navigation mission of the Corps.

We thank you for the chance to present our views to the Corps.

Sincerely,

BERNIE BILLS,
Director of Management Services for the Port of Vancouver.

PACIFIC NORTHWEST WATERWAYS ASSOCIATION,
Vancouver, WA, November 8, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

We were disappointed in the "Draft Minimum Dredge Fleet Study" released on October 8. We have been waiting for years for the Corps' study, expecting it to provide data and analysis that could be used to determine the requirements for the federal fleet. Our criteria for maintaining the federal fleet has been cost, capacity and responsiveness. Capacity and responsiveness were not analyzed in the study. The future of the dredge fleet is an important decision that will affect international trade and the economic well being of our region and the nation. It should be made with sound analysis.

—The study was not a study. It provides neither the data nor the analysis necessary for making a decision. Until we get more information, we have no other alternative but to reject all proposals to put federal dredges on standby or to retire federal dredges.

—We do not agree with the guiding principle. The guiding principle should be to ensure that the nation's navigation channels are maintained to authorized depths at all times.

We do not agree with the risk criteria. The definition of risk criteria drives the conclusions of the study. Essentially, the study defines low navigation risk as having dredges on standby. With that definition, the logical conclusion is that having dredges on standby provides low risk. That is not analysis. We believe low navigation risk should be defined as the assurance that all channels are properly maintained to authorized depths at all times. The study provides no analysis that demonstrates that this criterion is met for any of the options.

—The study provides no analysis of the viability of the standby concept. The study simply defined standby status. It did not analyze whether the dredges can actually be maintained to that standard over the long run. It did not address whether Congress is likely to fund the additional costs over the long term. It did not discuss whether contracting procedures allow dredges to be called out of standby in 72 hours if a private contractor does not perform.

—The study offers six options that would retire the YAQUINA, but it provides no analysis of private industry's ability to meet the dredging requirements the YAQUINA currently fills. It doesn't analyze whether there will be sufficient West Coast competition in the private sector to keep costs down. It doesn't describe how dredging will occur without the YAQUINA if private bids are not competitive. The same comments apply to options in which the WHEELER or the McFARLAND are retired or placed on standby.

We encourage the Corps to conduct the kind of analysis that will appropriately answer the key questions about cost, capacity and responsiveness. We expect that all options other than the status quo will require Congressional approval. We have requested additional information to help us evaluate current and future Minimum Dredge Fleet proposals. Until we see an acceptable analysis that addresses these and other concerns, we will be recommending that our Congressional delegation reject any proposed changes to the operating status of the Corps dredges.

Sincerely,

GLENN VANSELOW,
Executive Director.

COOS BAY PILOTS ASSOCIATION,
Coos Bay, OR, November 6, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

DEAR CORPS OF ENGINEERS: I am writing on behalf of the Coos Bay/Yaquina Bay Pilots to express our concern about the possible retirement of the dredge YAQUINA. The YAQUINA has been a critical asset to the ports at Coos Bay, Oregon and at Yaquina Bay in Newport, Oregon. The navigation channels at both locations are subject to frequent shoaling and the YAQUINA has been very responsive to the need for prompt maintenance when shoaling appears.

As state-licensed pilots for both locations, we are responsible for the safety of deep-draft vessels entering and leaving Coos Bay and Yaquina Bay. In many cases we move vessels with very little underkeel clearance. Shoaling that is not removed immediately will result in either a grounding or a constraint on navigation with serious, adverse economic consequences to vessels, shippers and ports.

We object to consideration of any option for future operations that does not include continuing availability of the YAQUINA as part of the federal hopper dredge fleet.

Very truly yours,

CAPTAIN STEVE SWEET,
President.

OREGON INTERNATIONAL,
Port of Coos Bay, OR, November 3, 1997.

U.S. Army Corps of Engineers,
Minimum Dredge Fleet Study,
CECW–OD,
Washington, DC.

Thank you for the opportunity to comment on the draft "Minimum Dredge Fleet Study." The Oregon International Port of Coos Bay supports your efforts to provide for the nation's dredging needs in the most cost-effective manner possible, but we cannot agree with the analysis in the Corps' recent study.

Six of the eight options call for retiring at least one of the federal dredges based in the Northwest, yet there is no analysis that demonstrates that we will continue to have our dredging needs met in a timely, cost-effective manner under those options.

Maintenance of the navigation channels in Coos Bay is extremely important to the economic health of our community. Attached to this letter is a copy of the Port of Coos Bay 1996 Annual Waterborne Report, which depicts the number of vessels that

call this harbor. Additionally, the Port's Charleston Marina Complex, with its 520-plus vessel slips, is home to one of the largest commercial fishing fleets on the South Coast, as well as being heavily used by recreational vessels.

We are writing to express our strong support for the Corps of Engineers' maintenance dredging program, and to urge you to maintain the minimum dredge fleet. We must reject all options which decrease the active role of the federal hopper dredge fleet.

Sincerely,

ALLAN E. RUMBAUGH,
General Manager.

PORT OF COOS BAY 1996 ANNUAL WATERBORNE REPORT

	Board feet	Short tons	Values
Outbound:			
Lumber:			
Australia	64,484,919	112,849	$52,394,000
Domestic	18,929,830	33,127	8,992,000
Japan	90,453,929	158,294	62,187,000
Mediterranean	8,471,000	14,824	16,942,000
N. Africa			
S. Seas	14,717,039	25,755	8,094,000
Other			
Total	197,056,717	344,849	148,609,000
Logs:			
Japan	77,116,622	385,583	67,863,000
Korea			
Other			
Total	77,116,622	385,583	67,863,000
Plywood:			
Australia		385	
Domestic		7,985	
Japan		57	
Mediterranean		50	
N. Africa			
S. Seas		2,106	
Other			
Total		10,583	2,117,000
Linerboard:			
Australia		1,250	
Domestic			
Japan		19,257	
Mediterranean			
China		7,457	
N. Europe			
S. Seas		9,208	
S. America			
Other			
Total		37,172	18,586,000
Woodchips:			
Japan		2,063,098	134,555,000
(Hardwood)		274,441	18,160,000

PORT OF COOS BAY 1996 ANNUAL WATERBORNE REPORT—Continued

	Board feet	Short tons	Values
Korea			
Other			
Total		2,337,539	152,715,000
Miscellaneous			
Copper Ore			
Pulp		5,549	2,775,000
Total		5,549	52,775,000
Total Outbound		3,121,275	392,665,000
Inbound:			
Lumber	8,267,411	14,468	
Total	8,267,411	14,468	6,201,000
Logs	28,998,024	144,990	
Total	28,998,024	144,990	11,352,000
Miscellaneous			
Petroleum	[1] 36,035,936	118,919	
Total	36,035,936	118,919	23,991,000
Nickel Ore		941,332	
Total		941,332	35,086,000
Total Inbound		1,219,708	76,630,000
Total Tonnage		4,340,984	469,295,000

[1] Gallons.

Deep-draft calls	236
Barges (loaded)	139
Barges (light)	113

COLUMBIA RIVER PILOTS
Portland, OR, November 6, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

DEAR CORPS OF ENGINEERS: I am writing to express the concerns of the Columbia River Pilots regarding the possible reduction in size of the federal hopper dredge fleet. In particular, we are disturbed that six of the eight options addressed in your recent study would retire the dredge YAQUINA. The YAQUINA is essential to maintaining the navigability of the Columbia River, one of our nation's key navigable waterways.

Enclosed, to remind you of the level of commerce on the Columbia River, is a copy of the Great Waterway, an annual publication with shipping and cargo statistics and port information. Billions of dollars worth of cargo is transported on deep draft vessels each year on the Columbia River. The lower hundred miles of the River is wide and relatively slow flowing, and it is joined by many side streams and smaller rivers. The tremendous sediment loads, fluctuating river levels and currents, and influences of side streams and rivers cause the Columbia River to be constantly sub-

ject to rapid shoaling and development of sand waves and ridges. Because we frequently move vessels at drafts that are at the limits of the project depth of 40 feet, the appearance of shoaling at any location creates a hazard to navigation that must be dealt with immediately.

Our experience with the YAQUINA has been excellent. The YAQUINA was at work in the Columbia River 27 days in 1996 and 47 days so far in 1997. It has responded quickly and effectively to emerging problems and with it and the current federal fleet we are confident that any problem that arises will soon be dealt with. We have no such confidence in what amounts essentially to a privatization scheme for a basic governmental function.

Your recent study does nothing to demonstrate that the public interest would be protected under any of the options that retire federal dredges or place federal dredges on standby. We are operating vessels on thinner safety margins than most people realize, and cannot sanction the further erosion of those margins by turning maintenance dredging operations over to private, unproven contractors of questionable reliability.

Very truly yours,

CAPTAIN STEVE BROWN,
President.

NOVEMBER 8, 1997.

MG RUSSELL FUHRMAN,
Director of Civil Works, U.S. Army Corps of Engineers,
Washington, DC.

DEAR GENERAL FUHRMAN: The Dredging Contractors of America (DCA) welcomes the opportunity to comment on the Corps of Engineers' (Corps) "options paper" for the future use of the four federal hopper dredges. While we remain committed to the successful implementation of Section 227 of WRDA 96 and seek no changes until the two-year trial period has run its course, we appreciate the Corps' effort under your leadership to spawn a dialogue between and among the interested parties. We are always open to new ideas and approaches to this public policy issue of great concern to our industry. We are also willing to discuss potentially non-controversial technical corrections to last year's legislation. While the industry appreciates the work that went into this report, "option two," the status quo remains our preferred course of action through the congressionally mandated reporting period.

For several years, DCA has pursued a "use industry first" policy for the overall management of the public/private hopper dredge fleet. If such a policy were applied universally, government dredges would serve as a "navigation insurance policy" and industry's investment potential would be enhanced while risk to the dredging industry and the ports reduced. Last year's congressional action and first step in this direction has already led to a commitment to build the first private hopper dredge in over a decade and the first large class hopper dredge since 1984. If the federal dredges are managed in a readiness status, "using industry first" will produce the maximum number of hopper dredges to maintain the nation's entrance channels.

Based on several of the options in the "options paper," DCA is pleased that the Corps apparently is supportive of a "use industry first" concept. The Corps' commitment to maintaining active reserve dredges and personnel should help provide confidence to those concerned with a long term funding commitment. DCA is also committed to working with both the ports and the Corps to make sure Congress and the Office of Management and Budget understand the importance of maintaining needed federal reserve capacity. Finally, permanent changes to the government fleet should be considered after adjusting to the new system. With enough time "using industry first," it should become crystal clear to all which federal dredges must be kept at a high readiness status.

With these thoughts in mind, Corps options seven and eight would eventually yield the best results. However, as stated above, DCA does not support the retirement of any dredge before the "use industry first" operating policy has been successfully implemented in the context of WRDA 96. Since all vessels have a finite economically useful life, "using industry first" will extend the life of every federal dredge, clearly a benefit to proponents of "maximum capacity" and to lowering the risk to navigation. It should also provide the Corps good data upon which to make future decisions.

The first option to increase the operations of the Corps dredges would unduly harm industry and increase government cost over the long term. DCA strongly disagrees that the risk to navigation would be low under this scenario. Rather, the risk to navigation increases under option one as industry would likely disinfest in the

hopper dredge segment. The lowest risk to navigation is the scenario diet stimulates the most investment.

DCA looks forward to working with all concerned to develop and refine a policy that's good for America's ports, taxpayers as well as the dredging industry.

Sincerely,

MARK D. SICKLES.

CONGRESS OF THE UNITED STATES,
Washington, DC, November 7, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

DEAR MR. HOLLIDAY: We are writing to you regarding the Corps' Minimum Dredge Fleet Study. Dredging is an important part of the navigation infrastructure in the Northwest. Our region and the nation are heavily dependent upon a safe, reliable navigation system for domestic and international trade and commercial and recreational fishing. The Corps' hopper dredges support these activities by contributing to responsive, cost effective dredging with capacity to provide competition and to respond to peak dredging needs.

When we wrote to Acting Assistant Secretary John Zirschky on this issue in August, we asked that the study include certain analysis to allow Congress to evaluate Corps recommendations regarding the future of the fleet. We asked that the analysis include an examination of responsiveness to routine and emergency dredging requirements, industry competitiveness, a comparison of dredging costs and industry capacity. The presentation of the eight options in the study did not include such an analysis.

Upon review of the study, we have several additional questions. First, is the Corps' primary objective to keep navigation channels maintained at authorized depths at all times? It appears that the Corps considers other issues to be of greater importance. Second, has the Corps completed a detailed analysis of the range of possible impacts of the eight study options on navigation in the Northwest and the rest of the nation? Third, exactly how does placing dredges on standby status provide low risk to navigation? Fourth, has the Corps developed specific predictions for the cost of maintaining dredges in standby? Similarly, has the Corps developed contractual and procedural frameworks and vessel operations frameworks for dredges in standby? Do these predictions and frameworks support the low risk conclusion? Fifth, does the Corps believe that Congress and future administrations will support maintaining dredges in standby?

We encourage the Corps to conduct the kind of analysis that will appropriately answer the key questions about cost, capacity and responsiveness. We must reject all proposals to put federal dredges on standby or to retire federal dredges until we review the Corps analysis of these issues and our related questions. We expect that all options other than the status quo will require Congressional approval. Until we see an acceptable analysis that addresses the above issues and questions, we will oppose reductions in the current operating status of the Minimum Dredge Fleet.

Sincerely,

GORDON SMITH,
RON WYDEN,
SLADE GORTON,
PATTY MURRAY,
LARRY CRAIG,
KIRK KEMPTHORNE,
U.S. Senate.

PETER DEFAZIO,
DARLENE HOOLEY,
ELIZABETH FURSE,
EARL BLUMENAUER,
MICHAEL CRAPO,
HELEN CHENOWETH,
GEORGE NETHERCUTT,
NORM DICKS,
JACK METCALF,
JIM MCDERMOTT,
ADAM SMITH,
DOC HASTINGS,
LINDA SMITH,

BOB SMITH,
JENNIFER DUNN,
Members of Congress.

STATE OF LOUISIANA,
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT,
November 7, 1997.

U.S. Army Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

DEAR SIR: This is in response to your request for comments on the Minimum Dredge Fleet Study.

The Louisiana Department of Transportation and Development has the responsibility to administer the planning and coordination of navigation activities in the State of Louisiana. The Department also administers a statewide program for the construction and development of port infrastructure. We are, therefore, very interested in the conclusions of your study.

We are concerned about private industry's reliability to respond to dredging needs on the lower Mississippi River. With 60 percent of the hopper dredge requirement being attributed to the Gulf region, it seems prudent that hopper dredge capability be given a high priority.

To that end we support Option 1, maximum work to Corps of Engineers' dredges. It was noted in your "Guiding Principle" that the best deal for the American taxpayer would be ensured. Option 1 is the lowest cost of the eight options.

Option 1 has a low risk to navigation. We, in Louisiana, cannot afford to risk our maritime industry. Four of our ports are ranked in the top seven ports nationwide in tonnage handled. The 1995 Waterborne commerce statistics reveal that approximately 438,000,000 tons were shipped through the Port of South Louisiana, the Greater Baton Rouge Port, the Port of New Orleans, and the Plaquemines Parish Port, Harbor, and Terminal District. The St. Bernard Port, Harbor, and Terminal District is currently implementing a construction program to enable Louisiana shippers to use this port's services as well. Keeping the lower Mississippi River dredged is also a key in the effectiveness of the Red River ports (Caddo-Bossier, Natchitoches Parish, Alexandria Regional, and Red River Parish) as the Red River Waterway navigation project is complete.

A recent study indicates the total impact of Louisiana ports is $21.9 billion. The ports and related activities generate directly $4.8 billion in income for Louisiana residents and support, in part or whole, 178,600 jobs throughout the State.

Louisiana's maritime industry is of vital importance to the state and the nation. We simply have too much at stake to afford any risk.

Thank you for the opportunity to comment.

Sincerely,

FRANK M. DENTON,
Secretary.

PORT OF HOOD RIVER, OR,
November 10, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

The Port of Hood River welcomes the opportunity to comment on the October 8, 1997 draft study of the Corps Minimum Dredge Fleet (MDF). All stakeholders appreciate the interest of the Corps in considering our views about this important issue when the study still is in draft form.

The Port of Hood River is a part of the Columbia-Snake River system, a vital gateway for many different American exports. Personally, as a former Manager of the Port Division of the Oregon Economic Development Department, I have been involved with issues surrounding the future of the Corps MDF for over a decade.

After the buildup to the issuance of this report, and the two-year delay for compilation of additional data, we were disappointed that short set of "viewgraphs" represents a significant portion of the entire study. A slide show can be effective in demonstrating highlights to an audience of people new to this issue, but ports whose future is tied to dredging need a more complete explanation. Specifically, no analysis was given to us to show how the Corps reached its conclusions. Because of this,

we encourage the Corps to extend the comment period until sufficient background analysis can be provided to stakeholders for review.

When the Corps states that they have a plan to lower costs and increase the private sector role, all ports and all taxpayers pay attention. However, at this point the study does not document how these benefits will flow to shippers, ports and taxpayers, or how port concerns will be addressed.

The four Corps dredges are all that remain from what once was a much larger Corps fleet. The private fleet already performs all the new construction dredging. In total, the Corps dredges only performed 8.3 percent of all dredging work in fiscal year 1996. In fiscal year 1994, the total of all dredging work done by Corps dredges was only 6 percent. Yet these dredges perform a vital service to the ports and shippers of this country.

Cost and competition, emergency responsiveness and adequate capacity form the core of our concerns for dredging in our region. The draft report needs to provide measurements for these issues. Factors to be addressed include:

1. *Cost and competition*.—Real competition for Corps contracts offered to the private contractors is limited. Single bidders sometimes are awarded jobs. The Corps dredges currently serve as a brake against excessive bids. If a private company bids over 125 percent of the Corps estimate, the Corps dredge can perform the work. No plausible explanation in the draft report shows how our region can be protected if an option is implemented that retires additional Corps dredges.

2. *Emergency Response*.—The current Corps dredge fleet provides emergency response capacity to all three coasts. If shoaling limits the channel depth, vessels must depart "light loaded." Corps dredges that are active in each region can respond quickly to prevent economic impact to shipping. We are told that the Corps is considering new contracting procedures that will help speed private dredges to service such emergencies. Ports want to see details before accepting the concept. What administrative or court challenges by the private dredge companies will be permitted? Will the private dredgers push for such high fees to respond that the Corps will be reluctant to utilize them under a declared emergency—thus creating a damaging adverse economic impact for a port or river whose exports are limited by channel shoaling?

3. *Adequate Capacity*.—All parties admit that there is inadequate dredging capacity at times of peak demands. Although this issue traditionally has been thought of as a Mississippi River concern, it impacts the Columbia system. If the Corps dredge Wheeler is retired, chances rise that the Essayons will be transferred to the Mississippi to help after a flood. If the Essayons is in the Gulf and shoaling occurs in the Columbia, how will our needs be met? The rate of repair for private and Corps dredges is an important consideration in this decision process. Any port or river system that acquires a reputation for a slow response to shoaling that causes light loading faces a serious risk of a loss of business. For example, if the Essayons is in the Gulf, and shoaling in the Columbia threatens grain shipments from Eastern Oregon and Washington, disgruntled shippers could decide to export some future cargoes through Canadian ports.

Due to the lack of detailed analysis, our port wishes to wait for adequate material before commenting further. We cannot accept any change in the status quo of the existing Corps dredge fleet until we have sufficient data so we can make informed judgments.

In closing, we also urge the Corps to have a port stakeholder forum. Senior Corps officials now meet regularly with the private dredge industry to discuss dredging schedules, compare notes, etc. That is fine. We would welcome creation of a regular forum with ports and shippers and senior Corps officials, so the Corps would hear our concerns on a regular basis. Ports have enjoyed an open door policy at Corps headquarters, so this is not a criticism of past policies. A regular meeting with ports and shippers should include regular information from the Corps on competition, bid costs and trends, predictions of dredging needs (snowpack, El Niño, etc.) and so forth. If one of the Corps options is not working, ports must not be forced to rely on ad hoc communications for resolution.

Thank you for your consideration of our port's view on this subject.

Sincerely,

GREG E. BAKER,
Executive Director.

SIUSLAW SCHOOL DISTRICT 97J,
Florence, OR, November 20, 1997.

Corps of Engineers Minimum Fleet Comments.
CEW–OD,
Washington, DC.

By unanimous consent, the Siuslaw School District Board of Directors directed me to express their concerns about the proposal to decrease the federal dredge fleet and its impact on the Port of Siuslaw.

As directors of a public agency, the Board strongly supports government efficiency and efforts to reduce costs. When considering reductions, however, long term consequences should be balanced with short term benefits before making a decision. In this case, the Port's viability and its impact on the community must be weighed against the savings made from reducing the dredging fleet. In the Board's opinion, the scale tips in favor of keeping the fleet and continuing the dredging.

Board members, all of whom are long-time residents of the area, believe that the proposed reduction will affect the community's economic health and quality of life. The Board believes that maintaining the dredges is critical to keeping the Port's harbor and navigation channel open for commercial and recreational activities. By staying open, the Port remains dynamic and a vital contributor to the area's economy and environment. It also gives the community an avenue for strengthening its commercial, recreational, and environmental assets. Based on their history in the area, board members conclude that two things will happen if dredging is reduced or eliminated. First, commercial and recreational opportunities will decrease creating an economic downturn that will disturb the community's stability. Second, the Siuslaw River Basin and its ecosystems will be harmed or damaged by unforeseen or unanticipated consequences.

Subsequently, the Siuslaw School Board recommends that you keep the dredging fleet active and maintain the regular maintenance of the Port's harbor and navigation channel.

Thank you for your consideration.

Sincerely,

STEVE WADDELL,
Superintendent.

WEST GULF MARITIME ASSOCIATION,
Houston, TX, November 26, 1997.

Mr. BARRY HOLLIDAY, Chief,
Dredging & Navigation Branch,
U.S. Corps of Engineers, Washington, DC.

DEAR MR. HOLLIDAY: We have received a copy of your communication to George Duffy dated November 18, 1997 which was in response to his request for certain additional information. Similar requests have been made by several of the concerned parties participating in the dredge fleet discussions as we felt they were needed and essential in order to make informed comments on the presentation that was given to us.

As has been pointed out to you some of the specifically requested information would hopefully enable us to evaluate the facts as you presented them.

It is hard to believe that the Army Corps of Engineers does not have specs on the hopper dredges capabilities so that you can evaluate the capacity any one dredge or a combination of dredges produces. We know loss of project dimensions occurred the last year or two in the Gulf due to insufficient equipment being available to do the work when needed. The only option that the maritime industry can accept from the analysis distributed by Major General Fuhrman on 8 October 1997 is Option one (1) which would keep the four Corps hopper dredges available and in active status at least 250 days a year.

The specific details we were seeking have been clearly outlined to you from many different sources and for you to state that this information is not available and/or not utilized by the Army Corps of Engineers is almost unbelievable.

We understand Major General Fuhrman has forwarded a copy of the Army Audit Agency report we discussed to Mr. Duffy, and we are looking forward to receiving a copy from him and to review the contents.

Very truly yours,

TED THORJUSSEN,
President.

PORT OF ST. HELENS, OR,
November 5, 1997.

Corps of Engineers Minimum Fleet Comments,
CECW–OD,
Washington, DC.

The Port of St. Helens appreciates the opportunity to comment on the proposed changes in the Corps Minimum Dredge Fleet (MDF) as set out in the draft study of October 8, 1997. As a beneficiary of dredging sentences provided primarily by the Corps dredge Essayons and also the Yaquina we know first-hand the importance of the dredging services performed by these two dredges.

In summary, our port believes that the status quo should continue, even though current restrictions imposed by Congress limiting use of the Corps dredges drive up the costs of Corps dredges by allocating expenses to a limited number of days. As to the other options, our Port is unable to evaluate the impact of various options in the Corps' "viewgraphs" of October 8. We find in it little analyses or supporting data from which our port can make reasonable judgements about whether or not the various eight options meet the standards critical to us: costs and competition, emergency response and adequate capacity.

When the issue of the MDF has been discussed in the past, these three elements served as our guidelines. When we examine the Corps options set out in the 27-page viewgraphs, we find little analyses showing how these standards will be met by most of the eight options.

Specifically, we do not know enough to evaluate how the "hot standby" options involving the Essayons will impact vital Columbia River dredging. Without such data, we question the basis by which the Corps reached its conclusions. We cannot accept conclusions without the analysis documenting how the Corps' conclusions will not compromise the standards set out above that are critical to us. As a result, we cannot agree now to any option that alters the status quo.

If sufficient back-up material is available to allow our port to evaluate how options involving "hot standby" can be implemented without compromising these important factors, we certainly will examine it. We know that the Corps believes that benefits to it will flow from adopting a less-costly alternative than the status quo. Ports also benefit from less costly dredging. Ports need convincing that, in fact, costs will decrease. Our port will look seriously at the impact from all the options when we have supporting materials and analyses to help us. Today, however, the options in the Corps draft study involving standby status, from what we have seen and when measured by our standards, do not meet the test.

We support efforts of the Corps to evaluate its approach to its various programs. Looking for ways to save money while expanding the role of the private sector has obvious appeal. Yet, the current Corps hopper dredge program appears to work well: the private dredges already do about two-thirds of the hopper dredge O&M work. Private dredges also perform all new constructions dredging. Corps dredges play a limited, but critical role in hopper dredge O&M. Overall, Corps dredges performed only 8.3 percent of all dredging of Corps projects in fiscal year 1995. In the years fiscal year 1992 through fiscal year 1996, Corps dredges amounts ranged from a high of 9.1 percent in fiscal year to a low of 6.0 percent in fiscal year 1994.

As one example of the shortcomings we see in the Corps draft study, use of graphs to illustrate risk presumes that statistical analysis was done to develop a numerical basis for the conclusion of low, medium or high risk to navigation projects illustrated on each "options" page in the study. Each graph was blacked in, as if it had a numerical basis. Perhaps the Corps had a numerical basis that prompted its use of graphs for ease of illustration. Without that numerical quantitative data, however, we believe use of graphs on the "options" pages of the study is misleading. They imply that quantitative "number crunching" produced the level of risk shown on the bar graphs. Without such data, the graphs should be dropped on each options page of the viewgraphs.

The Corps' 27-page set of slides had other shortcomings that, in some cases, presented conclusions as if they were analyses, or introduced new elements as conclusions without first explaining how they were developed.

More than many other ports, the Port of St. Helens can cite the Mt. St. Helens eruption as a vivid example of the importance of the Corps dredges. The vital Columbia River channel was closed to all large vessel traffic by enormous mud deposits carried into the channel from the eruption. This blockage occurred not far from our port, and we witnessed the impact first-hand. Several vessels were trapped upriver and could not exit the river with their cargoes. Other vessels could not pass the blockage to reach ports upriver on the Columbia-Snake system. Corps dredges were at work to clear the Columbia River channel shortly after the eruption, and

these dredges led efforts to reopen the blocked channel. (We note that private dredges also played an important role in reaping the channel, but Corps dredges were the critical element.)

One purpose of Corps dredges is as an insurance policy, and prompts the question of how often a disaster event must occur to merit retention of that "insurance." Recent Mississippi River floods also remind the nation of the importance of this emergency role played by Corps dredges. At such times, there is insufficient peak capacity. Retiring any Corps dredges will worsen this lack of peak capacity.

Mississippi River shippers can cite the dollar loss if vessels must be light-loaded to clear shoals that occur and are not removed. The availability of the Wheeler meant that a Corps dredge could respond to sudden shoaling and could limit the risk to river commerce. On the Columbia River system, Corps dredges have responded when emergency shoaling threatened the draft or creating a navigation hazard.

If the Wheeler is removed from service, and a Mississippi River flooding recurs, as can be expected, the Essayons may well be moved to the Gulf to help with emergency channel maintenance. As long as it was for reasonable time and did not present problems for regular Columbia River O&M, we would have no objection. When the Essayons was in the Gulf however, and if shoaling the Columbia reduced our allowable draft and curtailed full vessel loading at Columbia River ports, then our region would suffer greatly. Any shipper or vessel owner is upset when suddenly forced to "light load" to clear a channel shoal, and this will hurt a port's ability to keep current clients and attract new customers. As a result, our region has a direct interest in the issue of capacity. The Corps recalls examples in the past when the existing fleet—Corps and private—was inadequate to meet the needs of this country's ports and harbors at certain times. International trade can suffer as a result, and the cost of the four Corps dredges is small when measured against an adverse impact on U.S. exports.

In addition, the Corps asks smaller ports along the Oregon coast to accept on trust that their needs can be met by the greatest change: retiring the Yaquina. Without the Yaquina as a back-up if a private dredge company bids over 125 percent of the Corps estimate, coastal ports may well see their dredging costs rise. If the Yaquina is retired, we saw in the study no explanation of how the Corps will respond to issues of no competition or excessive bids.

Currently, Corps dredges act as a brake on excessive bids. If private bids exceed 125 percent of the Corps estimate, a Corps dredge can perform the work. We believe that the existence of this alternative results in low bids from private dredges. Without it, and with true competition, private dredge bids for coastal O&M work may well climb. Without the Corps dredges to perform the work, such as the Yaquina performs along the Oregon coast, Corps options appear to be limited if it finds no private dredge company competition or if a bid is too high If the Yaquina is removed from service, how does the Corps respond when an Oregon coastal port O&M bid is well above the 125 percent ceiling? In the end, we fear coastal dredging costs will rise if the Yaquina is retired.

We also believe that the Corps fleet also helps as guideposts to assist the Corps in preparing O&M bids estimates. Without the Corps dredges, these estimates may drift upward. If the private fleet challenges Corps job estimates as being consistently too low, without a Corps dredge by which to help measure such costs, Corps estimators may accept the private dredge fleet complaints, for the Corps could be unable to check them in the same way they can today.

In order to increase the operating efficiencies of its four dredges, we encourage the Corps to implement cost-savings on all its dredges. We understand that some changes have been made already to increase such efficiencies, and we encourage more such actions.

In conclusion, we welcome the openness represented by the opportunity to comment on a draft report. Because of serious shortcomings in the study itself, however, we cannot support any of the eight options except continuing the status quo. Given the length of the study by the Corps, our port hoped for a more complete analysis by the Corps by which ports could evaluate all eight options.

We thank the Corps for the opportunity to present our views.

Sincerely,

PETER K WILLIAMSON,
General Manager.

PORT OF PASCAGOULA, MS,
January 6, 1998.

Maj. Gen. RUSSELL L. FUHRMAN,
U.S. Army, Director of Civil Works,
CECW–OD, Washington, DC.

MAJ. GEN. FUHRMAN: Thank you for the opportunity to comment on the Army Corps' "Minimum Dredge Fleet Study." We realize that the deadline for official comment has expired; however, we felt strongly enough about this issue to provide you with our comments. Although the Port supports the Army Corps' guiding principles of ensuring the "best deal" possible to the American taxpayer, we were disappointed that the guiding principles did not emphasize one of the Corps most important roles; maintaining navigation channels to authorized project dimensions at all times. We cannot overestimate the importance of a fully maintained federal channel to the economic health of our community.

The Army Corps should be commended for taking initiative and seeking ways to ensure a viable, competitive private hopper dredge industry, while sustaining the capability to respond to national and international emergencies. Although hopper dredges are responsible for only 20 percent of the national dredging requirement, our region's hopper dredge requirement makes up approximately 60 percent of this national requirement. Our dredging requirements for the Port of Pascagoula are usually completed by dredges other than hoppers (i.e., bucket, pipeline). However, we have recently used or considered using hoppers for certain sections of our channel. An example of this was during Phase I of our Harbor Improvement Project where a hopper dredge was used to widen and deepen the entrance channel.

The Port's concern is that the Minimum Dredge Fleet Study did not analyze the effects of a reduced hopper dredge fleet on other types of dredge fleets (i.e., bucket, pipeline). Specifically, we are concerned that the hopper dredge fleet could be depleted to a point where other type dredges (i.e., bucket, pipeline) have to be used in areas traditionally dredged by a hopper. This would be a less than desirable situation, as our experience with bucket and pipeline type dredges has shown that they are already operating at or near capacity. For example, our last maintenance dredging contract had to be rebid since no bids were received in the first advertisement. We received two bids the second time, however, only one bid was within the Corps' budget allotment. In an environment where only one or two bids are received, the ability to receive a full range of competitive bids is reduced and industry could, therefore, dictate dredging costs.

As the Corps of Engineers develops its plan for a Minimum Dredge Fleet, their assessment should consider the implications of a depleted hopper fleet on other types of dredging and their fleets. The Corps' Study did not provide this type analysis, and a final assessment should demonstrate that dredging requirements would continue to be completed in a cost-effective, timely manner. A competitive private fleet in addition to a sufficient Corps' fleet, which considers impacts on all dredging fleets, would ensure the best deal for the American taxpayer.

Again, thank you for the opportunity to comment on the Corps' Minimum Dredge Fleet Study. If you have any questions or comments, feel free to contact me.

Sincerely,

MELODY K. BRADLEY,
Port Director.

PACIFIC RIM TRADE ASSOCIATION,
Portland, OR, December 18, 1997.

U.S. Army Corps of Engineers Minimum Dredge Fleet Study,
CECW–OD,
Washington, DC.

As an organization many of whose members are dependent on water transportation for their commercial activities, we are concerned about an expected effort to place the Corps of Engineers hopper dredge fleet on stand-by status.

We believe such an action would result in a lower level of service to those Oregon and Washington ports that have relied on the Corps fleet for many years. Moreover, tax funds would be used for the cost of mothballing the fleet, while still paying private contractors to do the work. In short, taxpayers would pay twice.

Our members, especially those representing Oregon ports, are in strong support of the Corps' maintenance dredging program, and we urge you to maintain the public hopper dredge fleet.

We understand that Representative Peter DeFazio has called for a congressional hearing on the matter, and we fully support him in this request.

Thank you.

Yours truly,

ROLF GLERUM,
Executive Director.

QUESTIONS SUBMITTED BY SENATOR DORGAN

RAMSEY COUNTY SEWER SYSTEM, ND

Question. What actions are being taken by the Corps to modify the Ramsey County Sewer system?

Answer. An evaluation of the Ramsey County Rural Sewer system, including the development of designs and plans and specifications to keep the system operational for levels of Devils Lake up to elevation 1450, was conducted. Two construction contracts have been awarded to modify the system through raising, modifying, and protecting lift stations, relocation of sewer lines, and modifications to sewer connections. Two remaining components will be accomplished by exercising options to the last contract.

Question. Is the $250,000 being requested in the Supplemental Appropriation sufficient to complete the work?

Answer. Yes, sir. Bids have been received on the second of two construction contracts and based on the low bid for this contract, the $250,000 will be sufficient to complete the work.

Question. Please explain possible liability for an $80,000 claim.

Answer. During the construction of one segment of the first construction contract, a sewer line that was being reinforced was found to be collapsed. This was a significant change in conditions which required additional work beyond that covered in the original contract. A claim for the additional work has been submitted by the contractor. The additional funds ($250,000) requested in the Supplemental will be sufficient to settle this claim.

Question. As the lake continues to rise, are there any technical, scope, or authority issues that may arise?

Answer. The modifications to the Ramsey County Rural Sewer System are being designed to keep the system functional for lake levels up to elevation 1450. The lake is presently at elevation 1443. If the lake level rises more than another seven feet and goes above elevation 1450, additional modifications to the rural sewer system will be required which are beyond the scope of the funding provided for the present work. For lake levels higher than elevation 1450, another evaluation will be required to determine the requirements to keep the rural sewer system functional.

DEVILS LAKE BASIN, ND, LEVEE RAISE

Question. What is the status of the current levee raise project (TOL 1450 feet) regarding the levee and pump stations?

Answer. The current levee raise project for the city of Devils Lake to get the levee to a top of levee elevation of 1450 (TOL 1450) is well underway. The levee embankment sections and the riprap erosion protection are essentially complete and are providing assured protection for a lake level up to elevation 1445. The permanent pumping stations required to address the runoff from the areas within the levee system will not be completed until the spring of 1999. Five pumping stations are required. Two are presently operational and the other three will not be completed until 1999. Temporary pumping will be used at those three locations until the permanent stations are completed.

Question. When will the contract to raise the levee to TOL 1452 feet be let?

Answer. There will be two contracts to raise the city's levee to a top elevation of 1452 (TOL 1452), one on the west side and the other on the east side of the city of Devils Lake. The contract for the east side was advertised in March, and the contract for the west side is scheduled for advertising in April 1998. Execution of an amendment to the existing project cooperation agreement between the Assistant Secretary of the Army for Civil Works and the city of Devils Lake is required prior to contract award. The contracts necessary to raise to a TOL 1452 are scheduled for award in May 1998 with completion scheduled for December 1998.

Question. What is the cost and cost sharing?

Answer. The additional cost to raise the city of Devils Lake levees from the TOL 1450 condition to the TOL 1452 condition is estimated to be $12 million. This would bring the total cost of the levee raise work being accomplished since 1996, when the

raise of the original levee system was started, to an estimated $38 million. This cost is being shared on a 75 percent Federal/25 percent non-Federal basis.

Question. As we expect a 2 to 2.5 foot rise this summer, are there any special construction considerations needed to protect the citizens of Devils Lake?

Answer. No special construction considerations are required to accommodate the predicted 2 to 2.5 foot rise in lake level this summer. If, however, the lake level is expected to increase by more than 2.5 feet, special construction requirements will be considered for implementation. The requirements considered would include prioritizing selected segments of the levee for additional raises in the embankment height, placement of additional riprap, and requiring the construction contractor to accelerate the completion date for the work.

Question. Will it include options to raise it to TOL 1457 feet and would it be prudent to do so?

Answer. Yes, the option to raise the levee to a top of levee elevation of 1457 (TOL 1457) will be considered. Our goal is to ensure a five to seven foot freeboard on the levee.

Question. What would be the cost and cost sharing for levee raises to TOL 1452 feet and TOL 1457 feet?

Answer. The additional cost to raise the levee from a top-of-levee condition of 1450 (TOL 1450) to a TOL 1452 condition is estimated to be $12 million, and the cost to raise it from a TOL 1452 to a TOL 1457 condition is estimated to be an additional $12 million. This would be cost-shared on a 75 percent Federal and 25 percent non-Federal basis, similar to the rest of the levee raise project.

DEVILS LAKE BASIN, ND, EMERGENCY OUTLET

Question. What is the status of the Corps' work on the planning, engineering, and design of an emergency outlet?

Answer. An all-pipeline option from the west end of Devils Lake to the Sheyenne River along the Peterson Coulee route has been identified as the recommended plan and has been endorsed by the North Dakota State Water Commission. The detailed design of this plan is now. Plans and specifications on the first major components would be completed in the spring of 1999 for the ordering of pumps and pipe.

Question. Is the outlet part of a comprehensive plan? Specifically: What role does an outlet play in an overall flood-fighting strategy?

Answer. The proposed outlet is considered an element of a three pronged comprehensive plan to reduce flood damages caused by the rising levels of Devils Lake. The plan includes upper basin storage to reduce the amount of water entering the lake, the outlet to help remove excess water, and infrastructure protection (levees, road raises, relocations, etc.) to reduce damages if the lake continues to rise in spite of the effects of the other two measures.

Question. Why not just try to store more water in the upper basin instead of constructing an emergency outlet?

Answer. Upper basin storage is also one of the components of the comprehensive approach of flood damage reduction for the Devils Lake basin. Additional upper basin storage is being pursued by the North Dakota State Water Commission; however, a very large percentage of the upper basin is suffering from flooding due to high water levels in existing wetlands, ponds and lakes. Significant additional storage of water that would reduce the water reaching Devils Lake would adversely affect the economic viability of many farmers and as a result there is very little support in the agricultural community for this concept. Also, the actual effectiveness of the upper basin storage cannot be reliably estimated as it is a hydrologically very complex situation. Past geologic analysis indicates that Devils Lake has naturally overflowed into the Sheyenne River several times prior to settlement by man and development of the land for agriculture. Restoration of the upper basin to its natural condition by increasing the storage may not prevent future overflows to the Sheyenne River.

Question. Without an emergency outlet, what might happen downstream if the lake continues to rise?

Answer. If the level of Devils Lake continues to rise to the natural overflow elevation of 1459 water from Devils Lake will start flowing into the Sheyenne River via the Stump Lakes and Tolna Coulee. Although the flow rate of the overflow would be relatively small initially, the salinity of the natural overflow would be high. Several parameters of the water quality standards in the Sheyenne River and possibly the Red River of the North would be exceeded as a result of the natural overflows. With a natural overflow, flooding problems along the Sheyenne River would be worsened.

Question. What is the status of the Corps report to Congress relative to initial construction of an emergency outlet (pursuant to Public Law 105–62)?

Answer. The report to Congress required by Public Law 105–62 is in preparation with a draft scheduled for the summer of 1998. However, many of the studies underway as part of the environmental impact statement will not be available for incorporation into the report based on the present schedule for submission.

Question. Each foot rise in the level of the lake causes $10–15 million in damages. What role would an outlet play in preventing such damage?

Answer. The proposed outlet would try to remove from 50,000–100,000 acre-feet per year from Devils Lake which would translate into a one-half to one foot reduction at the present lake level. If the lake goes higher, the same volume of water removed would result in a smaller stage (level) reduction. The cumulative effects of operation of the outlet over a period of years could result in lowering the lake level by several feet and could prevent very significant amounts of damages. However, due to the complexities and unknowns of forecasting whether, when, and at what rate, the lake level could rise, the outlet alone cannot provide an effective means of preventing flood damages. The outlet must be considered as only one part of an overall plan which includes upper basin storage and infrastructure protection.

Question. What is the status of the $5 million appropriated in the 1997 Supplemental for PED and NEPA work?

Answer. The funding appropriated in the 1997 Supplemental is being used for the preconstruction engineering and design, the environmental studies and the environmental impact statement. As of the end of March 1998, $2.6 million has been provided to the St. Paul District. Of that amount, $1.3 million has been obligated and $1.1 million has been expended. Additional amounts from the balance of the $5 million of appropriated funds will be requested as required to accomplish the necessary design and environmental studies.

Question. Given that we expect the lake to rise about 2 feet this spring, what are your funding requirements for constructing an outlet under these circumstances?

Answer. Based on the information presently available, the $5 million already appropriated will be adequate for the completion of design and economic and environmental studies for the outlet. The actual date of initiation of construction, however, is dependent upon the completion of the design and the completion of the environmental impact statement which are not related to funding. If these worsening conditions lead us to a decision to proceed with the outlet immediately and if a waiver from the normal NEPA compliance process under the emergency provisions of NEPA is granted, and if the report to Congress required by Public Law 105–62 is favorable, and if the Secretary of State assures that the provisions of the 1909 Boundary Waters Treaty have been met, and if agreement with the state of North Dakota for acquisition of real estate, cost sharing and operation and maintenance is reached, and if the pumps and the pipe are ordered in the fall of 1998 and construction started in the spring of 1999, Federal construction funds of $21 million may be required in fiscal year 1999. The $5 million appropriated for the initiation of construction in Public Law 105–62 will be sufficient for the initial ordering of the pumps and pipe, but additional construction funds in fiscal year 1999 of $16 million would be required to actually start the physical construction of the project.

Question. The President's fiscal year 1999 budget includes $16 million in additional funding for construction of emergency outlet. What assurances can you provide that the Corps is treating the flooding as an emergency and is prepared to take any necessary steps to prevent a catastrophe at Devils Lake?

Answer. The design of the proposed outlet is proceeding on an expedited schedule and is being readied for construction at the earliest possible time. The schedule for completion of the environmental impact statement has been intensively reviewed and is also being conducted as fast as possible using the normal NEPA compliance procedures. If necessary and warranted, use of the emergency procedures of NEPA will be considered to initiate construction of the outlet project at the earliest possible schedule.

Question. Even though the Devils Lake Basin is within the Hudson's Bay drainage, Canadian officials view an outlet as a potential threat to Canadian fisheries. Is it correct that a joint team of Canadian and American technical experts have completed a report that shows that any Canadian concerns relative to biota transfer can be addressed?

Answer. A report was prepared by the Garrison Joint Technical Committee Working Group that addressed potential issues with an outlet from Devils Lake, including biota transfer. The report indicates that there are minimal risks at the border due to any potential concerns with biology related issues associated with introducing Devils Lake water into the Sheyenne and Red River of the North.

Question. What is the status of formal consideration of this report?

Answer. This report has been approved by the Garrison Joint Technical Committee which includes both U.S. and Canadian representatives and has been provided to the U.S./Canadian Consultative Group for consideration. No action has yet been taken by the Consultative Group.

Question. What is the status of consultations involving our State Department and the International Joint Commission to ensure that construction of an emergency outlet would comply with the Boundary Waters Treaty Act?

Answer. On 10 March 1998 the Department of State was requested by the Acting Assistant Secretary of the Army for Civil Works to initiate consultations with the International Joint Commission (IJC) as required in Public Law 105–62. A specific schedule and the requirements for the consultation with the IJC have not yet been developed.

Question. Will the Boundary Waters Treaty be complied with under all circumstances?

Answer. The operating plan for the outlet is being designed to assure compliance with the Boundary Waters Treaty. Changes in flow and water quality at the border are anticipated to be very minor and compliance with the Boundary Waters Treaty is expected. However, since under existing conditions the water in the Red River of the North at times exceeds the water quality goals at the border, detailed hydrologic, hydraulic and water quality modeling is being undertaken to assess the potential effects at the border during these critical periods.

Question. How are these consultations being coordinated with NEPA?

Answer. Coordination with representatives of agencies in Manitoba and at the Canadian federal level is being conducted as a part of the environmental impact statement preparation process. These agency representatives are invited to participate in discussions concerning the studies being undertaken.

Question. What is the status of public NEPA scoping meetings and what steps are being taken to ensure widespread input from local citizens, tribal members of the Spirit Lake Nation, and downstream interests in North Dakota, Minnesota, and Canada?

Answer. A notice of intent to prepare an Environmental Impact Statement for the outlet was published in the Federal Register on 21 October 1997. Initial scoping meetings were held with agencies in January 1998 and initial pubic scoping meetings were held 23–27 March 1998. Coordination meetings with agencies and the public will continue throughout the development of an Environmental Impact Statement.

Question. How are these concerns being addressed?

Answer. Coordination and scoping meetings with agency representatives and the public are being held to determine their concerns and to identify the studies required to address the concerns. Hydrologic, hydraulic, water quality, cultural resources, and other environmental studies are underway or planned. The results of these studies will be shared with interested parties. A liaison with the Spirit Lake Nation is being established to improve the lines of communication. Newsletters are being published to distribute information throughout the Devils Lake basin, to downstream areas, and to interested agencies and organizations. Information on the Devils Lake outlet is also available on the St. Paul District web page.

Question. Will NEPA be complied with under all circumstances? Please specify how.

Answer. Yes, NEPA will be complied with under all circumstances. The necessary environmental studies and analyses are underway. Under the normal NEPA procedures, construction of a project would not start until after the record of decision is issued with the environmental impact statement. However, NEPA allows for variation from the normal procedures in emergency situations. If the construction of the outlet is deemed necessary at an earlier schedule than allowable using normal NEPA procedures, construction could start before completion of the EIS by using the guidance for emergency situations. The necessary environmental studies and analyses would still all be conducted, however, they would be conducted concurrently with or after completion of construction.

Question. What is the management plan for the outlet?

Answer. The management plan for the outlet is to pump water from the west end of Devils Lake through a 13 mile pipeline into the Sheyenne River at appropriate rates to avoid or minimize any adverse effects on the downstream areas along the Sheyenne River and Red River of the North. Release rates from the outlet would be based on an assessment of the flows in the Sheyenne and Red Rivers, water quality in the Sheyenne and Red Rivers, the water quality in Devils Lake, and on the level of Devils Lake. The release rates would be adjusted so that flows on the Sheyenne River stay within the non-damaging channel capacity and so that the water quality standards are complied with.

Question. Who would operate the outlet?

Answer. The non-Federal sponsor would operate and maintain the outlet project. The operation of the project would be monitored by the Corps of Engineers to assure compliance with the operating constraints developed for the project. Although the flow rates and the water quality on the upper Sheyenne River will be the principal considerations in the operation of the outlet, many other factors will be considered for project operation, including the effects on the downstream water users and downstream biota.

Question. What criteria would be used to avoid adverse impacts?

Answer. Adverse impacts would be avoided or minimized to the extent possible in the design of the project and in the development of the operational plans. Where adverse impacts cannot be avoided, mitigation measures will be evaluated and implemented where feasible and justified. The technical feasibility and soundness, the social compatibility and the economics will all be considered in the development of mitigation measures.

Question. Are downstream interests involved in the management of the outlet?

Answer. Yes. The North Dakota legislature has directed establishment of a Devils Lake Outlet Management Advisory Committee that would provide guidance and recommendations to the North Dakota State Water Commission on the operation and management of the outlet. This committee has been established and has several representatives of downstream interests. In addition, the development of the operation plan for the outlet is considering downstream effects and is being formulated to comply with downstream water quality standards and to not worsen flooding conditions in the downstream areas.

Question. Give examples of how the outlet could be effective in reducing flood damages.

Answer. The outlet could be effective for potential future scenarios that would project lake levels to continue to rise based on the average runoff volumes experienced over the past 10 to 15 years. Runoff patterns over the past fifty years show a period of several years with higher than normal runoff alternating with several years of below normal runoff. A continuation of this pattern would allow the lake to be drawn down in anticipation of the next higher than normal runoff period.

Question. During operation of the emergency outlet, would water quality and quantity in the Sheyenne River and the Red River of the North differ from normal conditions?

Answer. The changes in the quality and quantity of the Sheyenne and Red Rivers due to the operation of the outlet from Devils Lake to the Sheyenne River would vary depending on the reach of river being considered. The largest changes would be on the upper Sheyenne River upstream of Lake Ashtabula, with the changes becoming less further downstream, with the smallest changes occurring on the Red River in Canada. The water quality changes would primarily be increases in salinity represented by Total Dissolved Solids, including specific parameters such as sulfates. Although the salinity levels would increase, water quality in the Sheyenne and Red River would be within existing water quality standards. The increases at the Red River crossing into Canada would be very small but within the objectives of the Boundary Waters Treaty of 1909. The water quantity changes upstream of Lake Ashtabula would result in river level increases of generally less than three feet and these changes would still keep the river within its natural riverbanks. Along the Sheyenne River between Lake Ashtabula and the Red River, the river level increase would be less than one foot. Along the Red River of the North, the river level increase would be less than two inches. These changes would be at lower flow levels along the Sheyenne and Red Rivers.

Question. What is the status of activities to develop a PCA and to obtain the real estate necessary for an emergency outlet?

Answer. The North Dakota State Water Commission (NDSWC) has been identified as the non-Federal sponsor. The NDSWC has been informed of the requirements of project sponsorship, including providing 35 percent of the first cost of the project and operating and maintaining the project at full non-Federal cost. The NDSWC is preparing to issue bonds for the non-Federal share of the first cost and is working with the Devils Lake Joint Water Resource District to develop arrangements for the operation and maintenance. The NDSWC is also working with the Spirit Lake Nation and individual property owners along the outlet alignment to secure the necessary rights-of-entry to accomplish the necessary surveys for the design of the project. The NDSWC will also be responsible for acquiring the necessary lands and easements for the construction of the project.

The Project Cooperation Agreement (PCA) will need to be executed prior to the ordering of pumps and pipe, acquisition of real estate, and initiation of construction.

Question. What is the status of the "Virtual Flood" exercises and what did it show?

Answer. The Virtual Flood workshop was held in Grand Forks on March 11, 1998 for Federal, State, and local agencies and members of the public. The workshop used computer simulations of synthetic future floods to demonstrate the potential effectiveness of outlet operation and upper basin storage on lowering the level of Devils Lake. The effects of varying the flood timing and severity, outlet implementation schedule, water quality standards, river channel capacity, amount of upper basin storage, and outlet and storage trigger elevations were also displayed. The Virtual Flood model is a tool for graphically demonstrating, exploring, presenting, and explaining the complex interrelationships between the above factors. However, the current Virtual Flood model does not address cost effectiveness and downstream water quantity and water quality issues. The model will be enhanced when ongoing and planned studies of those factors are completed.

Question. How have you included information from EERC and RWIC and what was the value of their input?

Answer. Information from Energy and Environmental Research Center (EERC) and the Regional Weather Information Center (RWIC) was used in the development of the Virtual Flood model. The RWIC provided weather outlooks for the next several years which were incorporated into the hydrologic information data base. The EERC provided information on the salinity relationships in the Stump Lakes. These inputs were incorporated into the model. The major effort in model development was conducted by the Institute for Water Resources (IWR). IWR worked with EERC and RWIC on the model development, arrangements for the Virtual Flood workshop, and integration of the EERC and RWIC input into the model. The participation of EERC and RWIC was valuable to the Virtual Flood workshop.

Question. What additional actions related to Devils Lake flooding are being taken by city, state, and other federal agencies?

Answer. Other actions being undertaken in the Devils Lake basin to address the flooding problem include raising and relocating roads and highways, relocating homes imminently threatened by flooding, constructing and raising levees, modifying and relocating utilities, acquiring rights to store additional water in the upper basin, and development of mapping and flood risk information.

QUESTIONS SUBMITTED BY SENATOR HUTCHINSON

MONTGOMERY POINT LOCK AND DAM

Question. I understand that the contractor for Montgomery Point Lock and Dam has suspended contract operations in early January this year. I believe this project is very important not only to my state of Arkansas, but to the Southwest United States, as well. Will you please inform me of your progress on identifying reprogramming funding so construction can resume this year?

Answer. Sir, Headquarters is currently identifying projects throughout the nation where funds are excess to current year needs and available for reprogramming into the Montgomery Point project. I anticipate that funds will be reprogrammed into the Montgomery Point project by early April 1998 to continue construction.

Question. Few will disagree with me that the president's fiscal year 1999 budget request for the Corps of Engineers is woefully inadequate. I will join my colleagues in their effort to ensure more realistic funding is provided in fiscal year 1999. Indeed, only $19 million is provided for Montgomery Point Lock and Dam. What is the Corps' capability range for the project in fiscal year 1999?

Answer. Sir, subject to the normal language regarding capabilities, $60,000,000 is the approved fiscal year 1999 capability for this project. This is $41,000,000 above the budget amount requested.

QUESTIONS SUBMITTED BY SENATOR BUMPERS

MONTGOMERY POINT LOCK AND DAM, ARKANSAS

Question. The Montgomery Point Lock and Dam project is vital to the McClellan-Kerr Arkansas River Navigation System. It is my understanding that construction on Montgomery Point Lock and Dam has been halted due to a lack of funds. What is the status of Montgomery Point Lock and Dam with regards to the reprogramming of funds to continue construction during fiscal year 1998?

Answer. Sir, we are currently evaluating other Construction, General, projects throughout the Corps which may have funds excess to fiscal year 1998 needs. Once

projects are identified, we will reprogram within our authority to this project. Any remaining funds required to be reprogrammed will be coordinated with the Committees for approval.

Question. It is my understanding that the original intent of the Corps was to complete construction of Montgomery Point Lock and Dam within five years. What is the current timetable for completion of Montgomery Point Lock and Dam.

Answer. Sir, assuming capability funding through construction, the timetable for completion of this project is March 2003. However, the funding stream anticipated in the President's budget will result in a completion in March 2007.

GRAND PRAIRIE REGION AND BAYOU METO BASIN, ARKANSAS

Question. Water resources are vital to Arkansas' economy. Water for municipalities, industry, and agriculture is key to the long term viability of my state. The Arkansas Soil and Water Conservation Commission recently declared the ground water to be at critical levels in several areas in eastern Arkansas. Due to this dire situation, the President has included the Grand Prairie/Bayou Meto project in the budget for fiscal year 1999.

Is there any reason to be concerned that delays in construction will be encountered if funds are made available for construction in fiscal year 1999?

Answer. We are concurrently revising the project to provide substantial multipurpose benefits and are proceeding toward new start construction in fiscal year 1999 for the irrigation components of the project. However, there are several policy concerns that must be resolved that affect the irrigation components of the project. We must also assure that there is a non-Federal sponsor prepared to share in the cost of the project and to fulfill the items of local cooperation. We expect to have these policy concerns resolved within three months and will then work with sponsors to define and obtain commitments for the items of local cooperation. When the General Reevaluation Report is approved, we will initiate negotiations with the non-Federal sponsor for a Project Cooperation Agreement and process the draft Environmental Impact Statement. With so much work remaining to be done, it may not be possible to complete all of the steps required by law, especially the National Environmental Policy Act, before the end of fiscal year 1999. Concurrently, we are preparing a decision document presenting revisions of the project to provide substantial amounts of groundwater protection, wetland restoration, and water fowl habitat to enable the Secretary of Army to determine whether, as stated in Section 363(a) of the Water Resource Development Act of 1996 "* * * the change in scope of the project is technically sound, environmentally acceptable, and economic, as applicable." Nonetheless, assuming funding is provided as requested, we will do all that we can do to achieve the actual start of construction as soon as possible.

Question. Language was provided in the fiscal year 1998 Energy and Water Development Appropriations Act directing the Corps to reevaluate the Grand Prairie and Bayou Meto Projects. Will the Corps provide my office with the results of the evaluation regarding the status of these irrigation projects?

Answer. Yes, The General Reevaluation Report on the Grand Prairie element of the Grand Prairie Region and Bayou Meto Basin Project was submitted to Corps Headquarters in October 1997. Policy issues are currently being resolved. The fiscal year 1998 Appropriations Act urged the Corps to continue design on the Grand Prairie and initiate a reevaluation of the Bayou Meto Basin. Funds were reprogrammed into the Grand Prairie Region and Bayou Meto Basin Project and design of the first item of construction, the pumping station, for the Grand Prairie has been initiated. Preparation of a plan of study for reevaluation of the Bayou Meto Basin to include substantial amounts of groundwater protection, wetland restoration, and water fowl habitat has also been initiated. Your office will be kept informed of the status of the resolution of policy issues for the Grand Prairie and of the reevaluation of the Bayou Meto Basin.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

STATEMENTS OF:

PATRICIA J. BENEKE, ASSISTANT SECRETARY FOR WATER AND SCIENCE, DEPARTMENT OF THE INTERIOR
ELUID L. MARTINEZ, COMMISSIONER, BUREAU OF RECLAMATION

OPENING REMARKS

Senator DOMENICI. Now could we have Patty Beneke, Assistant Secretary for Water and Science, Department of the Interior, and Eluid Martinez, Commissioner of the Bureau of Reclamation come to the witness table.

Senator REID. Mr. Chairman, as they are coming up here, we have been working the last couple of days on the Superfund bill and the final committee vote on that is going to be at 11:30 a.m. So I am going to have to again recognize and excuse myself. I'll return shortly.

Senator DOMENICI. Is that in committee?

Senator REID. Yes; we are going to report a bill out. So I am going to have to do that before our vote.

Senator DOMENICI. Secretary Beneke, Commissioner Martinez, we welcome you. We look forward to your testimony. We have reviewed it.

If you could be as brief as possible, we would greatly appreciate it.

Please proceed.

STATEMENT OF PATRICIA J. BENEKE

Ms. BENEKE. Yes; good morning, Mr. Chairman. It is a pleasure to be here again this year as Assistant Secretary for Water and Science to testify regarding the President's fiscal year 1999 budget request for both the Bureau of Reclamation and the Central Utah Project Completion Act.

I will be very brief this morning. My written statement highlights several key items in Reclamation's budget request. Among these, providing adequate funding for facilities operation and maintenance and for dam safety continues to be a high priority for both the Commissioner and me.

The budget request for the CALFED program has already come up this morning. I would like to make a few comments on that.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

We appreciate the Congress' efforts in passing legislation in 1996 to authorize the California Bay-Delta Ecosystem Restoration Program [CALFED] and in providing funding in the amount of $85 million for the program this fiscal year.

CALFED, which is a consortium of Federal and State agencies working on the California Bay-Delta Ecosystem Restoration Program, has developed a careful, consultative process to select the highest priority restoration actions for funding.

We are doing everything possible to invest these funds effectively and wisely.

For fiscal year 1999, the President's budget requests funding consistent with the congressional authorization. In addition, I would like to emphasize that we are working very closely with the State of California, and they are participating as full cost-share partners with us.

This initiative is important for California and for the Nation for resolving the long-term issues of the Bay-Delta, where we are confronted with serious problems regarding not only habitat degradation but also water supply, water quality, and flood control.

Finally, consistent with the Central Utah Project Completion Act, the Secretary has delegated to my office responsibility for completion of the Central Utah Project. For the record, I would like to assure Senator Bennett that both OMB and I are working diligently to provide an expeditious response to his request.

PREPARED STATEMENT

This concludes my statement and, again, it is both a pleasure and an honor to be here this morning.

Senator DOMENICI. Did you have a longer statement?

Ms. BENEKE. Yes; I have a longer statement that I would like to submit for the record.

Senator DOMENICI. That will be made part of the record.

Ms. BENEKE. Thank you.

[The statement follows:]

PREPARED STATEMENT OF PATRICIA J. BENEKE

I am pleased to appear before this Subcommittee again as Assistant Secretary for Water & Science to testify in support of the President's fiscal year 1999 budget for the Bureau of Reclamation and the Central Utah Project.

Reclamation's fiscal year 1999 request reflects its focus on water resources management. Providing adequate funding for the operation, maintenance and rehabilitation of its facilities continues to be one of Reclamation's highest priorities, and its staff works closely with water users and other stakeholders to ensure that available funds are used effectively. The fiscal year 1999 request will allow the timely and effective delivery of project benefits; ensure the reliability and operational readiness of Reclamation's dams, reservoirs, power plants, and distribution systems; and identify, plan, and implement dam safety corrective actions and site security improvements.

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

This approach is reflected in several major initiatives in the Department's fiscal year 1999 budget, including actions implementing the President's Forest Plan in the Pacific Northwest, implementing the Vice President's Clean Water Action Plan, making the Endangered Species Act work better through partnerships with private landowners, and restoring California's Bay-Delta ecosystem. In South Florida, several Federal agencies are working closely with the State, Tribes, local communities and affected stakeholders to restore the Everglades. And, finally, because funding for another such vital effort, the multi-agency Bay-Delta Restoration Program, is included in the Bureau of Reclamation's budget request, I will discuss it in more detail this morning.

Eluid Martinez, the Commissioner of the Bureau of Reclamation is appearing with me today. His testimony will address details of the fiscal year 1999 budget request for the Bureau of Reclamation. This morning I would like to highlight only one or two key elements in Reclamation's budget and also discuss the request for the Central Utah Project, for which my office is responsible. Ron Johnston, Program Director for the Central Utah Project (CUP) Completion Act Office is also with me today.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

The President's fiscal year 1999 budget request includes second year funding of $143.3 million, the full amount authorized by the 1996 Bay-Delta Environmental Enhancement and Security Act. The historic 1994 Bay-Delta Accord recognized that a comprehensive set of actions is required to balance competing water uses, restoring and protecting the Bay-Delta ecosystem while providing the reliable water supply on which the State's long-term economic health depends. Under the Accord, CALFED—a consortium of the Federal and State agencies with management and regulatory responsibilities in the Bay-Delta—is developing a balanced solution to the four main problems in the Bay-Delta: uncertain water supplies, aging levees, declining fish and wildlife habitat, and threatened water quality. Working with stakeholder groups, CALFED has defined and analyzed options which can result in a comprehensive, long-term program for water quality, water supply, levee stability, and ecosystem restoration. Ecosystem restoration is an essential component in achieving the goals of the program.

During 1997, CALFED developed a careful consultative process to select the highest priority ecosystem restoration actions for funding. It includes two methods of identifying proposals: Public Project Solicitations and CALFED Directed Programs. Under both methods, proposals are reviewed by technical experts and the CALFED program staff before going to the Ecosystem Roundtable and the Bay Delta Advisory Council for review and advice. A final list of recommended proposals is then forwarded by the CALFED Policy Team to the Secretary of the Interior, or in the case of State funds, the California Resources Secretary for approval.

The first Public Project Solicitation was published by CALFED in June 1997, and resulted in 332 proposals for a total of $471 million. In December, 50 of these proposals were selected and recommended for approval: 44 costing a total of $37.3 million to be funded using the State's Proposition 204 money, and six costing a total of $21 million to be funded using Federal funds appropriated for this program in fiscal year 1998. In February of this year the Secretary approved these six projects and four others recommended by the CALFED Policy Team. These projects will be described in our first quarterly report to Congress.

In early March, following the process described above, the CALFED Policy Team recommended approval of a package of projects and programs that would use the balance of the funds appropriated for this program in fiscal year 1998. A letter seeking final approval of this package is now in the review process within the Department.

BUREAU OF RECLAMATION

Aside from the request for the Bay-Delta Restoration initiative, the budget request for the Bureau of Reclamation totals $775.8 million, a decrease of $8 million. The request includes adequate funding for operations, maintenance and rehabilitation, which continues to be a high priority for both the Commissioner and me. The request also includes $68 million for the dam safety program, $50 million for the Central Arizona Project; $25 million for the Colorado River Basin Salinity Control; $24 million for the Garrison Diversion Unit; $37 million for Water Reclamation/Reuse projects; $131 million for the Central Valley Project; $49 million for the Central Valley Project Restoration Fund; $13 million for Columbia/Snake River Salmon Recovery and $15 million for Endangered Species Recovery, including the Platte River.

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

The Reclamation budget request also includes the first Annual Performance Plan required under the Government Performance and Results Act. This plan identifies the annual goals for fiscal year 1999 that support Reclamation's Strategic Plan that was submitted to Congress last September.

CENTRAL UTAH PROJECT COMPLETION ACT

The Central Utah Project Completion Act became law in October 1992 after several years of debate on how to complete the CUP and resolve related claims of the Ute Indian Tribe. The Act provides for completion of the Central Utah Project (CUP) by the Central Utah Water Conservancy District. The Act also authorizes funding for fish, wildlife, and recreation mitigation and conservation; establishes the Utah Reclamation Mitigation and Conservation Commission to coordinate mitigation and conservation activities; and provides for the Ute Indian Rights Settlement.

The Central Utah Project Completion Act prohibits the Secretary from delegating his responsibilities under the Act to the Bureau of Reclamation, and therefore, responsibility for overseeing implementation of the Act has been delegated to the Office of the Assistant Secretary for Water and Science. We have established a program coordination office in Provo, Utah, with a Program Director to provide oversight, review, and liaison with the District, the Commission, and the Ute Indian Tribe, and to assist in administering the responsibilities of the Secretary under the Act.

We are pleased with progress to date in implementing the Act. Accomplishments through fiscal year 1997 include: initiation of construction on the Wasatch County Water Efficiency Project; implementation of 14 other water conservation measures that conserve a total of 12,000 acre-feet of water annually (enough water to serve 60,000 urban dwellers annually); initiation of a major conjunctive use project in Salt Lake County; completion of construction of the Lower Diamond Fork Pipeline; substantial progress on planning the remaining segments of the Diamond Fork System, the Spanish Fork Canyon/Nephi Irrigation System, and the Uinta Basin replacement facilities; and initiation of a variety of activities by the Mitigation Commission, including land acquisitions for the Provo River Restoration Project, and around Great Salt Lake, the Jordan River, and Utah Lake to protect wetlands.

The fiscal year 1999 request for the Central Utah Project Completion Account provides $40.9 million for use by the District, the Mitigation Commission, and the Department, a decrease of $0.2 million from the fiscal year 1998 enacted level. This includes $20.4 million for the District to continue construction and implementation of the Wasatch County Water Efficiency Project and other water conservation projects; to continue work on the Diamond Fork System and the Spanish Fork Canyon/Nephi Irrigation System; and to continue implementation of the Uinta Basin Replacement Project and the groundwater recharge and conjunctive use programs. In addition, the fiscal year 1999 request includes $1.4 million to continue work on additional replacement facilities for the Uintah and Upalco Units that would serve Indian and non-Indian users in the Uinta Basin.

The request also provides $12.4 million that would be transferred to the Mitigation Commission for mitigation and conservation projects authorized in Title III of the Act, and for completion of other mitigation measures identified in Reclamation planning documents. Finally, the request includes funds for the Federal contribution to the principal of the Utah Reclamation Mitigation and Conservation Account ($5.0 million); for mitigation and conservation projects outside the State of Utah ($0.3 million); and for activities administered by the program office ($1.4 million).

In addition to this request, the Bureau of Reclamation's budget includes $0.1 million to complete certain features of the CUP; $30.0 million is included in the Bureau of Indian Affairs budget for the Ute Indian Rights Settlement authorized in Title V of the Act; and $5.0 million is included in the request for the Western Area Power Administration for its contribution to the Utah Reclamation Mitigation and Conservation Account.

This completes my statement today. Again, thank you for providing me the opportunity to discuss with this subcommittee our fiscal year 1999 requests. The Commissioner and I will be pleased to respond to your questions.

STATEMENT OF ELUID L. MARTINEZ

Senator DOMENICI. Commissioner.

Commissioner MARTINEZ. Mr. Chairman, my written statement will be submitted for the record, and I will try to be brief.

Generally, Reclamation's budget contains a request for approximately $776 million for our traditional programs. That reflects a decrease of $8 million from our fiscal year 1998 level.

Approximately 50 percent of our 600 dams out West were constructed between 1900 and 1950. The continued safe performance

of those structures as they age is of great concern. Our budget reflects the need to continue to address this high priority item.

BUDGET SUMMARY

With respect to our facility operation and maintenance budget line item, we are requesting $8.2 million above our fiscal year 1998 level and believe it is sufficient to adequately maintain and operate those structures.

Let me draw your attention to one Bureau of Reclamation program which has drawn quite a bit of interest. It is the Water Reclamation and Reuse Program.

As you know, in 1992, Congress authorized four projects in southern California, and in 1996, 18 additional projects were authorized. Our budget request this year includes $37 million to continue funding the four projects initiated in 1992, plus minor amounts for the Arsenic Wellhead project in New Mexico, one demonstration project in South Dakota, and a reuse study in California.

Our budget request this year includes $7.8 million of new money to be used as follows: $1.1 million for assisting project sponsors with feasibility studies and to review and prioritize projects for possible funding in the future; $1 million for research and development activities; $1 million for preconstruction work on the Orange County Regional Water Reclamation project; and the balance of $4.7 million is to move forward three projects out of those 18 projects that were authorized, and to continue one additional project that already has ongoing funding. We propose to spend $800,000 for the continuation of the Tooele project in Utah; $1.3 million for the North San Diego County project; $1.3 million for the Long Beach project; and $1.3 for the Calleguas project. The last three are in California.

We in Reclamation went through an extensive process for soliciting information from the project sponsors to determine which of the authorized projects were ready to go to construction. We then did a ranking using a criteria process to come up with these four new projects.

PREPARED STATEMENT

Mr. Chairman, that is my summary, and, other than the issues that you will find in our budget, these are the issues of interest.

[The statement follows:]

PREPARED STATEMENT OF ELUID L. MARTINEZ

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to appear before the Subcommittee this morning to discuss the Bureau of Reclamation's fiscal year 1999 budget request.

The Bureau of Reclamation has been in existence for 96 years, developing and managing water and related resources in the Western United States. Having constructed more than 600 dams and reservoirs, including such significant structures as Hoover and Grand Coulee Dams, Reclamation today is the largest water wholesaler in the country, bringing water resources to more than 31 million people and irrigating approximately 10 million acres of land. Reclamation is also the second largest producer of hydroelectric power in the nation and the fifth largest electric utility in the West. Reclamation's 58 powerplants annually provide more than 40 billion kilowatt-hours, generate nearly a billion dollars in power revenues, and produce enough electricity to serve six million homes.

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

For fiscal year 1999, the Bureau of Reclamation is requesting $919.1 million, of which $893.3 million is new budget authority and $25.8 million is a transfer of unobligated balances from its Working Capital Fund. This request includes $775.8 million for Reclamation's traditional programs, a decrease of $8.0 million from the fiscal year 1998 level; and $143.3 million for California Bay-Delta Ecosystem Restoration account, which is administered by Reclamation but funds activities in several Federal agencies, an increase of $58.3 million over fiscal year 1998.

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

ANNUAL PERFORMANCE PLAN

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

DAM SAFETY

Ensuring the safety and reliability of Reclamation dams is one of the agency's highest priorities. This program is critical to effectively manage risks to the downstream public safety, property, and natural resources. Funding of $10.0 million is being requested for ongoing modifications on four dams—Cachuma Project, Bradbury Dam in California; Salt River Project, Horse Mesa Dam in Arizona; Weber Basin Project, Lost Creek Dam in Utah; and San Angelo Project, Twin Buttes Dam in Texas.

In addition, $56.6 million is requested for the Safety of Dams Evaluation and Modification Program that provides for risk management activities throughout Reclamation's inventory of 378 high and significant hazard dams, as well as preconstruction and construction activities for up to 32 dams in the Safety of Dams program. Another $1.5 million is requested for the Department of the Interior Dam Safety Program.

Approximately 50 percent of Reclamation's dams were built between 1900 and 1950, and approximately 90 percent of the dams were built before current state-of-the-art foundation treatment and filter techniques were incorporated in embankment dams to better control seepage. Continued safe performance becomes a greater concern with aging of the dams and places a greater emphasis on the risk management activities provided by the program.

EL NIÑO

The current El Niño is producing heavy precipitation in California and in the Southeastern U.S. While these areas are the most seriously affected to date, the unusually mild and humid air mass over much of the nation presents the potential for additional weather anomalies as Spring arrives. Long-lead forecasting of specific amounts of precipitation and runoff is impossible for particular river basins. Water managers must watch the short-range forecasts closely—to best manage reservoir operations. This requires close cooperation with the National Weather Service, Army Corps of Engineers, U.S. Geological Survey, National Resources Conservation Service and state water management agencies.

Reclamation has taken an aggressive role in preparing for El Niño impacts: reservoirs were drawn down; and water operations managers took other proactive positions regarding water supply forecasts. They are fully aware of El Niño's historic impacts in their river basins, and Reclamation has taken special precautions in planning operations. The Denver Office has established a real-time, continually updated El Niño Website and its hydrometeorological team is closely collaborating with National Weather Service forecasters. The Central Valley Operations Office in Sacramento has developed a special flood runoff and reservoir operations model

above Folsom Reservoir in collaboration with the National Weather Service to assist in operations. Water managers will take appropriate actions when there is clear evidence of any developing problems. Thus far, we have identified $2.3 million of emergency needs and included them in the Administration's request for supplemental funding in fiscal year 1998.

Now, I would like to focus on Reclamation's fiscal year 1999 Budget request by appropriation.

Water and Related Resources.—The amount requested for the Water and Related Resources appropriation for fiscal year 1999, $665.9 million, is a decrease of $27.1 million from the fiscal year 1998 enacted level of $693.0 million. This appropriation funds five program activities. These are Water and Energy Management and Development, Fish and Wildlife Management and Development, Land Management and Development, Facility Operations, and Facility Maintenance and Rehabilitation.

The fiscal year 1999 Budget proposes $273.4 million for Facility Operations and Facility Maintenance and Rehabilitation, an increase of $8.2 million from the fiscal year 1998 enacted level. Reclamation places high priority on these activities, which ensure delivery of project benefits and protect the Federal investment and the public through the dam safety program, discussed above, and other measures.

The request includes $49.9 million for the Central Arizona Project; $131.4 million for the Central Valley Project in California; $31.3 million for the Mni Wiconi Project and $10 million for the Mid-Dakota Project in South Dakota; $24.1 million for the Garrison Project in North Dakota; $37 million for water reclamation and reuse projects; and $3 million for the Animas-LaPlata Project in Colorado and New Mexico.

The fiscal year 1999 request of $37 million for water recycling includes funding for four projects that were authorized by the 102nd Congress in 1992, plus minor amounts for Arsenic Wellhead in New Mexico, the Rapid City Wastewater Reuse Study in South Dakota, and the Southern California Comprehensive Water Reclamation and Reuse Study. Additional projects were authorized in 1996 through Title XVI amendments. The Bureau has included $1 million for the Orange County Regional Water Reclamation Project in California and $6.8 million for research and feasibility studies, and to initiate construction cost sharing on additional projects. As this testimony is being prepared, we are completing a careful selection process and will inform the subcommittee of the results.

Reclamation's fiscal year 1999 request includes a proposal which fully funds the acquisition of capital assets for four water resource projects. This is part of an overall effort to improve the way the Federal Government manages the planning, budgeting, and acquisition of capital assets.

Reclamation's fiscal year 1999 request proposes to fully fund four projects through advance appropriations. The four projects are: Colorado River Front Work & Levee System (CA, AZ); Salt River Project, Horse Mesa Dam, Safety of Dams (AZ); Minidoka Northside Drainwater Management Project (ID); and Weber Basin Rehabilitation and Betterment Project (UT).

The total amount requested for fiscal year 1999 for these projects is $7 million. In addition, appropriation language is included in the fiscal year 1999 budget to provide advance appropriations totaling $22.6 million in fiscal year 2000 and beyond (including cost indexing), which should be sufficient to complete these projects.

The request also includes $10.2 million for our Science and Technology Program. This funding is requested for development of new information and technologies that respond to and anticipate mission-related needs, and that provide for innovative management, development, and protection of water and related resources and associated values through cost-shared research and technology transfer.

Loan Program.—Funding of $12 million is requested to continue work on six loans—Chino Basin Desalination, Castroville Irrigation, Salinas Valley Water Reclamation, San Sevaine Creek, and Temescal Valley, in California, and Milltown Hill, in Oregon. In addition, $425,000 is requested for program administration.

Policy and Administration.—The $48 million requested supports Reclamation's centralized management functions. These functions include overall program and personnel policy management; equal employment opportunity management; safety and health management; budgetary policy formulation and execution; information resources management, property, and general services policy; public affairs activities; and organizational and management analysis.

Central Valley Project Restoration Fund.—The Restoration Fund request is the full $49.4 million allowed for fiscal year 1999. These funds are focused on three primary emphases: water acquisition for instream flows and refuges; refuge conveyance and refuge water wheeling; and land retirement. Efforts to provide for the doubling of the anadromous fish population are expected to be enhanced through increased emphasis on partnerships with local, state, and stakeholder involvement.

California Bay-Delta Ecosystem Restoration.—The fiscal year 1999 budget includes a request for $143.3 million to continue Federal cost sharing in ecosystem restoration efforts in California's Bay-Delta, the full amount authorized by the California Bay-Delta Environmental Enhancement Act. Although requested in a single account under Reclamation, the funds will be distributed among participating Federal agencies based upon the program recommended by CALFED, a consortium of Federal and State agencies with management and regulatory responsibilities in the Bay-Delta, and approved by the Secretary of the Interior.

The fiscal year 1999 budget request provides details on how we intend to use the funds, including a summary of how the project selection process works. Participating agencies and the CALFED staff have developed a fiscal year 1998 program that covers habitat acquisition and restoration, improvements to fish screens and passage, and exotic species management. In early February the Secretary approved a proposal for the allocation of the first $23 million of fiscal year 1998 Federal funding. A second package approving the remaining $62 million of the $85 million appropriated in fiscal year 1998 is expected to be approved by the Secretary very soon.

Mr. Chairman and Members of the Subcommittee, this concludes my prepared remarks. I would be happy to respond to any questions Members may have concerning the Reclamation program and our fiscal year 1999 Budget request.

DAM SAFETY PROGRAM

Senator DOMENICI. Commissioner, let me ask this. You stated that many of our reclamation dams were built between 1900 all the way through 1950. Is there a process where these dams are evaluated regularly for dam safety?

Commissioner MARTINEZ. Yes; we have in our budget request a line-item request for money to repair dam deficiencies and money for continuing inspection and operation of these facilities.

We inspect our high and significant hazard dams on a routine basis and our low-hazard dams on a routine, but less frequent, basis. But we do inspect every single dam.

Senator DOMENICI. So we should not wake up in the morning suspecting there has been a dam failure unless there was something unusual happening upstream from the dam?

Commissioner MARTINEZ. I would dread the day that I have to wake up to that scenario. I would hope not.

Senator DOMENICI. That is why the dam safety program is in effect.

Commissioner MARTINEZ. Correct.

Our dam safety request this year, Mr. Chairman, reflects a lesser amount than it did last year. The reason it does that is because we need less construction money this year since we have completed work on some dams. However, I am advised that in the future years, that request will go up as we identify construction needs at particular dams.

ANIMAS-LA PLATA PROJECT

Senator DOMENICI. Regarding the Animas-La Plata project, the Bureau has begun what you call a reconnaissance level appraisal of both the opponents' downsize project and the proponents' proposal to provide the tribes money to purchase water rights. The committee has been clear, and specifically referred to a modified project, not a method of paying the tribes money for them to buy water rights. What is the status of the appraisal study?

Has the study been completed and do you have it with you today?

Ms. BENEKE. I will take a crack at that, Senator.

As you know, Governor Romer and Lt. Gov. Gail Schoettler of Colorado convened the Romer-Schoettler process a year or one-half years ago to try to work through these issues. As a result of that process, two main alternatives came out for the Animas-La Plata Project. One is the so-called Animas Lite, which is a downsized structural alternative. The other one is a nonstructural alternative that involves both additional storage in existing facilities and some acquisition of water for the tribes.

When those alternatives were forwarded to us, the Commissioner and I discussed it. We decided that the best course would be to evaluate the alternatives and to do an appraisal-level study, anticipating possible authorizing legislation in this Congress and anticipating questions about both of the alternatives.

The Bureau is in the midst of doing this study. Again, it is just at the appraisal level. At the time we decided to undertake the study, we said that we would do everything possible to have it done in 3 to 6 months. We are still within that timeframe.

We are making good progress on the analysis. It is going to have to be cleared by the administration, and we do not control that timeframe. But, other than that, I think we will be within our 3 to 6 month estimate.

Senator DOMENICI. Yes; Commissioner?

Commissioner MARTINEZ. Mr. Chairman, I am well aware of the controversy of this particular project. There were two proposals that really came out of this Romer-Schoettler process. I thought it was in the best interest to be prepared to answer specific questions on both proposals. That is why I undertook this study.

I have reviewed a draft document, and I would expect that it would be released by Reclamation in the next few weeks for clearance by the administration. I would hope I would be prepared to respond to specific questions at a future hearing.

Senator DOMENICI. When do you think that might be? In a month?

Commissioner MARTINEZ. The clearing of the report?

Senator DOMENICI. When you think you would be in a position to tell us more.

Commissioner MARTINEZ. I will be in a position to move the document through the Bureau of Reclamation, hopefully in the next few weeks. As to when it will come out of the administration, I cannot say.

Senator DOMENICI. What about your thoughts on whether this is going to cause undue delay? Is somebody really serious about this new scheme to pay them money to buy water rights? Obviously, the Indians want to store water rights. They don't want money. They want to be able to store them so they can use them for a very diverse set of potential uses.

I understand the administration regularly says we are for Animas-La Plata and they send us up $3 million, $4 million, or $5 million in their budget. But then it seems like there is no end to the delays.

Ms. BENEKE. Well, it certainly was not our intention, in taking a look at these two proposals, to delay anything any further. We just want to be in a position to be as responsive as we can be to the inquiries regarding both.

Senator DOMENICI. Where do these kind of proposals go after they leave you? From your shop, the Secretary level, do they go through some environmental review section within the administration beyond OMB? Where would it go?

Ms. BENEKE. The study—is that what you mean?

Senator DOMENICI. Whatever. You are coming up with a final decision. To get there, after you all have looked at the modified plan, the so-called Animas-La Plata Lite, and the other study that you are looking at for payment in dollars to acquire water rights, when you have reached a conclusion as you have put that together, where does it go in the administration?

Ms. BENEKE. The Animas-La Plata Lite proposal would require legislation. Senator Campbell has introduced a bill that basically embodies the Animas-La Plata Lite proposal.

The report that we are doing, because we are planning to provide it to the Congress, will need to be cleared through OMB. We are also doing our best to coordinate with EPA and with CEQ. EPA has voiced concerns in the past regarding our environmental documentation. We think it is good Government to try to coordinate with them as well.

Senator REID. Mr. Chairman, would you yield just for a brief second?

Senator DOMENICI. Of course.

Senator REID. I would like to submit my questions and ask the Secretary and Commissioner Martinez if you would answer those not only for the record but send a copy to my office. I have to go up and vote on Superfund now, which is going to be reported out of committee.

Senator DOMENICI. Do you have any to ask before you go?

Senator REID. No; this will be fine. I have had a meeting with the Secretary and I have some additional questions here.

If you get back to me as soon as you can, that would be adequate.

Thank you, Mr. Chairman.

Senator DOMENICI. Thank you, Senator. Thank you for helping today.

ANIMAS-LA PLATA PROJECT

I guess what I am wondering about, Madam Secretary, is this. How long is it going to take for the administration to say what it is going to say in an official way about the Animas-La Plata Lite?

Ms. BENEKE. It is difficult for me to give you a specific timeframe. At the Interior Department, we are working as expeditiously as possible to complete this review. It would certainly be my hope that the review would make it possible for the administration to take a position on the pending legislation.

Senator DOMENICI. I'll tell you, every year it is the same story. You send up a little bit of money and request further studies and further reviews. I personally would think, and as chairman of the subcommittee I think it would just be better to reach a point where we are just going to forthrightly say what do you recommend and go from there.

I will communicate that further to whomever I must. But we are going to be called upon to appropriate a small amount of money.

It could end up being a lot of money. I don't want to be just misled every year into putting something in with the administration pulling the plug in 18 months or 2 years when they finally give an opinion. I don't see why it should take more than a few months for the administration, with all its stopover points, to give Congress an answer.

My hunch is there are many within the administration who don't want this project. Now that may be a normal process. That's fine. But we keep hearing from the Interior Department that the project is getting a go-ahead sign, that you all have been requesting money and it has been put in. I just think sooner or later we have to end this process. Either we are totally on our own up here or we have the administration suggesting some changes on which they would predicate they support a recommendation.

You understand. You have been up here on this side with us. One reason we think you are doing so well is because you understand us. We do have some prerogatives. It is not all OMB. As Senator Byrd so aptly describes, that is what the Constitution says. You don't get any money without us. That is one interesting thing.

So whatever you can do to convey that to the right people, we will convey it to OMB.

Thank you very much.

RIO GRANDE LOW-FLOW CONVEYANCE CHANNEL STUDY

Commissioner, the Rio Grande Low-Flow Conveyance Channel Study, the funding for the Rio Grande Conveyance Channel Study is requested at $25,000, compared to $265,000 in 1998. What does that mean?

Commissioner MARTINEZ. I cannot respond directly to you on that. I will look into it for the record.

But my knowledge is that there is a holdup on the construction because of some consultation on endangered species issues. I will have to get back to you on that.

Senator DOMENICI. OK. I need to know specifically, when you get back to us, if the $25,000 is sufficient to keep the study on schedule and to meet the commitments that are made in fiscal year 1999. Would you do that?

Commissioner MARTINEZ. This is not the model study for the assessment for the Rio Grande, but there is a Rio Grande Assessment Assistance model.

Senator DOMENICI. We will work with you on being more specific. Please get that information to us.

[The information follows:]

RIO GRANDE LOW-FLOW CONVEYANCE CHANNEL STUDY

The fiscal year 1998 enacted budget for the Rio Grande Low-Flow Conveyance Channel Study was $170,000, which, coupled with $95,000 from non-federal contributions equals the amount needed for fiscal year 1998 of $265,000. Originally, the study was scheduled for completion in fiscal year 1998; however, completion of the study has been pushed into fiscal year 1999. The $25,000 requested for fiscal year 1999 is sufficient to complete the draft and final environmental impact statement and complete the study.

EL PASO-LAS CRUCES REGIONAL SUSTAINABLE WATER PROJECT

Senator DOMENICI. There is an El Paso-Las Cruces Regional Sustainable Water project. Are you familiar with that, Commissioner?

Commissioner MARTINEZ. That's a study for the pipeline down in that part of the country. Yes.

I believe our budget contains some money. They have an ability to spend another million dollars, and they have that capability. If the money is available, I think they would need it. They could use it.

Senator DOMENICI. Maybe you can look at that more specifically. Our understanding is that the 1999 budget does not contain any follow-on funding for the project.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

I have one last question for you on the California Bay-Delta Ecosystem Restoration, CALFED project. We provided $85 million for the first year appropriation for that program. It is expected over time to cost quite a few billions of dollars. How much of the appropriation has been allocated to specific projects that have definite completion dates?

Ms. BENEKE. To the best of my knowledge, Senator, $23 million was approved in February to specific projects. The program did a public solicitation for projects last summer. We had $470 million worth of projects proposed.

There has been an extensive project selection process. It is outlined in my written statement. As a result of that process, $23 million worth of projects have been approved. Another package is pending approval at the Department. It is a package for both programs and specific projects which will allocate the balance of the $85 million. We expect that imminently.

Senator DOMENICI. I have about five questions on CALFED and would ask you to respond to them.

SOUTHERN NEW MEXICO STUDY

Commissioner MARTINEZ. Mr. Chairman?

Senator DOMENICI. Yes.

Commissioner MARTINEZ. With respect to the southern New Mexico study, our fiscal year 1999 budget does not contain any money. The fiscal year 1998 request was a $400,000 write-in. I believe the participants would be seeking a $400,000 write-in.

Senator DOMENICI. I did not hear you. Tell me that again.

Commissioner MARTINEZ. The fiscal year 1999 budget does not contain a request for the southern New Mexico study. There was a write-in of $400,000 in 1998, and the project sponsors would appreciate $400,000 for 1999. They could use it.

Senator DOMENICI. OK. But you don't have it in your budget.

Commissioner MARTINEZ. No.

Senator DOMENICI. Thank you.

ADDITIONAL COMMITTEE QUESTIONS

We have a number of other questions regarding operation and maintenance costs and a series of other questions. We will submit them to you in the interest of time.

You have been very patient, waiting around while the other witnesses were testifying. Maybe next time we will sequence you and tell you when you are coming on. One year we will put you on first. Maybe next year, whoever is second, we will tell them that the people don't have to be here for an hour or one-half hour after our starting time.

Thank you so much.

Ms. BENEKE. Thank you.

Commissioner MARTINEZ. Thank you, Mr. Chairman.

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

QUESTIONS SUBMITTED BY SENATOR DOMENICI

ANIMAS-LA PLATA

Question. The Bureau of Reclamation has begun what they call a "reconnaissance level appraisal" of both the proponent's downsized project and the opponent's proposal to provide the Tribes money to purchase water rights citing the direction of this Committee as the basis of undertaking this work. The Committee was very clear and specifically referred to a modified "project", not a scheme to pay the Tribes Federal dollars to buy water from their non-Indian neighbors. An important component to the Tribes is to have the ability to store their rightful water supplies.

What is the status of the appraisal study? Has the study been completed and—do you have it with you today?

Answer. The Bureau of Reclamation is in the process of completing the appraisal level study of two major alternatives that resulted from the process led by Governor Romer and Lieutenant Governor Schoettler and estimates that it will have its work completed within the three to six month time-frame as originally estimated. The study will also need Administration clearance prior to its release. No final conclusions have been reached at this time.

Question. In light of the fact that legislation has now been introduced to move a modified project forward, one that the Tribes will accept as full settlement of their claims, what is the Administration's position on this modified project, and how do you intend to use the fiscal year 1999 budget request? Will the $3,000,000 be used for anything other than more studies?

Answer. At this time it would be premature for the Administration to take a position regarding either alternative. However, under either alternative, fiscal year 1999 funds would be used for additional compliance activities and to address cost- share and repayment issues.

EL PASO-LAS CRUCES REGIONAL SUSTAINABLE WATER PROJECT

Question. Last year $400,000 was provided for the Rio Grande Conveyance Canal Pipeline project. The name has been changed to the El Paso-Las Cruces Regional Sustainable Water project to better reflect the regional nature of the project. However, the Bureau's budget request for fiscal year 1999 does not contain any follow on funding for the project.

Is there any reason, other than budget constraints, that shaped your decision not to request funding for the El Paso-Las Cruces project in fiscal year 1999?

Answer. Yes. Funding this type of project would not be a high priority by the Administration who would oppose efforts to fund construction of a single-purpose, municipal and industrial water supply project of this kind through the Reclamation program.

Question. What is the capability of the Bureau of Reclamation to continue this project in fiscal year 1999 and how will the funds be used?

Answer. The Bureau of Reclamation has the capability to expend approximately $400,000. Funds would be used for scoping and agency coordination, natural and cultural resource surveys to include assessment of Endangered Species Act and cultural resource compliance; development and analysis of alternatives; and an Environmental Impact Statement.

Question. As a general matter, setting aside budgetary issues, does the Administration support pursuing this type of project through the Bureau of Reclamation?

Answer. If Congress again adds funds, we are prepared to continue to use our expertise to assist the local communities at this stage of the planning process. The

Bureau has an interest in the project at this stage of the planning process because the water resources that are being studied are administered by the Bureau and the project would require substantial coordination and review by the Bureau and other Federal agencies. However, typically the Administration would oppose efforts to fund construction of a single-purpose, municipal and industrial water supply project of this kind through the Reclamation program.

OPERATION AND MAINTENANCE COSTS

Question. Both the House and Senate Energy and Water Subcommittees address the issue of providing stakeholders an opportunity to participate in the review and development of operation and maintenance budgets for their respective projects. What steps has the Bureau of Reclamation taken to implement such a process?

Answer. In the recent past, Reclamation has involved the various water and power contractors in varying degrees of user participation to discuss prospective budgets and costs, including major maintenance items such as capital replacements that impact these users. Feedback obtained from users at a recent Family Farm Alliance meeting in early March identified a detailed process that Reclamation is currently evaluating.

Question. The Bureau has had six months to develop this process. Why is it taking so long to interact with stakeholders on the O&M program?

Answer. Stakeholder participation in the development of our fiscal year 1999 and fiscal year 2000 budgets has taken place both formally and informally throughout Reclamation, but perhaps not to the degree and depth as requested by some users. Reclamation is currently exploring additional opportunities to allow stakeholder involvement in developing the fiscal year 2001 budget.

Question. Do you plan any conversations with project beneficiaries concerning the fiscal year 1999 budget or development of the fiscal year 2000 budget request?

Answer. Conversations with many project beneficiaries took place during formulation of the fiscal year 1999 and fiscal year 2000 budgets. Reclamation is exploring additional opportunities to allow more involvement by project beneficiaries in developing the fiscal year 2001 budget.

Question. Given that construction activity is winding down and that Reclamation soon will no longer be a construction agency, will not the direct collection of operation and maintenance costs for most of the contracting and contract management activities currently conducted by the Bureau of Reclamation essentially remove Reclamation from the budget process?

Answer. No. Reclamation still operates and maintains multipurpose projects that affect the national interest. In addition, on many projects there are nonreimbursable activities such as flood control, fish and wildlife, recreation activities, land management, and water quality that continue to be funded by Reclamation. The transfer of O&M responsibility to our users/contractors, or transfer of title to some facilities where feasible, has allowed Reclamation to meet its maintenance funding requirements without having to seek significant increases in appropriated funds.

Question. Since most of these projects, if not all of them that will remain and not be handed over to project beneficiaries have associated hydropower generation as part of their benefits and repayment scheme, wouldn't contract administration be just as efficiently managed if moved to the relevant power marketing administration?

Answer. If power production were the primary purpose of Reclamation's multipurpose projects, then this approach might work. Since the primary purpose of these projects is typically the use of water for multiple purposes, it would not be appropriate to transfer project administration to the power marketing administrations.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

Question. Congress provided a first year appropriation of $85,000,000, for the California Bay-Delta Ecosystem Restoration (CALFED) program which is expected to cost several billion of dollars over many years.

Of the $85,000,000 appropriated for the current year, how much has actually been or will be spent by the end of fiscal year 1998?

Answer. The full $85 million will be allocated to specific projects or programs by the end of April 1998. Because much of this funding will be used for projects of more than 12 months duration, Reclamation estimates that $50 million or more will be obligated by the end of fiscal year 1998 of which approximately $25 million will actually be expended by September 30, 1998. This represents a first year "spend out rate" of about 30 percent, or slightly less than the 35 percent assumed in the fiscal year 1998 budget request.

Question. How much of the appropriation has been allocated to a specific project that have initiation and completion dates? What is the average cost and duration of the projects which have been committed to?

Answer. On February 13, 1998, the first package of Bay-Delta Ecosystem Restoration projects totaling $23 million was approved by the Department. A second package totaling $62 million is working its way through the Department for approval. Roughly $35 million of this amount are programs. With approval of the second package, the total $85 million will have been allocated to projects or programs. Of the $85 million allocation to projects and programs, approximately $32 million will be allocated for 21 specific projects that have initiation and completion dates. The range of project costs runs from $15,000 for a small fish screen for the Boeger Family Farm to $10.6 million for land acquisition and riparian restoration in the San Joaquin Floodplain. With respect to the $35 million allocated to programs, CALFED plans another solicitation for specific projects by program categories which identify additional high priority specific projects. The duration of these projects varies from 6 months to 3 years.

Question. How much of the $85,000,000 will remain uncommitted to individual, specific projects at the end of fiscal year 1998. Is it realistic to believe that the entire appropriation for CALFED be identified by specific project? Please explain.

Answer. As mentioned in response to the question above, the full $85,000,000 will be allocated or committed to specific projects or programs shortly. It is neither realistic nor possible to identify specific projects for fiscal year 1999 in advance of the time that Congress appropriates the funds. It is also likely that some portion of the funds allocated to one or more programs may not have been identified with specific projects by the end of fiscal year 1998.

Question. What is the current status of the draft programmatic environmental impact statement which, I believe, was to be published in draft form in February or March?

Answer. The release date for the draft Environmental Impact Statement/Environmental Impact Report was March 16, 1998. The public comment period ends June 1, 1998.

Question. What is the importance of the programmatic EIS to proceeding with additional requests for proposals for additional work under CALFED?

Answer. The Environmental Impact Statement will not affect work proposed for fiscal year 1999 under the Bay-Delta Ecosystem Restoration Appropriation. Restoration work performed prior to the selection of the preferred alternative is not dependent upon the outcome of the EIS. Because ecosystem restoration is a common element in all of the alternatives in the draft EIS, the activities being undertaken are early implementation activities that comport with the regulation of the Council on Environmental Quality.

Question. What is the schedule for completing and releasing the final programmatic EIS?

Answer. The final programmatic EIS/EIR is scheduled to be released to the public in December 1998, assuming the comment period for the draft is not extended beyond the June 1 deadline.

Question. How much of the $143,000,000 in new appropriation requested for fiscal year 1999 is identified by specific project? When will the Department be able to tell the Committee how additional appropriations will be allocated by project?

Answer. Due to the open and public process CALFED is committed to providing, funding for specific projects will not be identified until an October 1998 through February 1999 time frame. CALFED expects to issue a public solicitation for proposal projects which would be funded with fiscal year 1999 monies. The budget justification document sets forth the categories of projects that will be funded with the fiscal year 1999 appropriation request.

Question. What major milestones or critical dates are scheduled for the remainder of fiscal year 1998 and in fiscal year 1999?

Answer. The following time line is provided for the record:

RESTORATION COORDINATION PROGRAM

April 1998—Approval of allocation of remaining $62 million to projects and programs for fiscal year 1998.

May 1998—Public proposal solicitation for programs identified by the CALFED process for funding in fiscal year 1998. (Roughly $35 million of the $62 million proposed in the second funding package to the Secretary in March 1998 are programs that will require a public solicitation process.)

Spring 1998—Revise and update ecosystem priorities for fiscal year 1999 funding.

Summer 1998—Technical workshops for fiscal year 1999 actions.

September 1998—Final selection of projects for fiscal year 1998 funding.

Late Summer through December 1998—Select actions for fiscal year 1999 funding.

PROGRAMMATIC EIS/EIR

June 1, 1998—Comment period closes.

December 1, 1998—Final EIS/EIR released to the public.

December 31, 1998—Record of Decision.

(Last two dates assume the comment period is not extended).

Question. Congress required a quarterly report on how the funds appropriated under the CALFED program are being utilized. What is the status of this quarterly report? Why has it taken so long to get the first report to the Congress?

Answer. The first quarterly report was delivered on March 24, 1998. Since it was the first report for the Bay-Delta Ecosystem Restoration Appropriation, we wanted to make sure that we included all the appropriate information. Now that we have a product we feel accurately describes quarterly results, future reports should be more timely.

Question. Congress has also required the Department to develop performance measures or indicators to determine whether the restoration measures are achieving their purpose over time. What progress is being made in developing these measures? When will this effort be completed?

Answer. Performance assessment for the ecosystem restoration program consists of two major parts: overall assessment of ecosystem response—or landscape-level assessment—and project level assessment.

CALFED requires project-specific performance standards for monitoring and assessing the biological benefits of the individual projects as part of standard contract conditions. These project-specific performance standards will be adopted as each contract is finalized. Information from project-specific monitoring will be used in the adaptive management process to evaluate the benefits of certain actions. Project-specific standards will be required for all of the major ecosystem restoration investment categories.

The overall, landscape-level assessment is, by its nature, a long-term commitment to monitoring and to evaluating trends and broad conditions. We do not have well defined performance measures relative to landscape level assessment at this time, but CALFED agencies working through the Interagency Ecological Program and stakeholder groups are developing a comprehensive monitoring and assessment program that will include long-term performance measures.

Question. What measures or procedures have been put in place to ensure that funding is spent primarily for on ground activities? What assurances can you give the Committee that other agencies administrative costs are not being provided through CALFED appropriations?

Answer. All requests for funding are reviewed closely through the CALFED process of technical panels, the Ecosystem Roundtable and then referred to the CALFED Policy Team for final recommendation. Funding must be requested and approved through this process and must meet the priorities identified by the technical panels. The only administrative costs associated with individual proposals are those required to perform the work, such as project management.

CENTRAL VALLEY PROJECT RESTORATION FUND

Question. The Central Valley Project Restoration Fund was established to provide funding for habitat restoration, improvement, and acquisition and other fish and wildlife restoration in the Central Valley Project area in California. Many of the activities proposed for funding through the Central Valley Project Restoration Fund are the same as projects to be accomplished through CALFED and visa versa.

How do you differentiate between activities to be conducted under the Restoration Fund and those to be conducted under CALFED?

Answer. First, Public Law 104–333, Section 1101(b) states that "funds authorized to be appropriated in the CALFED Bay-Delta Program shall be in addition to the baseline funding levels established for currently authorized projects and programs under the Central Valley Project Improvement Act." As required by Section 1101(e), a baseline funding report was submitted last year to the Committees on Appropriations, which shows funding provided previously or requested under pre-existing authorities, including CVPIA.

Secondly, the projects and programs to be implemented under Central Valley Project Improvement Act (CVPIA) encompass the entire Central Valley, and, with exceptions, are related to CVP facilities and operations. For example, section 3406(b)(4) provides authorization to develop and implement a program to mitigate

for fishery impacts associated with operations of the Tracy Pumping Plant, and section 3406(b)(5) to develop and implement a program to mitigate for fishery impacts resulting from operations of the Contra Costa Canal Pumping Plant. The Bay-Delta Ecosystem Restoration Program, on the other hand, focuses on environmental protections and improvements in the San Francisco Bay-Delta estuary and other portions of the "solution area." For coordination purposes, CVPIA workplans are provided to the CALFED Integration Panel in order to insure a comprehensive perspective.

Question. The fiscal year 1999 budget proposes an appropriation of $49,447,000 out of the Fund compared to a $32,775,000 program for fiscal year 1998. What are the sources of receipts into the Fund annually?

Answer. The majority of the receipts projected to be collected in fiscal year 1999, $40,981,000, consists of discretionary payments authorized by Section 3407(d) commonly known as "Additional Mitigation and Restoration Payments." These receipts are expected to be collected from Central Valley Project water and power users through water and power rates. The remaining estimated collections consist of revenues received from Friant Surcharges, ($7,026,000); water transfer charges, ($140,000); tiered water charges, ($300,000); and Municipal and Industrial water surcharges, ($1,000,000).

Question. Mitigation Restoration Payments are expected to increase from $25,649,000 in fiscal year 1998 to $40,981,000 in fiscal year 1999. Where do these payments come from and how realistic is it that the $40,981,000 will be available?

Answer. In fiscal year 1998, Additional Mitigation and Restoration Payments were reduced in accordance with the fiscal year 1998 Energy and Water Development Appropriations Act. The impact of the reduction in payments was a reduction in collections from the power customers, with no impact to water users. The fiscal year 1999 budget requests the full amount available under the authority in the CVPIA. Scheduled collections are expected to be as follows: $24,586,000 from irrigation and municipal and industrial water users; and, $16,395,000 from power customers. It is realistic that these payments can be collected within fiscal year 1999.

Question. There is some controversy regarding Congressional action in fiscal year 1998 reducing the appropriation from the Fund. What would be the best approach if Congress wanted to limit or reduce the program again in fiscal year 1999?

Answer. We would urge the Congress to accept the Administration's proposal to collect the full amount allowed under the CVPIA. The premise of establishment of the CVP Restoration Fund was to provide funding from water and power project beneficiaries to accomplish CVPIA objectives. If Congress chooses to reduce or limit the CVP Restoration Fund collections in fiscal year 1999, it would be appropriate to indicate that the reduction is limited to that specific year, and not intended to affect future year collections through the action of the three-year rolling average computation required by the CVPIA.

Question. Provide for the record a detailed breakout of all Central Valley restoration, improvement enhancement work for 1997, 1998 and that proposed for fiscal year 1999 by the Bureau of Reclamation. Show the source of the funding whether from Water and Related Resources, the Restoration or CALFED, etc.

Answer. The table provided lists all Central Valley restoration work for fiscal year 1997 through fiscal year 1999 in terms of thirteen categories. Bay/Delta funds were initially appropriated in fiscal year 1998. The fiscal year 1998 CVP Restoration Fund Program includes $7.5 million of carryover funds from fiscal year 1997.

CENTRAL VALLEY PROJECT IMPROVEMENT ACT AND BAY-DELTA ACT CENTRAL VALLEY HABITAT MITIGATION, IMPROVEMENTS, AND ENHANCEMENTS

[In millions of dollars]

Category	Actual fiscal year 1997			Planned fiscal year 1998			Proposed fiscal year 1999		
	Water and related resources	Restoration fund	Bay-Delta funds	Water and related resources	Restoration fund	Bay-Delta funds	Water and related resources	Restoration fund	Bay-Delta funds
Fish Screen Improvements	6.021	6.859	.....	8.750	2.000	2.539	9.400	7.850	19.000
Fish Passage Improvements	2.817	0.719	.....	3.260	0.090	8.325	2.216	.....	3.000
Habitat Restoration in Floodplains & Marshes	.....	13.963	.....	.....	6.237	27.342	.....	7.133	27.000
River Channel Changes	.....	0.778	.....	.....	0.050	9.624	.....	.....	58.00
Improved Instream Flows	2.739	12.098	.....	4.055	6.016	20.000	2.800	14.564	20.000
Water Quality and Temp Improvements	0.365	7.041	.....	2.750	0.070	5.003	0.200	.....	2.000
Introduced and Undesirable Species Control	.....	.....	.....	.....	.....	1.250	.....	.....	3.000
Watershed Management	.....	1.673	.....	.....	0.790	2.253	.....	1.200	3.000
Improved Fish Management & Hatchery Ops	.....	2.069	.....	2.150	3.623	0.625	1.500	1.000	3.000
Refuge Water Acquisition & Wheeling	1.127	10.764	.....	5.853	8.479	.....	5.400	10.000	
Land Retirement	1.383	1.824	.....	1.000	10.000	.....	4.000	4.000	.....
Monitoring, Permit Coordination & other Support	0.002	4.300	.....	.....	3.295	3.570	.....	3.700	5.000
Program Dev, Coordination, & Miscellaneous	.....	.....	.....	.....	.....	4.469	.....	.....	0.300
Total	14.454	62.088	.....	27.818	40.650	85.0002	25.516	49.447	143.300

Question. How much additional funding is provided for these types of activities through other Federal, State or other agencies or groups? Provide a table for the record which shows the funding level for 1997 and the work proposed for 1998 and 1999.

Answer. The following table displays additional funding for activities that are direct-funded by other agencies or groups under CVPIA and Bay-Delta Ecosystem Restoration Act.

ADDITIONAL FUNDING FOR ACTIVITIES DIRECTLY PROGRAMMED UNDER CVPIA AND BAY-DELTA ECOSYSTEM RESTORATION ACTS—FISCAL YEAR 1997–1999

[In millions of dollars]

	Fiscal year		
	1997 actual	1998 estimated	1999 estimated
Reclamation:			
Water and related resources	14.454	27.818	25.516
Restoration fund	62.088	40.650	49.447
Bay-Delta	.....	85.000	143.300
Reclamation total	76.542	153.468	218.263
Other:			
EPA Bay-Delta watershed	1.000	1.000	
Prop 204—Cat III	.....	60.000	.....
Prop 204—Ecosystem restoration	.....	.....	(1)
Prop 204—CVPIA	.....	31.161	25.000
California urban water agencies	10.000	10.000	.....
Misc.—Including local and water districts	13.312	50.793	40.309
Other total	14.312	152.954	65.309
Total of all funds	100.854	306.422	(1)

[1] On December 1, 1998, the Final Environmental Impact Statement/Environmental Impact Report is scheduled to be released. At that time, an additional $390 million will be available for implementation of ecosystem restoration projects. Therefore, we cannot estimate total funds for fiscal year 1999.

DESCHUTES ECOSYSTEM RESTORATION PROJECT

Question. Describe the Deschutes Ecosystem Restoration project which is a new project proposed to be initiated in the fiscal year 1999 budget request.

Answer. This project was authorized by Public Law 104–333, Omnibus Parks and Public Lands Management Act of 1996, Title X, Subtitle C, Section 1025, Deschutes Basin Ecosystem Restoration Projects, and Public Law 104–208, Title III, Deschutes Basin Act of 1996. The purpose is to restore and protect the natural and biological resources of the Deschutes and Crooked River basins and to avoid future resource conflicts. The program will focus initially on water quality and quantity through conservation. The Deschutes Basin Resources Conservancy, formerly known as the Working Group, which is a not-for-profit corporation in the State of Oregon, has been established to propose projects and obtain non-Federal cost-share funds. The Conservancy will include federally appointed members from the Departments of the Interior and Agriculture as well as members from the private sector (representing agriculture, environmentalists, as well as others), tribes, and state and local governments. The private sector members represent the agriculture, environmental, hydroelectric, grazing, timber, land development and recreation/tourism interests. The Restoration Project resulted from a locally-driven initiative that was not undertaken to recover an ecosystem, but rather to restore (where needed) and to protect an ecosystem that, while facing threats from rapid growth, was still in fairly good health.

Fiscal year 1999 funds will support actual restoration projects. The Conservancy's Board of Directors has directed that funds go to on-the-ground actions. The overhead limits of five percent in the Federal authorization reflect this desire. We expect the cost-share will be a maximum rate of 50 percent Federal funding.

The Conservancy has identified potential projects totaling $5.6 million through its initial solicitation. The Conservancy is working to have projects approved and ready for fiscal year 1999 Federal funding by the end of September 1998. It has already approved, pending appropriation of funds, a riparian fencing project that will require about $76,000 of Federal funds. Other potential projects include the purchase of water rights on a willing seller basis, fish passage and protection at irrigation diversions and hydroelectric facilities, irrigation water conservation, riparian restoration, and a conservation easement program.

Question. What is this restoration effort expected to cost, when is it expected to be completed and what are the major milestones?

Answer. The authorizing legislation for this project specifies that Congress may appropriate up to $5 million for Federal cost-share at the rate of $1 million per year for five years beginning in fiscal year 1997. Because the project was not authorized until fiscal year 1997 and the fiscal year 1998 budget request had already been formulated, fiscal year 1999 was the first year Reclamation could request appropriations through its normal budgeting process. Conclusion of Federal funding assistance in fiscal year 2001 pursuant to the existing authorization will limit Federal funding to not more than $3 million. The Conservancy expects watershed restoration actions to continue well beyond 2001 using private, state, and other funds. Reclamation will, however, continue to be involved in the Working Group process beyond fiscal year 2001 even though directly appropriated Federal funding will no longer be provided for selected restoration projects.

Reclamation intends to review project proposals carefully to ensure that proposed restoration projects have technical merit and fulfill the intent of the law. The first group of projects will be approved in September of 1998 for funding in fiscal year 1999. Thereafter, a solicitation for additional project activities will be issued annually for approval and funding to be provided in the next fiscal year.

Question. How will the costs be shared between the Federal government, and State and local interests?

Answer. The authorizing legislation requires at least 50 percent non-Federal funds. Cost-share funds will be contributed by the State of Oregon, irrigation districts, not-for-profit organizations, local governments, and private businesses. Cost-share will be provided by the project sponsor, through other funds raised by the Conservancy, by interested state or local governments, or through a combination of sources. The authorizing law allows for recognition of in-kind services for cost-share, and Reclamation is developing a procedure with the Conservancy for valuing cost-share either on a project-by-project basis or on a programmatic basis.

PACIFIC NORTHWEST ENDANGERED SPECIES RECOVERY IMPLEMENTATION PROJECT

Question. Why is this program increasing from $935,000 in fiscal year 1998 to $1,830,000 in fiscal year 1999? What new activities are planned for fiscal year 1999?

Answer. The program increase of $895,000 is largely to fund the construction of the Phoenix Canal Diversion fish ladder and to complete construction of Oak Street Diversion fish ladder and Phoenix Canal Diversion fish screen, which are in the Rogue River basin. In addition, contracts for construction of fish screens on the Baker and Deschutes Projects will be awarded and additional preliminary design and investigation work on additional sites on other Central Oregon projects will continue. These activities are needed to protect and conserve endangered and threatened species. Funding also has been requested to allow Area Offices to participate in strategic partnerships and cooperative efforts to proactively monitor and evaluate the status of certain candidate species that may be impacted by Reclamation's projects. These funds will provide for general coordination and consultation with other Federal, state, tribal, and local governments and agencies and to develop basinwide recovery plans. Currently there are more than 30 species listed in the Pacific Northwest. To the extent that Reclamation and others can work to protect candidate species and their habitats, the potential for formal Endangered Species Act listings will be diminished.

Question. What portion of the $1,830,000 request is for promotion of watershed and ecosystem recovery measures?

Answer. Approximately $300,000 has been included to allow Reclamation to participate in partnerships and cooperative efforts with other agencies. In addition, this funding will allow further monitoring and studies on candidate species to help preclude listings that could further impact Reclamation's projects.

STATE WATER MANAGEMENT AND TECHNICAL ASSISTANCE PROGRAMS

Question. Many of the individual state water management and technical assistance programs have significant increases in the fiscal year 1999 request compared

to the fiscal year 1998 level. Generally, what accounts for this increase over the fiscal year 1998 level?

Answer. Fiscal year 1998 studies and activities devoted to general investigation-type work totaled $15.6 million which includes feasibility studies. In fiscal year 1999, the 23 Geographically Defined Programs, which do not include feasibility studies, and the separate line item General Planning Activities total $14.6 million. The fiscal year 1998 continuing program and some new planning activities and studies for fiscal year 1999 have been included in a geographic area. These boundaries of the Geographically Defined Program are based on states, counties, Native American reservations, tribes, ecosystems or river basins. The intent is that most areas within the 17 Western States are included in a Geographically Defined Program area.

At first glance this combination of all investigation related work, within a geographical area rather than by line item, may give the appearance of explosive growth. But in actuality, looking at the program as a whole, this is not the case.

Question. For example, the California program increases from $594,000 in fiscal year 1998 to $1,863,000 in fiscal year 1999, and the Oregon program goes from $603,000 to $910,000 in fiscal year 1999. What specifically accounts for these increases?

Answer. The increase for the California Water Management and Technical Assistance Program reflects the initiation of several data gathering efforts and studies essential to addressing California water and related resource problems. These include Nutrient Management Study of the Lower Stanislaus River $100,000, San Joaquin River Basin Salt Management Study $85,000, Land Subsidence Appraisal Study $125,000, Selenium Drainage Management Appraisal Study $143,000, North Coast Salmon Water Management and Reuse Study $100,000, Noyo Harbor Comprehensive Water Management Study $100,000, Conjunctive Use Program $100,000, and the Sacramento Valley Water Quality Management Study $100,000. Most of these studies are cost-shared with the California Department of Water Resources.

The Oregon Water Management and Technical Assistance Program will fund Reclamation's participation in a proactive effort among all State and Federal agencies in Oregon's Coastal Salmon Restoration Initiative designed to focus and coordinate activities for the purpose of threatened and endangered coastal salmon species. In addition, the increase will provide funds to the State for watershed council coordinators and provide technical assistance to watershed councils. Assistance will include design, watershed assessments, water conservation, monitoring, and modeling. Needs will be determined by the watershed councils, in consultation with Reclamation, to ensure the requested technical assistance supports Reclamation's priorities.

CVP—FOLSOM DAM TEMPERATURE CONTROL DEVICE

Question. What are the problems driving the need to construct a temperature control device at Folsom Dam in California?

Answer. Folsom Dam regulates the flows of the American River for flood control, water supply, power generation, and fish and wildlife benefits. Normal releases are through three penstocks and an 84-inch municipal and industrial water supply intake. The three penstock intakes are equipped with temperature control shutters to conserve cold water in the reservoir. This cold water is later released to enhance the temperature conditions for the anadromous fish, such as salmon and steelhead, downstream of the dam. Steelhead in the American River were listed as threatened pursuant to the Federal Endangered Species Act on March 13, 1998. However, the M&I intake is located deep within the reservoir's cold water pool, has no temperature control device, and diverts significant amounts of cold water throughout the year. Diversion of this cold water without a temperature control device could adversely affect the threatened steelhead by reducing the amount of cold water available to enhance the downstream temperatures.

Question. What is the total estimated cost for this work and what is the basis of the estimate?

Answer. The total estimated cost for this work is $4.4 million based on a design that is 95 percent complete. This is an increase of $623,000 over the total cost shown in the Bureau's fiscal year 1999 Budget Justifications due to refined estimates reflecting the nearly-completed design.

Question. When is the work scheduled to start and be completed, and what are the major milestones for the project?

Answer. The design and specifications for the temperature control device are scheduled to be completed in June 1998 and a construction contract could be awarded by early fiscal year 1999, pending Congressional authorization. The major mile-

stones are: Contract Award—January 31, 1999; Complete Construction—December 31, 1999.

Question. Now, a similar project to construct a temperature control device at Shasta Dam experienced significant cost increases and extended delays due to changes in approach and scope. How certain is the Bureau of Reclamation in the costs and schedules supporting the funding request for Folsom Dam for fiscal year 1999, and that there will not be increases in costs and schedule delays similar to Shasta Dam?

Answer. The temperature control device on Shasta Dam was a much larger, more complex, and more expensive structure than the one for the water supply intake at Folsom Dam. By comparison, the fabrication and installation of the Folsom Dam temperature control device is fairly straightforward, and even if there were some delays, they should be in terms of days or weeks rather than months, and the cost overruns would be proportionally smaller, as well.

CALIFORNIA CENTRAL VALLEY PROJECT CVP—DELTA DIVISION

Question. Why does the request for the Suisun Marsh increase by more than three times from $500,000 in fiscal year 1998 to $1,909,000 in fiscal year 1999?

Answer. In the fiscal year 1998 Budget Justifications, the Delta Division carried a line item for Suisun Marsh Preservation which included what was the "historical construction" type of activities. Also in fiscal year 1998, the Miscellaneous Project Programs carried a separate line item for Suisun Marsh Preservation which included what was the "historical operation and maintenance" type of activities. The total fiscal year 1998 request for the two Suisun Marsh Preservation line items was $1,557,000. The Bureau decided that this activity should be presented in its entirety within one project. Therefore, fiscal year 1999 is the first year of displaying this activity as one line item within the Delta Division.

In order to meet water quality standards, an increase of funds is required for the next five years, beginning in fiscal year 1999, for management actions. As a result there is an increase of $352,000 in fiscal year 1999.

Question. Also explain the increase in the Administration and Compliance request for fiscal year 1999.

Answer. The increase in Administration and Compliance for the CVP, Delta Division was $1,048,000, up from $801,000 in the fiscal year 1998 Budget Justifications to $1,849,000 in fiscal year 1999. This is primarily due to a few new line items for water contracting and Delta-Mendota subsidence and groundwater monitoring; increases in water service contract renewals, water conservation, water quality marketing, and Delta water quality monitoring; but partially offset by decreases in the administration of water marketing and resource management.

Question. Reclamation plans to initiate implementation of the Conservation Plan in fiscal year 1999. Explain the scope and costs associated with this Plan.

Answer. The primary goal of the Conservation Program, developed and managed by Reclamation and the Fish and Wildlife Service, is to meet the needs, including habitat, of special-status species in the area affected by the Central Valley Project. The Delta Division addresses only that portion of the Program which resides within the Delta Division boundaries. The special-status species' needs which will be addressed by the Conservation Program which consists of primarily Federally-listed species. In addition, the program will benefit species that are candidates or are proposed species for Federal listing, as well as other species of concern that have high-priority biological needs. Proposed funding for the Program, for all of the Central Valley Project, is approximately $2.4 million per year for the first half of the projected 10-year period and decreasing amounts for the last five years, after the species' initial needs have been met.

Question. How long will it take to implement this Plan?

Answer. Implementation of this Plan is projected for a 10-year period.

Question. Why isn't this effort funded through the California Bay-Delta program?

Answer. The primary focus for this Program is upland terrestrial species and habitats, which are not being addressed by the CALFED Program. Additionally, the Program is targeting federally-listed and other special-status species throughout the area affected by the Central Valley Project, which is not the goal of CALFED. There may be some species and habitats of common interest to the Conservation Program and CALFED. Currently, there is close coordination and cooperation between the two Programs to prevent duplication of effort.

CVP—MISCELLANEOUS PROJECT PROGRAMS

Question. The budget request for fiscal year 1999 includes $3,500,000 under Miscellaneous Project Programs to "continue construction of refuge water supply con-

veyance systems", yet fiscal year 1998 justification material does not reflect a similar item. Explain this apparent discrepancy.

Answer. The fiscal year 1998 justification material contained a request of $8,553,000 for the Refuge Water Supply program. Because this amount included $4 million from the Central Valley Project Restoration Fund, the narrative for this work was included in the section for the Central Valley Project Restoration Fund. The remaining $4,553,000 was part of the $7,553,000 total shown on page 93 of the fiscal year 1998 Budget Justifications. In fiscal year 1999, no Central Valley Project Restoration Funds are allocated to the Refuge Water Supply program and the narrative is, therefore, included only in Water and Related Resources.

Question. How was this work started and where did the funds to start the work come from?

Answer. The Refuge Water Supply program was authorized by the Central Valley Project Improvement Act, Section 3406(d), Central Valley Refuges and Wildlife Habitat Areas. Work began in fiscal year 1994 with funding from the Central Valley Project Restoration Fund.

Question. What is the total estimated cost of the work?

Answer. The total estimated cost is $48,221,000.

Question. Why is it not appropriate to fund this activity in the CALFED program or through the Central Valley Project Restoration Fund?

Answer. The Refuge Water Supply program is specifically mandated by the CVPIA, and is funded through the Central Valley Project Restoration Fund and the Water and Related Resources appropriations. The focus of this program is on refuges in the Sacramento and San Joaquin Valleys and is directed at construction of conveyance facilities to meet refuge water supply requirements of the CVPIA. CALFED activity is authorized to receive Federal funding only for restoring the ecosystem in the Delta, and has no mandate to improve or enhance State and Federal refuges located elsewhere within California.

Question. What accounts for the Administrative and Compliance item increasing from $1,992,000 in fiscal year 1998 to $5,872,000 in fiscal year 1999?

Answer. The primary changes in the Administrative and Compliance items reflect changes in what work functions were included in fiscal year 1998 versus fiscal year 1999. Fiscal year 1998 was Reclamation's first year of presenting the Budget Justifications under the new Programmatic Budget Structure, and in fiscal year 1999 some items are being presented differently as we refine the definitions for consistency. The programmatic activity Water and Energy Development for fiscal year 1998 totaled $5,280,000, which compares favorably to the fiscal year 1999 request of $5,872,000.

The difference in the Administrative and Compliance subtotals reflects the exclusion in the fiscal year 1998 Budget Justifications of Water Conservation ($2,250,000), Modeling ($500,000), Monitoring ($338,000) and the California Water Augmentation Program ($200,000), which if included as they were in fiscal year 1999, would bring the total Compliance and Administration to $5,280,000.

CVP—SACRAMENTO RIVER DIVISION

Question. Explain why the budget justification for fiscal year 1999 shows an allocation of $9,690,241 for Fish and Wildlife Management and Development for fiscal year 1998, which the fiscal year 1998 budget justification only requested $6,860,000. Explain the reason for this change and where the additional funding came from.

Answer. The increase above the fiscal year 1998 request for Sacramento River Division's Fish and Wildlife Management and Development activity is the result of including $1,830,241 in fiscal year 1997 carryover and $1,000,000 in funding added by Congress. On page 113 of the fiscal year 1999 Budget Justifications, the carryover is subtracted from the this total, before calculating the "Total Reclamation Allotment." The funding added by Congress included $750,000 for the Colusa Basin Drainage District's Integrated Watershed Management Plan, and $250,000 for the Winter-Run Chinook Salmon Captive Broodstock Program.

Question. Describe the fish passage problems at Butte Creek and what work is proposed to correct the problem.

Answer. The principal fish passage problems on Butte Creek are marginal to inadequate ladders, unscreened diversions, and inadequate flows. The relative importance of these problems varies among stream segments. Improvements have been completed at Durham Mutual and Parrott-Phelan dams and Western Canal siphon. Other work proposed includes the removal of two dams immediately downstream of the siphon and the installation of new ladders on the stream immediately upstream of the siphon; the Adams Dam fish screen and ladder; and the Gorrill Dam fish screen and ladder. In addition, programs are also underway to identify problems

and restoration opportunities in the lower reach of Butte Creek and to explore the potential for establishing fish passage into uppermost Butte Creek.

Question. What is the estimated cost of the work and when will it be completed?

Answer. The total cost of improvements for Butte Creek as a whole is yet to be determined and is therefore speculative. The original estimate of $14.5 million is still plausible and may be funded by several private, state and Federal sources. Funding is contingent upon determination of eligibility under the CALFED processes. A completion date depends upon funding as determined in the CALFED process, but once funded, should be complete within 2–3 years.

Question. Why is the work being accomplished through Reclamation's Sacramento River Division and not through the CALFED program?

Answer. In the future, work on Butte Creek may indeed be eligible to compete for funding through the CALFED process. Funds requested for fiscal year 1999 would be used to facilitate the early development of plans for such work, regardless of how the implementation of these plans ultimately will be funded.

CVP—SAN JOAQUIN RIVER DIVISION

Question. Explain why Water Acquisition and Land Retirement funding is requested both through the general Reclamation request and through the Central Valley Restoration Fund.

Answer. The overall intent of the Central Valley Project Improvement Act is to protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins of California. CVPIA is implemented through the use of Water and Related Resources appropriations, State of California contributions and/or in-kind services, and Restoration Fund receipts from the water and power users of the Central Valley Project. All CVPIA activities, including water acquisition and land retirement, compete for the limited Water and Related Resource funds with all other Reclamation activities each fiscal year. Similarly, the CVPIA activities compete among themselves for Restoration Funds. This dual competition assures that the activities funded under both the comprehensive Regional program and the CVPIA restoration and mitigation program are of high priority. Water Acquisition and Land Retirement are significant activities within the Region and have been funded accordingly, using both Water and Related Resources as well as Restoration funds.

Question. Why does Reclamation's request for Land Retirement increase from $1,000,000 in fiscal year 1998 to $4,000,000 in fiscal year 1999?

Answer. In fiscal year 1998, the budget for the Land Retirement Program was $4 million, including $1 million from Water and Related Resources and $3 million in Restoration Funds. In fiscal year 1999, the request for the Land Retirement Program is $8 million, comprised of $4 million of Water and Related Resources appropriations and $4 million in Restoration Funds. The increase in funding for land retirement is in response to the current availability of willing sellers recently identified through a Request for Proposal process.

Question. Why isn't all work related to Water Acquisition and Land Retirement funded from the Central Valley Restoration Fund?

Answer. These are activities that we believe require more funding than is available solely through the CVPIA Restoration Fund. The water acquisition funding would be used to make water available for refuges and to meet other CVPIA objectives. Land retirement also is a high priority in the region.

KLAMATH PROJECT

Question. How much of the $2,287,000 requested for Klamath Project fish and wildlife activities is for the Wood River Ranch/Tulana Farms restoration project?

Answer. Of the $2,287,000 requested for Klamath Project fish and wildlife activities, $75,000 is for the Wood River Ranch/Tulana Farms restoration project.

Question. What is the total cost of this work expected to be and when will it be completed?

Answer. Reclamation has spent about $2.6 million to date and our remaining cost should be roughly $200,000. Our involvement is scheduled for completion in fiscal year 2001. There are a number of other Federal and non-Federal interests involved in this work. The total estimate for Wood River Ranch is about $5 million, and about $8.8 million for Tulana Farms restoration. We do not have a firm estimate as to when other parties will complete their work, but it will probably continue for over ten years.

Question. Is the work authorized?

Answer. Yes, the work is authorized under the authority of the Reclamation Act of 1902 and by the Endangered Species Act, the Fish and Wildlife Coordination Act,

the North American Waterfowl Conservation Act, and Executive Order 11910, Section 1(a).

SAN DIEGO AREA WATER RECLAMATION PROJECT

Question. Congress has provided nearly $30,000,000 for the San Diego Area Water Reclamation project through fiscal year 1998. The justification material for fiscal year 1998 indicated a $120,000,000 program between Federal appropriation and non-Federal funds. Now, the fiscal year 1999 justification material shows the total program for fiscal year 1998 to be $80,000,000 and sizable delays on most of the elements of the overall project.

Please explain the reasons for these changes and delays?

Answer. The construction schedules for the San Diego Area Water Reclamation Project, upon which Reclamation's budget request is based, are provided by the project sponsors. The information shown in the fiscal year 1998 Budget Justifications material was based on optimistic schedules for several components. The information on fiscal year 1998 that is shown in the fiscal year 1999 Budget Justifications document is thought to be more realistic. Most of the $40 million difference is due to slippages of five component projects. The San Diego Water Repurification Project was delayed 1 year due to additional studies that are being required by regulators and health officials, who are being very conservative with this project that will convert wastewater to potable water. Three components of the San Diego Area Water Reclamation Project (North City Water Reclamation Plant Demineralization, Sweetwater Authority, and Tijuana River Basin) were delayed due to lack of permits and/or delays in designs. Another component of the San Diego Area Water Reclamation Project (Southern Distribution System) was delayed because the schedule in the fiscal year 1998 Budget Justifications document was not realistic.

Although the fiscal year 1999 Budget Justifications document indicates that three of the four components have had their completion dates delayed by 1 or 2 years, Reclamation does not consider the delays to be "sizeable." The completion date for the Escondido component was delayed 2 years because the City of San Diego decided to completely reformulate the San Pasqual portion of this project. The Padre Dam Municipal Water District Reclamation Project was delayed one year due to the District's decision to revise its schedule for Phase II. Phase I will be complete in fiscal year 1998.

Even with all of the above changes and delays, the fiscal year 1998 appropriation and the fiscal year 1999 budget request for the San Diego Area Water Reclamation Project will not be sufficient to keep up with the Federal cost-sharing of up to 25 percent.

Question. What level of funding was available for use in fiscal year 1997 and how was it actually spent on the project during that year?

Answer. In fiscal year 1997, Federal funds available for expenditure totaled $10,956,229 and actual expenditures were $10,813,523. Major expenditures were $5.8 million for the City of San Diego's North/Central Distribution System, $3.6 million for the Padre Dam Municipal Water District, $0.7 million for the City of Escondido, $0.3 million for the City of San Diego's Water Repurification Project, $0.2 million for the Sweetwater Authority, and $0.1 million for the Tijuana Valley County Water District.

Question. How much was available for fiscal year 1998, how will it be spent, and how much is expected to be carried over into fiscal year 1999?

Answer. In fiscal year 1998, Federal funds available total $12,622,706. Major expenditures include $5.1 million for the City of San Diego's North/Central Distribution System, $1.7 million for the Padre Dam Municipal Water District, $1.4 million for the Sweetwater Authority, $1.2 million for the City of Escondido, $1.1 million for the City of San Diego's North City Water Reclamation Plant Demineralization Facility, $0.8 million for the City of San Diego's Water Repurification Project, $0.7 million for the Otay Water District, $0.2 million for the City of San Diego's San Pasqual Project, and $0.1 million for the Tijuana Valley County Water District, for a total of $12.3 million. Approximately $0.1 million is for administrative costs. Carryover into fiscal year 1999 is expected to be minimal, similar to the previous years.

Question. Has any project or element of a project been canceled or deferred in fiscal year 1997, or expected to be canceled or deferred in fiscal year 1998? If so, explain why and the impact this will have on Reclamation's use of available funding.

Answer. No projects or elements of projects have been canceled or deferred in fiscal year 1997, nor are any expected to be canceled or deferred in fiscal year 1998.

Question. Is there any reason, at this point, why the fiscal year 1999 request will not be spent as planned on any project or element of a project?

Answer. At this time we know of no reason why the fiscal year 1999 request would not be spent as planned.

SAN GABRIEL BASIN PROJECT

Question. What accounts for the 3 year delay on the San Gabriel Basin Demonstration project? Explain, specifically what is meant by "as a result of negotiations with the potential responsible parties", which is given as the reason of the delay.

Answer. The San Gabriel Basin Demonstration Project, authorized by Section 1614 of Public Law 102–575, is a conjunctive-use project that will improve the quality of the groundwater in the San Gabriel Basin. The Basin has been included on the Environmental Protection Agency's list of Superfund sites, and the entities that are believed responsible for the contamination have been identified as potentially responsible parties. Reclamation is authorized to provide up to 25 percent of the costs of this project, and the potentially responsible parties are responsible for the remainder of the costs. The San Gabriel Basin Water Quality Authority has been facilitating the overall project coordination, with the goal of completing the project without any litigation. This requires several concurrent, complex negotiations involving the potentially responsible parties, Environmental Protection Agency, numerous local water agencies, and state and local regulators. These negotiations have taken much more time than had been originally projected by the San Gabriel Basin Water Quality Authority. Reclamation is not a party to these negotiations and thus has little control over the process.

Question. Is there anything associated with these delays which has impacted or will impact the use of the funding provided for fiscal year 1998 or requested for fiscal year 1999?

Answer. The delays have impacted the use of funding provided for fiscal year 1998. In addition, the recent discovery of perchlorates in the groundwater will result in further delays due to the lack of an existing process for perchlorate removal. However, it is anticipated that these problems will be resolved so that most of the funds available in fiscal year 1998 will be obligated. All funds available and requested for fiscal year 1999 should be expended by the end of fiscal year 1999.

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM

Question. Explain why the non-Federal cost sharing for the Platte River Recovery Implementation Program has still not been determined.

Answer. The non-Federal share for the proposed Platte River Recovery Implementation Program was framed in the Cooperative Agreement signed by the Secretary of the Interior and the Governors of Wyoming, Nebraska and Colorado on July 1, 1997. The total costs including the first increment of the proposed program (10–12 years) is $75 million. Through this first increment, the states contribution will be as follows: Wyoming, $7.5 million; Nebraska, $15 million; and Colorado, $15 million. The Cooperative Agreement will be in place for three years, during which time a final consensus-based program will be developed.

Question. When will the cost sharing agreement be finalized and non-Federal funds contributed to the recovery program?

Answer. As mentioned previously, the proposed Platte River Recovery Implementation Program is a key part of the cooperative Agreement that was signed on July 1, 1997. During the three years of the Cooperative Agreement, the three states have committed to providing a total of $7.5 million in cash and cash equivalents; Nebraska—$6,000,000, Colorado—$900,000, and Wyoming—$600,000, in fiscal years 1998, 1999, and 2000 to fund implementation of the Agreement. Each state legislature is in the process now of authorizing state funds for the next one or two fiscal years. In fiscal year 1998, the states will be providing the entire funding for the first year of a three-year, $900,000 study for water conservation and supply augmentation opportunities. The states will also be providing $100,000 this year to support the hiring of an Executive Director for the Governance Committee. In addition, as part of its cost-share, Nebraska has set aside land owned by the Nebraska Public Power District valued at $5,300,000 for use as endangered species habitat. This amount is included in Nebraska's $6,000,000 contribution.

Question. Why should the Federal government, which will have allocated $10,000,000 by the end of fiscal year 1999, continue to provide funding in advance of the State or other non-Federal interest providing their portion or project costs?

Answer. The Federal government will have appropriated $7,500,000 by the end of fiscal year 1999. The cost-sharing agreed to by the states for the three-year period of the Cooperative Agreement, the funding being provided by the states in this first year, and the cost-share formula developed for the proposed program are evidence

of the states' commitment to share the financial cost of the proposed Platte River Recovery Implementation Program.

ROCKY BOYS INDIAN WATER RIGHTS SETTLEMENT

Question. Is use of the $1,000,000 budget request for fiscal year 1999 contingent upon enactment of authorizing legislation?

Answer. The entire amount requested for fiscal year 1999 could be used for prefeasibility studies of water resources in North Central Montana, under authority in the Reclamation Act of 1902. If authorizing legislation is enacted as anticipated, Reclamation would provide $500,000 of the amount requested in fiscal year 1999 to the Chippewa-Cree Tribe for a feasibility study of an additional MR&I water supply for the Rocky Boys Reservation, as provided in S. 1899.

Question. What is the total cost of the settlement agreement expected to be?

Answer. The total cost is expected to be about $50 million, of which $29 million would be funded through Reclamation and $21 million through the Bureau of Indian Affairs. Of the $29 million funded through Reclamation, $24 million would be for specified on-reservation construction projects to enhance water storage and enable full use of on-reservation water supplies, and $5 million will be for feasibility studies and project administration. Of the $21 million funded through the Bureau of Indian Affairs, $15 million would be the Federal contribution towards future construction of an imported drinking water supply, $3 million for an economic development fund, and $3 million to pay for compact administration.

Question. What specifically will be Reclamation's responsibilities under the settlement and what are the associated costs for Reclamation's work?

Answer. Under S. 1899, Reclamation would be responsible for:

(1) Contracting with the tribe for the Rocky Boys municipal, rural, and industrial feasibility study; $500,000 in fiscal year 1999 and $500,000 in fiscal year 2000;

(2) Contracting with the Tribe for the planning, design, and construction of four identified on-reservation water resource development projects; $13 million in fiscal year 2000, $8 million in fiscal year 2001, and $3 million in fiscal year 2002;

(3) Providing engineering and construction oversight for items 1 and 2; $1 million in fiscal year 2000; and

(4) Completing a Regional Feasibility Study to evaluate water and related resources in north-central Montana; $500,000 in fiscal year 1999 and $2.5 million in fiscal year 2000.

Question. What is the 5-year funding profile for Reclamation's work, including the initial studies which are beginning in fiscal year 1999?

Answer. This would be the total funding through Reclamation:

[In millions of dollars]

Fiscal year	
1999	1
2000	17
2001	8
2002	3
2003	.....

ENVIRONMENTAL PROGRAM ADMINISTRATION

Question. The budget request includes nearly $2,000,000 for Environmental Program Administration.

Why isn't this work, which is described as "assessment, evaluation, study, * * * to ensure compliance with environmental law, policy, and initiatives" conducted either under individual projects or under Policy and Administration?

Answer. In all cases of Bureauwide programs, such as the Environmental Program Administration, we review the site specific work plans and determine whether or not the work is within an individual project's boundaries. We routinely budget such work under those projects where Reclamation is currently operating or maintaining the project. The work funded by this program is either related to projects that are not operated by Reclamation, or to issues such as land withdrawn for Reclamation purposes and not assigned to a specific project. The Policy and Administration appropriation was not meant to provide the funding for specific, day-to-day activities, such as site assessments for environmental compliance.

Question. The Description/Justification does not indicate activities of an operational nature, yet a portion of the $964,000 request for fiscal year 1999 for Land Management and Development is for operational work. Please explain this and why the work is not accomplished under individual projects.

Answer. All of this work is for cultural resource activities necessary to identify and protect sites on Reclamation withdrawn land. None of this land is associated with projects currently operated or maintained by Reclamation. The National Historic Preservation Act and the Archaeological Resources Protection Act, among others, require Reclamation to protect these resources when they are present on Reclamation-controlled land not associated with a project. It should also be noted that none of these costs would be reimbursable by project users.

NATIVE AMERICAN AFFAIRS PROGRAM

Question. The total program for the Native American Affairs Program increases from $10,000,000 in fiscal year 1998 to $13,900,000 in fiscal year 1999. What accounts for this increase?

Answer. The Turtle Mountain Tribe has obtained a USDA Rural Development Administration loan in the amount of $3,000,000 which is shown on our budget reports as an "Other Federal" contribution. This amount is not a Reclamation request for additional funds. A planned expenditure of $150,000 for fiscal year 1999 for the Turtle Mountain Reservation MR&I needs assessment will be made from the Native American Affairs program. This is the only amount included in the fiscal year 1999 budget request. This MR&I needs assessment is only a portion of a larger reservation wide water system project planned on the reservation. Both the Indian Health Service and the Bureau of Indian Affairs are cooperating and providing data to this study. The Tribe will provide in-kind services through staff time and facilities. The remaining $900,000 increase is due to the following:

The $423,000 increase in the Great Plains Region will be used for water needs assessment studies and other water resources related projects.

An additional $210,000 is requested for water needs assessments and other water resources related projects on Indian reservations in other regions.

The $267,000 increase in the Commissioner's Office Technical Assistance Program will be used in support of special needs not funded in the Regional Technical Assistance portion of the program, such as emergency technical assistance to tribes, additional work in support of Indian colleges, and other training programs to be used throughout Reclamation, such as protocol policy, cultural awareness, and Indian Self-Determination and Education Assistance Act, as amended, Public Law 93–638.

Question. The total program costs are to be offset by nearly $5,000,000 of other funds in fiscal year 1999. This offset was only $1,700,000 in fiscal year 1998. What is the basis of the estimate of other funding and how certain is Reclamation that these funds will be provided? What would be the impact if these funds are not available as planned?

Answer. The non-Federal and other Federal funding is identified by the tribes when the work proposals for technical assistance projects are developed and submitted to the Regional Native American Affairs Program Managers. In the past, the estimated non-Federal and other Federal funding have been reasonably accurate.

The MR&I work proposed by Reclamation in fiscal year 1999 on Turtle Mountain Indian Reservation is planned to be accomplished regardless of whether or not the $3,000,000 in other Federal dollars are provided.

Question. Why does the technical assistance program increase from $5,900,000 in fiscal year 1998 to $10,200,000 in fiscal year 1999?

Answer. As stated above, most of this increase is due to an anticipated loan in the amount of $3,000,000 to the Turtle Mountain Tribe from the Rural Development Administration. The estimated fiscal year 1999 cost of the Reclamation needs assessment is $150,000. The remaining $1,300,000 increase is due to the following:

Additional funds in the Regional Technical Assistance Program will be used for water needs assessments and other water resources related projects.

Additional funds in the Commissioner's Office Technical Assistance Program will be used in support of special needs not funded in the Regional Technical Assistance portion of the program, such as emergency technical assistance to tribes and additional work in support of Indian colleges and other training programs to be used throughout Reclamation, such as protocol policy, cultural awareness, and Indian Self-Determination and Education Assistance Act, as amended, Public Law 93–638.

Question. Explain why the funding level for the Commissioner's Office increases from $869,000 to $1,136,000; and the Great Plains request increases from $1,354,000 to $4,777,000 in fiscal year 1999.

Answer. The increase of $3,423,000 in the Great Plains Region is due to a $3,000,000 loan from the Rural Development Administration to the Turtle Mountain Indian Reservation. The other $423,000 is due to increased water needs assessment studies and other water resources related projects on Indian reservations.

The Commissioner's Office technical assistance program for fiscal year 1999 was increased to provide funding at about the level that was available in fiscal year 1998 taking into account the appropriated funds and the unobligated carryover funds from fiscal year 1997. The current funding level for fiscal year 1998 is $1,284,000. The fiscal year 1997 carryover funds enabled projects to be added in fiscal year 1998, such as special projects for the Pyramid Lake Indian Reservation and the Hoopa Tribe and work with Indian colleges in support of Executive Order 13021.

SITE SECURITY

Question. The budget request for fiscal year 1998 included $5,000,000 for the Site Security Program and that full amount was appropriated by the Congress. However, an additional $2,834,000 of prior year funding was applied for a total program of $7,834,000. Why was the program changed from that presented to Congress in the fiscal year 1998 budget request, how was the additional funding used, and where did those funds come from?

Answer. This program was not changed from that presented to Congress in the fiscal year 1998 budget request. There was $5,100,000 appropriated for Site Security in fiscal year 1997 to do facility assessments, security training programs and enhance security measures at our facilities. Some of these activities did not get underway until late in the year and were not completed by the end of the fiscal year, which extended the activities into fiscal year 1998. The remaining $2,834,000 of the $5,100,000 was carried over into fiscal year 1998 for the completion of facility assessments and other security-related activities. The $5,000,000 requested in fiscal year 1999 will be used for the implementation of the recommendations from the security assessments.

UNSCHEDULED MAINTENANCE

Question. The budget request includes $1,500,000 for unspecified, unscheduled maintenance needs.

Explain the need for this type of an appropriation and why it is unrealistic for the Bureau to reprioritize within existing resources when unscheduled maintenance needs arise.

Answer. As Reclamation's infrastructure continues to age, it becomes more difficult to predict all maintenance needs with certainty at the time the budget is developed. The "Unscheduled Maintenance" addresses the need to respond to these unforeseen critical budget needs without major impacts to other programs.

Question. Can you give the Committee an example of how not having this type of funding has impacted your operations and why Reclamation was unable to reorder priorities to free up resources to accomplish the work?

Answer. No. However, we believe that the availability of these funds will better assist us in meeting the demands created by an aging infrastructure and improve our ability to respond quickly to the situation. Reclamation wants to make sure that funding is available to address these demands so as to minimize any impacts to the public, personnel safety and health, and disruption in the delivery of service.

CENTRAL ARIZONA PROJECT

Question. What is the current status of litigation between the United States and the Central Arizona Water Conservation District regarding repayment obligations for the Central Arizona Project?

Answer. The discovery phase of the litigation has been completed and the United States District Court has ordered a trial phasing plan to be jointly presented by the parties to the court by April 20, 1998. No trial date has been set. Settlement discussions between the United States and the Central Arizona Water Conservation District have been ongoing and a preliminary framework for settlement of the financial issues has been developed. State and water user interests have expressed concern to the Central Arizona Water Conservation District Board of Directors regarding this framework.

Question. What are the potential budgetary impacts if the government loses this litigation?

Answer. There are several aspects of the litigation related to the repayment obligation of the Central Arizona Project. If a court were to rule against the United States in the litigation, the size of the repayment obligation owed to the United States could be impacted. Because of the complexity and number of the issues involved, it is not possible to speculate on the potential impact that court rulings might have on the repayment obligation.

In addition, it is possible that the United States would have to appropriate money to cover its litigation costs, which are currently funded from project revenues, as well as the litigation costs of the Central Arizona Water Conservation District.

WESTERN WATER POLICY REVIEW COMMISSION

Question. What is the current status of the Western Water Policy Review Commission and the final report of the Commission?

Answer. The Western Water Policy Review Advisory Commission completed its final draft report in October 1997. The Commission chose to extend its schedule to allow for two months of public review and comment on the report, and to make revisions to the report based upon the comments received. The report was revised and adopted at the Commission's final meeting in February 1998. At present, final editing and preparation for publication are underway. The report is currently scheduled to be published for public distribution by June 1, 1998.

Question. What activities are planned for the remainder of fiscal year 1998 and fiscal year 1999?

Answer. Except for the final publication of the report, no additional Commission activities are anticipated.

TITLE XVI WATER RECLAMATION AND RECYCLING PROJECTS

Question. How many projects are currently under construction and what is the total cost of those projects?

Answer. There are four projects authorized in 1992 under Title XVI of Public Law 102–575 that are currently under construction. The total estimated cost to construct these four projects is $1,603,559,000, of which the Federal cost-share is limited to not more than $390,609,000. In addition, four projects authorized in Public Law 104–266, which amended Title XVI, and a desalination demonstration project are currently under construction or are expected to be under construction in the very near future. Based on the limited project information available at this time, the total estimated cost to construct these new projects is $115,413,000, of which the Federal cost-share is limited to not more than $37,222,300.

Question. The budget request identifies $4,700,000 in funding for initiating new Title XVI projects in fiscal year 1999, in addition to the $1,000,000 budgeted for initiation of the Orange County, California water recycling project. How does the Bureau of Reclamation plan to allocate the $4,700,000 by individual project?

Answer. Reclamation proposes to allocate the $4.7 million as follows:

North San Diego County Area Water Recycling Project	$1,300,000
Calleguas Municipal Water District Recycling Project	1,300,000
Long Beach/Los Angeles County Water Recycling Project	1,300,000
Tooele Wastewater Treatment and Reuse Project	800,000
Total	4,700,000

Of the $4.7 million in construction funds proposed for the four projects, Reclamation intends to complete certain Title XVI requirements, such as complete and/or assess feasibility studies, determine financial capability of project sponsors, prepare and process environmental compliance documents under the National Environmental Policy Act, and prepare construction cost-sharing agreements for the North San Diego County Area, Calleguas Municipal Water District, and Long Beach/Los Angeles County water recycling projects in southern California. Reclamation will also continue funding and administration of the Tooele Wastewater Treatment and Reuse Project in Utah.

Question. What is the estimated total costs of these projects and what would be the total Federal commitment?

Answer. The total estimated cost of these five projects, including Orange County, is $609,483,100. The estimated maximum Federal cost-share is $76,733,300.

Question. Have there been any delays on any of the Title XVI projects funded for the current fiscal year which have resulted in a reduced ability to fully utilize the funding provided for fiscal year 1998. If there have been delays, provide a description of the delay and how much of funding will not be used in fiscal year 1998 and carried over into fiscal year 1999.

Answer. To the best of our knowledge, while there have been some delays, these should not reduce our ability to obligate the funds provided for these projects in fiscal year 1998.

QUESTION SUBMITTED BY SENATOR BENNETT

TOOELE WASTEWATER TREATMENT AND REUSE PROJECT

Question. Commissioner Martinez, Congress last year appropriated $500,000 for the construction of the Tooele Wastewater Treatment and Reuse Project pursuant to the Bureau of Reclamation's Title XVI program. I recently wrote to you regarding the delay the City of Tooele has experienced in receiving these funds from the Bureau and I appreciated your prompt response to that letter which answered several of the questions that have troubled me. However, I am particularly concerned by one aspect of your response and would like to explore further with you now if I might.

Your letter indicates that the Bureau has unilaterally decided to withhold appropriated funds from projects or portions of projects that are required to meet water quality discharge standards under the Clean Water Act. I am not aware of any limitation in TITLE XVI generally or in the specific authorization for the Tooele project which would authorize the Bureau to withhold appropriated funds on that basis. I am very concerned that your position discriminates against water reuse projects being developed in states like Utah, which allow for direct use of secondary effluent. It seems to me that Congress and this Committee have the ultimate say over which of these projects receive appropriated funds. For the Bureau to withhold any of those appropriated funds for reasons not clearly established by statute is, it seems to me, inappropriate and possibly illegal.

I would appreciate it if you would explain to the Committee your position on this matter and what the statutory basis for that position might be. Thank you.

Answer. In reviewing the Bureau of Reclamation's program authority, we believe that Congress has not spoken to the issue of providing Title XVI funds for conventional wastewater treatment facilities. On the other hand, Congress has specifically spoken to the issue of funding construction projects to meet effluent discharge requirements in the Clean Water Act. Title 33 of the United States Code, Section 1381 provides that "the Administrator [of the Environmental Protection Agency] shall make capitalization grants * * * for providing assistance for the construction of treatment works." Thus, in light of this direct Congressional directive to the Environmental Protection Agency, we feel that allocating Title XVI funds for portions of projects other than those that are designed to meet Clean Water Act standards is a reasonable interpretation of our Title XVI authority.

We believe this approach is appropriate because in situations such as this, where Congress has authorized a program without addressing specific operational aspects, the administering agency is authorized to develop and implement policies on matters Congress has not addressed. This understanding of agency discretion has been recognized by the United States Supreme Court in *Natural Resources Defense Council* v. *Chevron,* 467 U.S. 837 (1984) and *Morton* v. *Ruiz,* 415 U.S. 199 (1974).

QUESTIONS SUBMITTED BY SENATOR BURNS

ELEPHANT BUTTE PROJECT, NEW MEXICO-TEXAS

Question. It is my understanding that states still own the water in their states, yet I recently heard that your agency has decided to change that.

The Bureau of Reclamation recently filed a quiet title suit in Federal court related to the Elephant Butte project in New Mexico and Texas. In that suit, the Bureau asserts that they not only own the water rights associated with this project, they also assert that they are sovereign owner of waters flowing in the Rio Grande in both Texas and New Mexico. Is this correct?

Answer. No, that is not correct. The United States filed a civil action to quiet title in its water rights for the Rio Grande Reclamation Project in June 1997. The project was authorized in 1905 and covers the headwaters of Elephant Butte Reservoir in New Mexico to Fort Quitman in Texas. In operating the project for the purposes authorized by Congress, the United States relies upon the water stored in Rio Grande Project facilities, return flows, and inflows to the Rio Grande in both New Mexico and Texas. When water stored in Elephant Butte Reservoir is released, it is intermingled with project return flows and with inflows to the Rio Grande. These intermingled sources of water are then diverted for use in New Mexico, Texas, and Mexico. These sources together enable the United States to meet its Rio Grande Project delivery requirements of approximately 931,841 acre-feet per annum under normal conditions, including the United States' treaty obligation to Mexico. In January 1906, the United States filed notice with the New Mexico Territorial Irrigation Engineer notice of its appropriation of water for the Rio Grande Project, in accordance

with Section 8 of the Reclamation Act of 1902. Thus, the United States' claim to ownership was acquired through appropriation, filed in conformity with the laws of the then Territory of New Mexico, and with the exception of the water for Mexico, not as a consequence of the sovereignty of the United States. The operation of the Rio Grande Project is further subject to the requirements of the Rio Grande Compact of 1939 between the United States, Colorado, New Mexico, and Texas.

Reclamation's position in the lawsuit is that the United States is the legal title holder of the water rights appropriated for the Rio Grande Project, subject to the rights of the Water District and the beneficial owners. The rights to the use of the water subject to such appropriation are appurtenant to the project. The users of such water own a beneficial property interest, provided that they use it consistent with the terms of their contracts and applicable law.

CVPIA

Question. The Central Valley Project Improvement Act (CVPIA) requires the Department of the Interior to submit an annual report to Congress describing actions and costs associated with implementing the law as well as progress made toward achieving the Act's purpose. The CVPIA was passed in 1992. To date, it appears that the Department has submitted only ONE annual report. Yet, you are once again requesting substantial sums to carry out the CVPIA. Why has the Department failed to fulfill its legal responsibility to report to Congress on how these funds are being spent?

Answer. Section 3407(f) of the CVPIA requires the Secretary to submit annually a Restoration Fund Financial Report describing all receipts to and use of Restoration Funds and the Restoration Account during the prior fiscal year. The report must also include projections for the upcoming fiscal year as to expected receipts and uses. The first three Restoration Fund Financial Reports have been submitted to Congress.

Section 3408(f) requires the Secretary to submit annually a report describing all significant actions taken by the Secretary to implement the provisions of the CVPIA. The first and second Annual Reports on CVPIA implementation have been submitted to Congress. The third Annual Report is finalized and expected to be submitted to Congress shortly. The fourth and fifth Annual Reports are in the review process and will be sent to Congress once they are finalized.

Question. Last year, the Committee directed the Bureau to undertake certain actions regarding operations and maintenance (O&M) budgeting for its projects. The Committee was acting in response to allegations about excessive overhead, poor accounting practices and lack of involvement on the part of project users. Please tell us what you have done to carry out these directives?

Answer. In regard to overhead costs, Reclamation is in the process of finalizing the report requested by Congress in the committee reports last year. With respect to involvement of users in the development of our budget requests, Reclamation is evaluating opportunities for increased stakeholder involvement in the development of our fiscal year 2001 budget. Reclamation does not believe that poor accounting practices were an issue.

Question. Has the Bureau identified specific problems with its O&M budgeting and management? If so, what are they and how do you plan to remedy them?

Answer. No. Reclamation is unaware of any specific problems related to O&M budgeting and management. However, we are working to identify additional opportunities for stakeholder involvement in our budget formulation process.

Question. Will the survey of O&M costs result in lower overhead charges? If so, to what extent can this reduction be attributed to reclassification of charges as something other than overhead?

Answer. In developing a methodology to prepare the report, Reclamation sought expert advice on the definition of overhead and learned that there is no widely agreed upon definition and that overhead legitimately can be defined in a number of different ways. The report will show as overhead the same sources of costs which Reclamation has long treated as overhead. Reclamation believes that total cost is ultimately the area of greatest interest to the stakeholders. However labeled, we are always interested in working with others in finding ways to reduce costs for stakeholders and taxpayers as long as appropriate levels of operation and maintenance are achieved and public health and safety are not compromised.

Question. Has the Bureau identified opportunities for genuine savings in its O&M management? If so, please explain how you plan to realize those savings.

Answer. Reclamation has streamlined all of its administrative support activities and reduced the number of managers. Genuine cost-saving opportunities are always of interest to Reclamation. While we have not identified additional opportunities

specific to "O&M management" at this time, we welcome any cost-savings suggestions from our contractors or other stakeholders.

Question. The Committee directed the Bureau to reexamine its policy of attributing payments for Central Valley Project O&M deficits to the lowest interest bearing debts first. This policy seems to be intended to generate increased benefits or services to the contractors. Has the Bureau's reexamination of this policy considered the issue of fairness? If not, why?

Answer. Reclamation is analyzing the current policy, including the issue of fairness.

Question. The Bureau's fiscal year 2000 budget cycle is about to get underway. What specific steps have you taken to include water and power users in the formation of the fiscal year 2000 O&M budget submissions?

Answer. Reclamation's preparation of its fiscal year 2000 budget proposal is, in fact, nearing completion. Each region has involved water and power users in the development of the fiscal year 2000 budget submission, but not to the degree and depth as requested by some users. We intend to provide additional opportunities for stakeholder involvement in the preparation of our fiscal year 2001 budget as the next budget cycle gets underway.

QUESTIONS SUBMITTED BY SENATOR REID

ROLE OF BUREAU OF RECLAMATION

Question. There has been some speculation about the distinction between the Corps of Engineers and the Bureau of Reclamation. Could you discuss the role that you see for the Bureau of Reclamation in the future and reconcile that role with the decreased budget that was proposed by the Administration?

Answer. The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

In 1902, President Theodore Roosevelt indicated that a key element to initiate Western growth and development was the reclamation of the arid West by constructing a system of irrigation works for the storage, diversion, and development of water. Since then, the Federal Reclamation program has expanded to include a variety of non-irrigation project purposes such as authorization to provide water for towns, for hydropower, to construct multipurpose projects, and to participate in municipal and industrial water supply projects.

As Reclamation's authorities have expanded, so have Congressional environmental mandates such as the National Environmental Policy Act in 1969 and the Endangered Species Act in 1973. In 1992, the Reclamation Project Authorization and Adjustment Act (Public Law 102–575) authorized Reclamation to undertake a number of new initiatives that reflected the view that further water resources development must address environmental concerns and be economically justified, such as Water Reclamation and Reuse. Changing societal values, greater environmental knowledge and awareness, increased competition for a scarce and finite resource, and Federal budgetary constraints have dictated the improved management and protection of existing facilities and our natural resources. Subsequent actions by Congress have been consistent with this view of Reclamation's program priorities.

Furthermore, Reclamation supports this Administration's commitment to meet Indian Tribe's needs for water and related resources. Even as we approach the 21st Century, many Indian reservations have not benefited from the water infrastructure that has been developed in the West; therefore, there remains a substantial need on Indian reservations to be addressed. Reclamation is uniquely and properly situated to assist in meeting that need.

As Reclamation shifts its focus toward the broader issues associated with water resources management, there is a decline in new construction projects. Furthermore, ongoing construction programs and contracts have either been completed or are nearing full performance. Specific examples of such projects include the Umatilla Basin Project in Oregon, the Dolores Project in Colorado, Belle Fourche Unit of the Pick-Sloan Missouri Basin Project in South Dakota, the Brantley Project in New Mexico, and two Water Reclamation and Reuse projects—Port Hueneme Brackish Water in California and Northwest El Paso Wastewater in Texas. In addition, several studies and investigations have been completed. As in every budget year, overall budgetary constraints impact the Bureau of Reclamation's as well as other agencies' requests.

EFFECTS OF EL NIÑO

Question. Commissioner Martinez, in your statement you focused on the effects of El Niño. Doesn't a decrease of $27 million in Water and Related Resources from the fiscal year 1998 level of $693 million impair the Bureau's ability to respond to the needs of the western states hit hardest by the harsh weather patterns?

Answer. When the fiscal year 1999 budget documents were prepared, the effects of the El Niño-related damage were not fully known. Since the submission of the budget, an assessment has been made of the current effects upon the Reclamation program. To assist in repairing the damage to Reclamation projects, a request for additional funds was made by the President for supplemental appropriations for fiscal year 1998. The reduction in the request for fiscal year 1999 is primarily due to a one year drop in the safety of dams work, as several large safety of dams repair projects are nearing completion.

CALIFORNIA BAY-DELTA ECOSYSTEM RESTORATION

Question. It has come to my attention that other federal agencies with whom you coordinate projects are complaining that they are not getting their fair share of the funds appropriated to the CALFED Bay Delta project within the Bureau. Could you explain the process by which those funds are allocated?

Answer. CALFED has developed a comprehensive process for ecosystem restoration project selection. The process is the same for every applicant whether or not the applicant is a Federal agency. In the project selection process, CALFED agencies, with assistance from stakeholder groups—the Bay-Delta Advisory Council and its subgroup called the Ecosystem Roundtable—first identify priorities for what are called stressors and the various species concerns. The dialogue begins with the Ecosystem Roundtable which provides the forum for open debate by all interested parties in determining the priorities for the available funding.

Two funding processes are utilized by CALFED for project or program selection. One is the public solicitation process and the second is the directed programs process. Under the public solicitation process, CALFED agencies will identify specific stressors that they would like to address and request proposals from the general public. Proposals would be accepted from Federal, state, and local governments, water users, agricultural concerns, environmental concerns, and non-profit organizations such as universities. Anyone who has a good idea that would specifically meet the goals described in the solicitation package will compete with all other applicants. Under the directed programs approach, CALFED participants—CALFED agencies, CALFED program staff, or even the stakeholder community—might suggest a specific project be funded. This approach would be utilized to address "gaps" that have occurred in the public solicitation process—areas of concern that require action, but perhaps the public solicitation applicants did not provide projects that address these concerns.

In either case, proposals are referred to the Ecosystem Roundtable for their evaluation and suggestions. The Ecosystem Roundtable created a Technical Review Panel to review proposals to determine that goals identified in the public solicitation are met and to rank the proposals based on the selection criteria established at the time of the solicitation. The Technical Review Panel forwards their suggestions to the Ecosystem Roundtable for their consideration.

The Ecosystem Roundtable includes representatives of 20 to 24 stakeholder groups. Membership is not closed. Stakeholder involvement is a necessary ingredient in the success of the CALFED program. Therefore, as stakeholders become engaged, they are welcome to join the group. Representation on the Ecosystem Roundtable is primarily made up of interest groups—water users, environmental groups, urban representatives, and several Federal agencies.

The Ecosystem Roundtable refers a list of proposals to an Integration Panel. The Integration Panel consists of technical experts in various disciplines such as fishery biologists, wildlife biologists, chemists for water quality issues, and such. Membership includes Federal and state agency personnel, but it is not limited to government representation. Experts from the private sector are also included. The Integration Panel reviews proposals to determine if, overall, the projects selected fit together to meet CALFED goals. They also look at compatibility with existing programs to make sure that all our programs complement each other in order to maximize benefits. The Integration Panel provides recommendations to the Ecosystem Roundtable for final review and discussion.

The list of recommended proposals, along with the advice from the Ecosystem Roundtable is forwarded to Bay-Delta Advisory Council for its advice. After review and recommendation by the Bay-Delta Advisory Council, recommended proposals are filtered through another review process—the CALFED Management Team. The

Management Team is represented by Federal and state agency directors or managers and other more technical agency staff. The Management Team provides recommendations to the CALFED Policy Team.

The CALFED Policy Team includes representatives of the Secretary of the Interior and the state's Secretary for Resources and policy level representatives from both state and Federal participating CALFED agencies. After the CALFED Policy Team prepares the final list of recommended actions, they forward the list of programs and specific projects to the Secretary of the Interior for final approval of proposed expenditures from the Federal Bay-Delta Ecosystem Restoration Appropriation or the California Resources Secretary for final approval of proposed expenditures from Proposition 204 funds.

QUESTIONS SUBMITTED BY SENATOR DORGAN

GARRISON DIVERSION UNIT

Question. The Garrison Diversion Project is the key to water development in North Dakota and water development is the key to economic development in our semi-arid state. Can you tell the Committee how this year's budget request will help North Dakota advance water development? I hope the Bureau would support adding additional resources for this critical project since the budget request is about $5 million less than last year's appropriation level. Funding in the range of $31 million would more closely reflect our priority needs for water development.

Answer. The Garrison Diversion Unit's fiscal year 1999 budget request will be used to advance project water development in the following major areas (Water and Energy Management and Development):

[In millions of dollars]

Development of irrigation facilities on the Standing Rock Reservation.	2.9
Federal cost-sharing for municipal, rural, and industrial projects around the State of North Dakota	8.6
Continued maintenance of completed facilities.	2.5
Continued construction of mitigation and enhancement features at Audubon and Arrowwood National Wildlife Refuges, including maintenance on completed wildlife lands.	5.6
Deferred construction on McClusky Canal.	0.8

Question. One of the funding priorities in the 1986 Garrison Reformulation Act was meeting the Municipal, Residential and Industrial water needs of Indian tribes in North Dakota. The tribes have now reached the funding ceiling in the Reformulation Act which prompted the Congress to add about $1.4 million to last year's appropriation.

Can you assure the Committee that the Bureau is prepared to work with us in identifying additional resources—in the range of $2 million—to meet critical MR&I needs on the reservation? Tribes in North Dakota have some of the poorest quality water in the nation and the Bureau has validated over $200 million in Indian MR&I needs so I encourage your cooperation.

Answer. Reclamation is prepared to assist in identifying projects and activities on the reservations that would help meet the water supply needs of the tribes. Construction of service line connections, community fill stations, and replacement of aged components are examples of such activities.

Question. All but 11 of North Dakota's counties are losing population as farm communities face unparalleled problems from low prices, Canadian grain imports, and severe weather disasters, among other factors. The MR&I program has helped breathe new economic life into communities across the state.

Can you comment on the benefits of such projects as the Southwest Pipeline in bringing clean, dependable water supplies to towns in our state? Several North Dakota communities have been using tobacco-colored water or been in violation of Clean Water standards—through no fault of their own. Now several are enjoying what most of us take for granted: clean, clear water.

Moreover, several businesses have started or expanded because they have access to dependable supplies of usable water. I might mention Antelope Creek Bison Ranch and Taylor Nursery as beneficiaries of the Southwest Pipeline. In eastern North Dakota, the Melroe Company in Gwinner and ADM Corn Processing, which draws upon the North Valley Water project, have also been able to tap the kind of high quality water their businesses require.

Answer. The municipal, rural, and industrial program, resulting from the Garrison Diversion Unit Reformulation Act of 1986, has resulted in significant invest-

ment and benefits in municipal and rural water supplies across the State of North Dakota. Over 100,000 people are now receiving a sufficient quantity of excellent quality water. The benefits go beyond just municipal and rural households as livestock, agricultural processing, and other industries are benefitting as well.

Question. As you know, the Bureau of Reclamation is currently studying the water development and management needs of the Red River Valley. Can you apprise the Committee of the status of these studies? The information provided in these studies will assist the Congress in making decisions about the future shape and funding needs of the Garrison Diversion project so I urge the Bureau to make these studies a top priority.

Answer. Reclamation recently received comments from interested entities, which included the North Dakota delegation and the Governor, on the Draft Phase IA Red River Valley Municipal, Rural, and Industrial Needs Assessment Report. We are in the process of finalizing that report which will be sent to state and local interests as well as the North Dakota congressional delegation. Work is underway on the Phase IB report, which will address instream flow needs. The Phase II study, which will identify alternatives to meet current and future needs in the Red River Valley, is in progress and is expected to be available for review later this year.

Question. I am concerned that the Bureau's budget request of $24 million does not provide funds for operation of the Oakes Test Area nor for orderly contracting for MR&I projects.

Will you please provide for the record the Bureau's plans to operate the Oakes Test Area in fiscal year 1999 and to ensure that contracts for MR&I projects can be let and managed in an efficient matter.

Answer. Research on the Oakes Test Area concluded in fiscal year 1996. Reclamation is working with the project sponsors in an effort to transfer title of the Oakes Test Area to local interests. Negotiations are taking longer than anticipated; therefore, the transfer process has been delayed. If a transfer cannot be worked out, Reclamation has recommended that the area be abandoned, since the limited water supply does not allow for enough acres to be irrigated, resulting in the inability to pay annual operation, maintenance and replacement costs.

The Administration has not requested funding in its fiscal year 1999 budget for the Oakes Test Area. This is consistent with the 1990 Task Group Report which continues to be the basis of Administration policy.

The fiscal year 1999 request includes $8.6 million for the municipal, rural, and industrial water program. This level of funding would allow the state to continue to let contracts and manage them in an efficient manner, although at a reduced level compared to fiscal year 1998.

CONCLUSION OF HEARINGS

Senator DOMENICI. We are in recess, subject to the call of the Chair.

Thanks, everybody.

[Whereupon, at 11:41 a.m., Thursday, March 26, the hearings were concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 1999

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

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—At the direction of the subcommittee chairman, the following statements received by the subcommittee are made part of the hearing record on the Fiscal Year 1999 Energy and Water Development Appropriations Act.]

CALIFORNIA FLOOD CONTROL AND OTHER WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF DANIEL F. KRIEGE, CHAIRMAN, CALIFORNIA WATER COMMISSION

The California Water Commission is an official agency of the State of California. It is composed of nine representative citizens from throughout the State. The Commission is charged by statute with representing State of California and local interests before your Committee. The Commission is coordinating the filing of the statements of a number of State and local agencies. On behalf of the California Water Commission, I would like to express our sincere appreciation for the support this Committee has given California water, fishery and flood control appropriations over the years. I am privileged to submit to you the official recommendations of the State of California for fiscal year 1999 appropriations.

The Commission would like you to know that it supports projects as shown on the attached document entitled, California Water Commission—Final Recommendations for Fiscal Year 1999 Federal Appropriations for California Water, Fishery and Flood Control Projects, March 6, 1998. That document contains recommendations adopted by the Commission at its March 6, 1998 meeting in Sacramento, California, where individuals from throughout the State testified on individual projects.

This year the recommended add-ons to the President's budget for the Corps of Engineers is the largest the Commission has ever requested. The reason is that the Corps' budget has been cut drastically in a cloak to balance the budget. These proposed cuts in ongoing flood control construction projects could be devastating. Stopping and starting construction projects can significantly increase the cost, as well as putting the respective project areas in jeopardy of severe damage from flooding of a partially build facility.

The Commission is also concerned with the Corps' new program on infrastructure seismic reliability. The funding requests for this program are growing exponentially. The Corps of Engineers has the expertise to prepare plans and give technical assistance to the cities; however, the funds are in competition for the dollars needed for ongoing construction projects that are proposed for major cuts in the President's Budget. The Commission has a similar concern with the U.S. Bureau of Reclamation's budget for water recycling projects. The California Water Commission has long recognized water recycling as an important element in the management of California's water resources. Nevertheless, the Commission encourages the Bureau to require local sponsors to demonstrate that long-term beneficial use can be made of the water produced (other than from research/demonstration projects) and that adequate long-term funding will be available for operation and maintenance of completed facilities.

The Commission is concerned about the engineering, economic, environmental and political feasibility of establishing a common set of criteria for evaluating and comparing the merits of one or more water recycling programs with other types of ongoing USBR projects and programs, such as dam safety, Arroyo Pasajero flooding of the San Luis Canal, a workable long-term program for Red Bluff Diversion Dam, other fisheries enhancement programs and Federal participation with the State of California in funding the anticipated recommendations to come out of the Bay-Delta Ecosystem Restoration (CALFED) process for long-term water supply and environmental benefits.

It is the Commission's view that both water recycling programs and the other ongoing USBR programs are highly important and that they should be supported in concert, within the limitations of available Federal funds, giving due consideration to other potential sources of funds that could be available to effect their implementation.

Special recommendations for funds.—The Commission recommends that special consideration be given for appropriation of funds for projects of the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation as shown in the following table. The Commission believes that these projects merit special consideration for the reasons set forth in the information shown on the tables on the following page.

CWC No.	Project and county	Presidents budget fiscal year 1999	CWC Final recommendation fiscal year 1999
	U.S. ARMY CORPS OF ENGINEERS		
110	Sacramento and San Joaquin Rivers Comprehensive Study	$3,500,000	$3,500,000
201	American River Watershed	50,000	5,000,000
235	Arroyo Pasajero (Also CWC 135 and 660–USBR)		1,000,000
304B	Marysville/Yuba City Levee Reconstruction	746,000	12,000,000
305	American River Watershed (Levee Improvements on American and Sacramento Rivers)	1,000,000	26,000,000
309	West Sacramento Project	2,500,000	13,000,000
353	Guadalupe River (Santa Clara)	4,000,000	8,000,000
381	Los Angeles County Drainage Area Project	11,000,000	60,000,000
382	Santa Ana River Mainstem	20,035,000	76,000,000
387	Norco Bluffs Bank Stabilization, Santa Ana River		4,400,000
400	WRDA, 1996, Section 205, Flood Damage Prevention Continuing Authorities Program Nationwide		(1)
410	WRDA, 1996, Section 206, Aquatic Ecosystem Restoration		(1)
420	WRDA, 1996, Section 503, Watershed Management, Restoration and Development ($15 million allocated for length of program)		(1)
430	WRDA, 1986, Section 1135, Project Modifications for Improvement of the Environment		(1)
	U.S. BUREAU OF RECLAMATION		
500	CALFED San Francisco Bay-Delta Program	143,000,000	143,000,000
612	Coleman National Fish Hatchery	2,500,000	2,500,000
621	Winter-Run Chinook Salmon Captive Broodstock Program		400,000
622	Hamilton City Pumping Plant Fish Facility (Glenn)	7,900,000	10,000,000
660A–D	Arroyo Pasajero Studies	1,050,000	5,960,000
701&A	Central Valley Project Operations and Maintenance /San Luis Unit	68,537,000	68,537,000
900—1000	Water Recycling Projects—Public Law 102–575, Title XVI/Public Law 104–266) (Mid-Pacific and Lower Colorado Regions)	(2)	(1)
1108	Salton Sea Area Study	400,000	400,000
1304B	Colorado River Salinity Control Program, Title I Div. (Basinwide)	12,300,000	17,500,000

[1] Support
[2] Various

CWC 110—Sacramento and San Joaquin Rivers Comprehensive Study.—As a result of the floods of 1997, the studies were combined in order to conduct a comprehensive assessment of the entire flood control system. Local, State and Federal water resources agencies support a coordinated multi-objective investigation to balance flood damage prevention, environmental restoration, and other water resource purposes along the river. The study will provide a long range management program for the Sacramento and San Joaquin Rivers with the objective of improving the flood carrying capacity of the system while restoring and protecting environmental features including wetlands and fish and wildlife habitat. The study will also identify those areas that are generally unsuitable for development. The study will include preparation of a comprehensive post-flood assessment, development of a hydrologic/hydraulic model, and formulation of a comprehensive plan for flood damage reduction and environmental restoration. Once completed, this study will provide a framework for a management plan that can be effectively implemented and supported by local, State and Federal agencies. The State of California, the local sponsor, expressed support for the study in May 1997, understands the two-phase planning process, and is willing to participate in 50–50 cost sharing of feasibility phase studies. The Feasibility Cost Sharing Agreement was executed in January 1998.

CWC 201—American River Watershed.—Folsom Lake and levees along the lower American River, Sacramento River, and tributary streams and channels provide flood protection to the highly urbanized Sacramento area. Potentially flooded areas during rare flood events could have an impact on approximately 410,000 people, and an estimated $37 billion in property value. Recent evaluations indicate that the level of flood protection along much of the American River area is less than the 100-year level. The February 1986 storms filled Folsom Lake and necessitated record releases in excess of design flows downstream. Due to the 1986 storms, an extensive flood fighting effort was made by the Corps at a cost of $3 million and an additional $10 million was required for post flood repair work. The storms of January 1997 again filled Folsom Lake and releases reached design flows. Portions of the project have been authorized for construction in the Water Resources Development Act of 1996 and are included in the budget for initiation of construction in fiscal year 1998.

Fiscal year 1998 funds will be used to complete the reimbursement agreement and plans and specifications for recreation features and continue discussions with the local sponsor on a comprehensive flood protection plan for the Sacramento area. Preconstruction engineering and design is scheduled for completion in September 1998.

Both SAFCA and the Reclamation Board are considering seeking Congressional authorization of additional improvements on the American River system as part of the 1998 Water Resources Development Act. If Congress acts on any of the alternatives being considered, the Corps will need significantly more funds to proceed with any meaningful design in 1999 and not lose a year in the schedule to implement these improvements.

CWC 135 and 235 (Corps) and CWC 660A–D (USBR)—Arroyo Pasajero Flood and Silt Deposition.—In the 1960's, in cooperation with the California Department of Water Resources (DWR), the U.S. Bureau of Reclamation (USBR) designed and constructed a 100-mile reach of the California Aqueduct called the San Luis Canal to convey municipal and agricultural water to San Joaquin Valley and southern California water users. The San Luis Canal is part of the "joint-use facilities" along the west side of the San Joaquin Valley, which are operated and maintained by DWR. Design, construction, operation and maintenance costs for this project are shared (DWR 55 percent and USBR 45 percent).

Following completion of an Arroyo Pasajero feasibility report to identify solutions to the flooding, sediment and asbestos problems in 1990, DWR requested the U.S. Corps of Engineers to conduct a reconnaissance study of these problems. The reconnaissance study demonstrated a Federal interest, and the Corps and DWR, with the DWR as local sponsor, began a feasibility study in 1994. The USBR supports the study through the San Luis Unit "joint-use facilities" agreement.

At present, DWR and the Corps are only a few months away from completion of the Feasibility Study which will identify a long-term flood protection plan for the Arroyo. The Corps, DWR and USBR are all participating in the cost of the study. If a feasible project and a Federal interest are identified by the feasibility study, the Corps will proceed with P.E. & D. for the selected project.

Severe flooding was experienced at the Arroyo during the winters of 1994–95 and 1997–98. On March 10, 1995 a section of Interstate 5 upstream of the canal collapsed when floodflows raced down the Arroyo. Seven people lost their lives and there was substantial property damage. Flood damage claims filed by private land-

owners adjacent to the canal against USBR and DWR have exceeded $12 million from this one flood alone. Damage to canal embankment from the flooding was repaired under an emergency construction contract, and turbidity in the canal water resulting from the Arroyo inflow caused significant damages to downstream water customers for up to 4 months after the flood. Arroyo flooding also closed Highway 269, isolating the community of Huron for several days in 1995 and again in 1998. DWR is taking the lead in a multi-agency group formed as a result of this most recent flooding to develop broad-based support for implementation of flood control measures on the Arroyo Pasajero and neighboring streams, and to keep the Federal, State, and local agencies, as well as the affected communities, apprised of the joint feasibility study.

CWC 304B—Marysville/Yuba City Levee Reconstruction.—The project is located within the boundaries of the Sacramento River Flood Control System in Butte, Sutter and Yuba Counties in north-central California. The area includes the Feather and Yuba Rivers and their tributaries, Sutter Bypass and the cities of Marysville and Yuba City and the communities of Linda and Olivehurst.

High flow conditions during the February 1986 storm event resulted in a levee break on the Yuba River, the evacuation of about 24,000 people and about $95 million in flood damages. Additional flood damages of about $2 million were incurred on the Feather and Bear Rivers and about $1 million in post-flood levee repair work was required. Flooding also occurred in 1997. Flooding was caused by a levee break along the Feather River below Marysville/Yuba City in the Linda/Olivehurst area, where one is confirmed dead and two are missing.

The California State Reclamation Board is the local sponsor for reconstruction work. The non-Federal sponsor is capable and willing to contribute non-Federal share.

CWC 305—American River Watershed (Levee Improvements on the American and Sacramento Rivers).—Recent evaluations indicate that the level of flood protection along much of the American River is less than the 100-year level. The project consists of a slurry wall to strengthen the lower American River levees, levee and berm raising along the Sacramento River, telemetered gages above Folsom Dam, and improving the flood warning system for the lower American River.

In June 1996, the Chief of Engineers deferred a decision on a comprehensive flood control plan, but recommended that features common to all three plans be authorized as the first component of a comprehensive plan. These common features include modification of and telemetering three streamflow gages upstream of Folsom Lake; installing a new downstream flood warning system; constructing a slurry wall in levees on the Lower American River; and strengthening and raising levees on the east side of the Sacramento River.

The American River Common Elements Project has $1 million in construction funds included in the President's Budget for fiscal year 1999. The Corps' proposed budget included with the Project Cooperation Agreement shows $26 million in Federal funds are needed in 1999 to keep this project on schedule. Both SAFCA and the State Reclamation Board are in a position to support funding at the higher Federal share.

CWC 309—West Sacramento.—The project is located in West Sacramento, Yolo County in north-central California. The project consists of raising 4.9 miles of levees up to 5.0 feet along the Sacramento and Yolo Bypasses; constructing concrete wing walls, a concrete sill and a manually operated gate at the Southern Pacific Railroad; constructing a concrete wing wall and flow cut-off wall on each side of Interstate 80; and developing approximately 40 acres of mitigation lands for riparian and upland habitat loss.

Construction of this project will provide protection to lands, improvements, and over 30,000 people in West Sacramento. Estimated damageable property in the floodplain is $1.2 billion. Flooding in February 1986, January 1997 and February 1998, in conjunction with subsequent updated hydrologic analyses, have shown that the existing level of flood protection is significantly less than previously thought and does not provide FEMA 100-year level of protection. Levee failure along the Yolo Bypass would release floodwater from the Sacramento River into the West Sacramento urban area, inundating industrial areas, two major highways, thousands of homes and thousands of acres of farmland.

The California State Reclamation Board will act as the non-Federal sponsor for the project.

CWC 353 Guadalupe River.—The project is located in San Jose, Santa Clara County, California. The authorized plan consists of channel improvements on the Guadalupe River between Interstate Highways 880 and 280, a distance of approximately 2.5 miles with provisions for fish and wildlife mitigation as necessary. The project under construction is the Locally Preferred Plan (LPP). The non-Federal

sponsor is responsible to pay 100 percent of the difference in cost between the LPP and the NED plan.

The Santa Clara Valley Water District is the local sponsor for both the flood control portion and the recreation portion of this project. The Local Cooperation Agreements (LCA's) were executed 30 March 1992.

Potential damage from a 1-percent flood in the project reach exceeds $526 million. Based on past flood events, the average annual flood damage estimate for the project is $24 million. Guadalupe River Park, an integral part of the successful revitalization for downtown San Jose, is an important element of the project. Benefit-to-cost ratio is approximately 2 to 1.

Two of three contracts are complete. Contract 3 is expected to be completed in 2000 pending sufficient Federal funding, and resolution of mitigation issues. Environmental issues regarding fish habitat and thermal impacts are being resolved through a multi-agency collaborative process. Total project cost is $182.8 million. Local community has expended more than $70.5 million on planning, design, land acquisition, and construction.

CWC 381—Los Angeles County Drainage Area (LACDA) Project.— The Los Angeles County Drainage Area, current population of over 9 million, is partially protected by an urban flood control system which includes Corps flood control structures consisting of 5 major reservoirs, 22 debris basins, and 470 miles of channel improvements. The existing system, protecting the second largest urban metropolitan area in the United States, has prevented over $3.7 billion in damages since construction. However, the flood of 1969 in Los Angeles County caused widespread damages of over $12 million, $56.5 million at 1996 prices. As urbanization of the basin has grown over the past 40 years, the ability of the existing systems to provide design levels of protection has diminished. Portions of the existing system cannot contain a 50-year flood event. Average annual benefits, at October 1991 price levels, are $58,616,000, all flood control.

The LACDA Project involves raising of 21 miles of existing levees which were originally built 40–50 years ago and modifying 21 bridge crossings. The Project was authorized by Congress in 1992 and is estimated to cost $240 million with the Federal Government paying about $180 million and the local sponsor (Los Angeles County) paying the rest.

Construction began in February 1996. Three construction contracts which included 4.5 miles of levee raising and modifications to three bridges have been completed. The current fiscal year budget includes $20.7 million for completion of two additional contracts which are scheduled to be awarded this February and March.

The low level of funding included in the President's Budget for fiscal year 1999 ($11 million) will significantly delay completion of the project. This will prolong the risk of flooding and continue jeopardizing the safety of those living in the 75 square mile overflow area. Such a condition is unacceptable.

CWC 382—Santa Ana River Mainstem.—The project is located along a 75-mile reach of the Santa Ana River in Orange, Riverside, and San Bernardino Counties southeast of and adjacent to metropolitan Los Angeles, California.

The plan of improvement provides for construction of the Seven Oaks Dam about 35 miles upstream of the existing Prado Dam, with a gross reservoir storage of 145,600 acre feet; flood plain management of the flood overflow area on the Santa Ana River between Seven Oaks Dam and the existing Prado Reservoir; enlargement of Prado Dam to increase the reservoir storage capacity from 217,000 acre-feet to 362,000 acre-feet; construction of 3.3 miles of channel modifications along Oak Street Drain in Corona; enlargement of the existing 2.4 miles of Mill Creek levee; construction of a detention basin and 2.0 miles of channel modifications along the Santiago Creek; and various means of flood control, including flood plain management, levees, and vertical walled concrete channels along the 30.5 miles of the Santa Ana River from Prado Dam to the Pacific Ocean.

Construction of this project will primarily provide protection to lands and improvements within Orange County downstream of Prado Reservoir. A severe flood threat exists in this area, which could cause damages in excess of $15 billion and could endanger and disrupt the lives of over three million people living or working in the floodplain. Damages upstream of Prado Reservoir could exceed $450 million. The overflow area comprises 160 square miles of primarily urban development in 15 cities including San Bernardino, Riverside, Anaheim, Orange, Santa Ana, Fountain Valley, Costa Mesa, Huntington, and Newport Beach. The greatest potential damage area is the Orange County floodplain below Prado Dam.

The $76 million request includes $53 million dollars to continue construction on Seven Oaks Dam and the Lower Santa Ana River plus $23 million to begin construction (a new start appropriation is required) at Prado Dam. Commencement of construction on improvements to Prado Dam is very important. This feature of the

SAR Project is the key link in providing the level of flood protection envisioned by Congress when it authorized the SAR Project in 1986.

CWC 387—Norco Bluffs, Santa Ana River.—The study area is located approximately 40 miles southeast of Los Angeles in the City of Norco along the south bank of the Santa Ana River. Flood induced migration of the main channel of the Santa Ana River to base of the bluffs has resulted in undercutting and subsequent bank destabilization which threatens residential development along the edge of the bluffs.

The purpose of this project is to protect a susceptible 65 foot high bluff in Norco from further retreat into the residential neighborhood. Severe bank sloughing results when floodflows within the Santa Ana River attack the toe of the bluffs. WRDA 96 Section 101b(4), provided for the authorization of the project based on a Chief's Report dated December 23, 1996 that recommended the project for construction. Design of the project by the Corps is underway and is fully funded. They are now seeking funding in the amount of $4.4 million in fiscal year 1999 for completion of construction of the Norco Bluffs Bank Stabilization Project.

CWC 400—WRDA, 1996, Section 205, Flood Damage Prevention.—The California Water Commission heard testimony at its March 6, 1998 meeting requesting support on individual projects. Each of these projects have merit and are needed to prevent recurring flood damages in the local areas. The Commission supports these projects for funding from this Continuing Authority for small projects.

CWC 410—WRDA, 1996, Section 206, Aquatic Ecosystem Restoration and Protection.—The California Water Commission heard testimony at its March 6, 1998 meeting requesting support on individual projects. The Commission supports these projects to improve the quality of the environment. Section 206 directs the Secretary of the Army to carry out such project if the Secretary determines that the project will improve the quality of the environment and is in the public interest; and is cost-effective. The cost-sharing provisions state that the non-Federal interests shall provide 35 percent of the cost of the construction of any project carried out under this section, including provision of all lands, easements, rights-of-way, and necessary relocation.

CWC 420—WRDA, 1996, Section 503, Watershed Management, Restoration and Development.—The California Water Commission heard testimony at its March 6, 1998 meeting requesting support on individual projects. The Commission supports fiscal year 1998 appropriations for the projects. This provision gives the Secretary of the Army the authority to have the Corps provide technical, planning and design assistance to non-Federal interests for carrying out watershed management, restoration and development projects at locations listed in Section 503, WRDA 1996.

CWC 430—WRDA, 1986, Section 1135, Project Modifications.—The California Water Commission heard testimony at its March 6, 1998 meeting requesting support on individual projects. The Commission supports fiscal year 1998 appropriations for each of these projects. Section 1135 of WRDA of 1986 directs the Secretary of the Army to review the operation of water resources projects constructed before the date of the Act to determine the need for modifications in the structures and operations of such projects for the purpose of improving the quality of the environment in the public interest.

U.S. BUREAU OF RECLAMATION

500—CALFED S.F. Bay-Delta Program.—The CALFED Bay-Delta Program is a cooperative effort among State and Federal agencies and the general public to ensure a healthy ecosystem, reliable water supplies, good water quality, and stable levees in California's Bay-Delta. The President's fiscal year 1999 Budget, contains $143 million to be spent specifically in pursuit of CALFED objectives. This money is appropriated to the U.S. Bureau of Reclamation to hold for the participating CALFED agencies as spending decisions are made.

California voters approved the $995 million Proposition 204 on the November 1996 ballot. This general obligation bond measure provides $390 million for the Bay-Delta Ecosystem Restoration Program.

During Phase I, from June 1995 through August 1996, the Program identified these problems, developed a mission statement and several guiding principles, and designed three alternative solutions. In Phase II, from June 1996 to September 1998, the Program will conduct a broad-based environmental review of the three alternative solutions will identify the one preferred alternative. During Phase III, starting in late 1998 or early 1999 and lasting for many years, the preferred alternative will be implemented in stages.

The California Water Commission strongly supports a fiscal year 1999 Federal appropriation of $143,300,000, which is in the President's fiscal year 1999 budget.

CWC 612—Coleman National Fish Hatchery Modification.—The Coleman National Fish Hatchery was built by the U.S. Bureau of Reclamation (USBR) on Battle Creek in 1942 to mitigate damages to salmon spawning areas in the Sacramento River system caused by the construction of Shasta and Keswick Dams. Federal custody and operation were transferred to the U.S. Fish and Wildlife Service (USFWS) in 1948. Title 34 of Public Law 102–575 (Central Valley Project Improvement Act) specifies that USBR provide funding for completion of the rehabilitation of the Coleman National Fish Hatchery: 50 percent will be reimbursable from water and power users and 50 percent non-reimbursable.

Facilities remaining to be completed are additional ozone water treatment facilities, a pump station in the Coleman Canal to pump water to the sand filters and ozonation plant, two new sand filters, 54-inch pipeline from the ozone plant to the 15 x 150 foot raceways and an air compressor.

The California Water Commission supports the funding in the President's fiscal year 1999 Budget for completion of the items listed above.

CWC 621—Winter-Run Chinook Salmon Captive Broodstock Program.—The captive broodstock program arose from shared concerns for the fate of the Sacramento River winter-run chinook salmon. Active participants have included representatives of U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Bureau of Reclamation, Bodega Marine Laboratory of the University of California, Steinhart Aquarium of the California Academy of Sciences, California Department of Fish and Game, California Department of Water Resources, Pacific Coast Federation of Fishermen's Associations, Tyee Club and California Water Commission. In late 1991, the parties formed the Winter-Run Chinook Captive Broodstock Committee to investigate the feasibility of rearing winter-run fry to maturity in captivity, so that broodstock would be available should the natural run disappear. By early 1992, the committee, through public meetings and consensus decisions, formulated and began the captive broodstock program.

The program has promoted the genetic conservation of winter-run chinook salmon. Analyses of the effective size of the winter-run stock showed that a properly managed artificial propagation program to which the captive broodstock program contributes gametes is not likely to have a negative effect and may, instead, be helping to maintain or slightly increase slightly the genetic diversity of the stock.

Development of microsatellite DNA markers from complementary programs at the Bodega Marine Laboratory, which are needed to determine parentage and run identity in the captive breeding effort, represents a substantial technical contribution of and for the program. In addition, under one of these complementary programs, these markers are being further developed and used for a mixed-stock analysis of juvenile chinook salmon in the Central Valley and in the Sacramento-San Joaquin Delta of California, where chinook salmon are taken by the State, Federal, and agricultural water diversions. Similar markers are also being used by salmon biologists in Alaska, Idaho, Washington, Louisiana, British Columbia, Ontario, Nova Scotia, Denmark, and New Zealand. Thus, these DNA markers will have uses in salmon biology far beyond their uses in the captive broodstock program.

The captive broodstock program was initiated as a rapid response to the endangerment of the Sacramento River winter-run chinook salmon. To date, the program has realized many of its objectives. Gametes from captively reared broodstock have contributed to artificial propagation of the winter-run population; however, gamete quality must be improved to ensure successful production of offspring. Despite these problems, in each year since its inception, the program has provided progressively better spawners, gamete production, fertilization and production of juvenile fish. The artificial propagation program is actively pursuing improvements to rearing facilities and genetics and mating protocols to eliminate hybridization concerns. The recently completed Livingston Stone NFH below Shasta Dam is expected to successfully imprint the young fry on Sacramento River water. Most important, the scientific and technical advances by the program will provide an important legacy to salmon biology.

The California Water Commission strongly recommends continuation of the program, which has been broadly supported by Federal, State and local funds.

CWC 622 Hamilton City Pumping Plant Fish Facility.—The project is located between Sacramento River Mile 202 and 206 near the Glenn-Tehama county line. It is about 100 miles north of Sacramento, California.

Finding a solution to the fish passage problem at the Hamilton City Pump Station has been identified as an important element to Central Valley fish restoration in both the Department of the Interior's draft Anadromous Fish Restoration Plan and in the California Department of Fish and Game's Restoring Central Valley Streams: A Plan of Action. Developing a state-of-the-art project has been a cooperative effort involving the District, the Bureau of Reclamation, the Corps of Engineers, the De-

partment of Fish and Game, the Department of Water Resources, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service and the Reclamation Board. A final EIR/EIS is currently undergoing a 30-day review. The lead agencies expect to sign a record of decision and notice of decision by March.

The preferred alternative incorporates two important elements. One element is the fish screening facility. After extensive physical modeling, it was determined that an extension of the existing flat-plate screen offered the most viable method of providing protection to California's fisheries.

The second critical element to the long-term solution is the gradient restoration work being done on the Sacramento River. Hydraulic modeling and field investigations have demonstrated that the gradient facility is essential to the long-term viability of the fish screen structure.

An appropriation of $2 million is recommended for the Corps of Engineers to complete the physical modeling necessary for final design and to award construction contracts, with construction scheduled to begin in late 1999. This level of funding is important to maintain the coordinated schedule for construction of the comprehensive long-term solution.

CWC 660A—Arroyo Pasajero (See CWC 235).

CWC 701 and 701A—Central Valley Project Operations and Maintenance (includes CVPIA).—The Nation's public works infrastructure is aging. We must ensure that adequate levels of funding are provided to protect the public's investment in facilities which we rely upon daily to provide water supply, flood protection, public safety, and other benefits. California's population of 32 million people depends upon a network of local, State, and Federal infrastructure developed over the past decades. Today, governments at all levels are finding it increasingly difficult to find funds to properly maintain existing facilities. The competition for funding raises important public policy questions about the relationship of funding for new projects and programs as opposed to funding to maintain and rehabilitate existing infrastructure.

Too often, the temporary solution used by all levels of government to meet budgetary constraints is to defer maintenance funding. However, deferred maintenance does not come without a price.

Given the increasing competition for Federal dollars, we must be prepared to make the difficult choice of deferring studies and new projects until we are assured that existing Federal facilities are receiving appropriate levels of safety review and maintenance.

CWC 900 and 1000—Recycled Water Projects.—The California Water Commission has long recognized water recycling as an important element in the management of California's water resources, both for cleanup of municipal, industrial and agricultural discharges and to improve the quantity and quality of water supplies. Following extensive hearings throughout the State on the Department of Water Resources' Bulletin 160–98, California Water Plan Update, which includes a provision that over 1 million acre-feet of recycled water be added to California's annual water supply by the year 2020.

It is the Commission's view that both water recycling programs and the other ongoing USBR programs are highly important and that they should be supported in concert, within the limitations of available Federal funds, giving due consideration to other potential sources of funds that could be available to effect their implementation.

CWC 1108—Salton Sea Study.—The Salton Sea is the largest lake in California and is a regionally important feature from both environmental and economic standpoints. It is located in the southeastern corner of the State within the geologic feature known as the Salton Basin, a natural basin located approximately 278 feet below mean Sea level (−278 feet msl). The Salton Sea receives drainage from approximately 8,000 square miles of Riverside, Imperial, and San Diego Counties and the Republic of Mexico. It is a closed basin thus water only leaves the Sea via evaporation. Inflow to the Sea consists of agricultural drainage, storm water and wastewater, and is generally in hydrologic balance with evaporative losses. The closed nature of the system has resulted in changes in the salinity and water surface elevation of the Sea over time.

In 1993, the Counties of Riverside and Imperial, Imperial Irrigation District (IID), and Coachella Valley Water District (CVWD) entered into a Joint Powers Agreement, creating a public agency known as the Salton Sea Authority. The Authority and the California Water Commission conducted a symposium on January 12, 1998 to help focus attention on this major issue. The Commission strongly supports the proposed authorized bill that is being discussed by Congress.

CWC 1304B—Colorado River Basin Salinity Control (Basinwide).—The Colorado River is a large component of the regional water supply, and its relatively high salinity causes significant economic impacts on the 16 million water customers in the

Metropolitan Water District's service area, as well as throughout the Lower Colorado River Basin. For this reason, MWD and the Bureau of Reclamation are currently conducting a Salinity Management Study in Southern California. The first phase of the study (completed in February 1997) concluded that the high salinity from the Colorado River causes significant impacts to residential, industrial, and agricultural water users.

The Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin States' salinity control efforts, issued its "1996 Review, Water Quality Standards for Salinity, Colorado River System" (1996 Review) in June 1996. The 1996 Review found that additional salinity control was necessary beginning in 1994 to meet the numeric criteria in the water quality standards adopted by the seven Colorado River Basin States and adopted by the U.S. Environmental Protection Agency, with normal water supply conditions.

The President's proposed fiscal year 1999 budget contains funding of $12.3 million for implementation of the basinwide program. MWD requests that Congress appropriate $17.5 million for implementation of the basinwide program, an increase of $5.2 million from that proposed by the President. This level of funding is necessary to meet the salinity control activities schedule in order to maintain the State adopted and federally approved water quality standards.

The California Water Commission supports an increase of $5.2 million for this program.

Final Recommendations for Fiscal Year 1999 Federal Appropriations
for California Flood Control, Water and Fishery Projects
Adopted by the California Water Commission on March 6, 1998

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final FY 99 Recomm.
U.S. ARMY CORPS OF ENGINEERS									
100	Bay-Delta Ecosystem Restoration (CALFED) (Also see CWC 500& 1500)	Corps				400,000	Support	1,000,000	1,000,000
General Investigations - Surveys									
102	Northern California Streams, Lower Sacramento River Riparian Revegetation (Solano, Yolo)	Corps	1,970,000	620,000	200,000	300,000	Support	250,000	250,000
		NonFed	1,350,000						
		Total	3,320,000						
106	Northern California Streams Dry Creek (Middletown)	Corps	500,000	89,000	111,000	200,000	Support	100,000	100,000
		NonFed	400,000						
		Total	900,000						
107	Northern California Streams Middle Creek	Corps	1,070,000	548,000	202,000	350,000	Support	200,000	200,000
		Non Fed	470,000						
		Total	1,540,000						
108	Sutter Basin (Sutter)								100,000
109	Lower Strong Ranch and Chicken Ranch Sloughs (Sacramento)								100,000
110	Sacramento and San Joaquin Rivers Comprehensive Study	Corps	12,750,000	0	3,293,000	0	Support	3,500,000	3,500,000
		NonFed	8,250,000						
		Total	21,000,000						
121	Sacramento-San Joaquin Delta Investigation	Corps	5,940,000	4,282,000	612,000	750,000	Support	555,000	555,000
		NonFed	2,975,000						
		Total	8,915,000						
122	Northern California Streams Vacaville, Dixon and Vicinity	Corps	850,000	89,000	163,000	200,000	Support	300,000	300,000
		NonFed	750,000						
		Total	1,600,000						
123	Northern California Streams Fairfield Streams and Cordelia Marsh (includes Suisun Marsh) (See CWC 412)	Corps	1,400,000	89,000	161,000	250,000	Support	300,000	300,000
		NonFed	1,300,000						
		Total	2,700,0 00						
124	Sacramento-San Joaquin Delta Western Delta Islands (Contra Costa, Sacramento)	Corps	1,898,000	698,000	300,000	300,000	Support	0	300,000
		NonFed	1,200,000						
		Total	3,098,000						
125	San Joaquin River Basin, Cosumnes and Mokelume Rivers	Corps	1,100,000	0	82,000	0	Support	18,000	18,000
		NonFed	1,000,000						
		Total	2,100,000						
129	San Joaquin River Basin Tuolumne River and Tributaries	Corps	1,100,000	0	60,000	0	Support	40,000	40,000
		NonFed	1,000,000						
		Total	2,100,000						
134A	San Joaquin River Basin Stockton Metropolitan Area	Corps	1,825,000	786,000	210,000	225,000	Support	500,000	500,000
		NonFed	1,000,000						
		Total	2,825,000						
134B	San Joaquin River Basin Stockton Metropolitan Area (Farmington Dam)	Corps	1,165,000	150,000	199,000	225,000	Support	400,000	400,000
		NonFed	1,000,000						
		Total	2,165,000						
135	San Joaquin River Basin, Arroyo Pasajero (Fresno) Flood and Deposition Study (Also CWC 235 & 660A)	Corps	4,465,000	3,624,000	641,000	146,000	Support	200,000	200,000
		NonFed	3,600,000						
		Total	8,065,000						
136	San Joaquin River Basin, Pine Flat Dam, Fish and Wildlife Habitat Restoration (Fresno)	Corps	1,525,000	1,161,000	99,000	400,000	Support	265,000	265,000
		NonFed	1,000,000						
		Total	2,525,000						
139	San Joaquin River Basin, Tule River (See CWC 239)	Corps	1,278,000	971,000	204,000	250,000	Support	103,000	103,000
		NonFed	928,000						
		Total	2,206,000						
140	San Joaquin River Basin West Stanislaus County	Corps	600,000	74,000	122,000	150,000	Support	100,000	100,000
		NonFed	500,000						
		Total	1,100,000						
141	White River (Tulare)								100,000
142	San Joaquin River Basin, Kern River Valley (Isabella Lake)	Corps	100,000					100,000	100,000
143	Russian River Ecosystem Restoration	Corps	1,125,000	450,000	196,000	240,000	Support	285,000	1,500,000
		NonFed	675,000						
		Total	1,800,000						
144	Napa River, Salt Marsh Restoration	Corps	1,125,000	450,000	200,000	500,000	Support	300,000	300,000
		NonFed	675,000						
		Total	1,800,000						
145	Napa Valley Watershed Management Study								100,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final[1] FY 99 Recomm.
146	Laguna de Santa Rosa Ecosystem Restoration (Sonoma)	Corps	1,100,000	0	100,000	0	Support	150,000	150,000
		NonFed	1,000,000						
		Total	2,100,000						
150	Bolinas Lagoon Ecosystem Restoration (Marin County)	Corps	1,100,000	100,000	613,000	240,000	Support	100,000	100,000
		NonFed	1,000,000						
		Total	2,100,000						
152	Hamilton Airfield Wetland Restoration (Marin)	Corps	1,050,000	0	100,000	0	Support	500,000	500,000
		NonFed	1,000,000						
		Total	2,050,000						
153	Santa Clara County/ San Francisco Bay Shoreline				100,000	0	Support	0	300,000
154	Upper Penitentia Creek (Santa Clara)	Corps	1,845,000	347,000	55,000	475,000	Support	250,000	475,000
		NonFed	1,500,000						
		Total	3,345,000						
155	Llagas Creek - Morgan Hill (Santa Clara)				0	0	Support	0	4,000,000
160	Morro Bay Estuary (San Luis Obispo)	Corps	600,000	0	100,000	0	Support	100,000	100,000
		NonFed	500,000						
		Total	1,100,000						
171	Santa Barbara County Streams Lower Mission Creek	Corps	2,788,000	2,249,000	410,000	380,000	Support	129,000	129,000
		NonFed	689,000						
		Total	3,477,000						
175	Mugu Lagoon (Ventura)	Corps	600,000	0	100,000	0	Support	100,000	100,000
		NonFed	500,000						
		Total	1,100,000						
179A	Los Angeles County Drainage Water Conservation and Supply (Hansen and Lopez Dams)	Corps	1,270,000	696,000	204,000	204,000	Support	Proceeding as local project	0
		NonFed	1,120,000						
		Total	2,390,000						
179B	Los Angeles County Drainage Water Conservation and Supply (Santa Fe & Whittier Narrows Dams)	Corps	1,360,000	741,000	189,000	189,000	Support	Proceeding as local project	0
		NonFed	1,210,000						
		Total	2,570,000						
180	Malibu Creek Watershed	Corps	600,000	0	100,000	0	Support	100,000	100,000
		NonFed	500,000						
		Total	1,100,000						
181	East Beach Shoreline Protection								100,000
182	Surfside Colony Shoreline Protection								100,000
183	Prado Basin Water Supply	Corps	968,000	257,000	378,000	378,000	Support	333,000	333,000
		NonFed	878,000						
		Total	1,846,000						
184	Newport Bay/San Diego Creek Watershed				100,000				500,000
185	Aliso Creek Watershed Management (Orange) (See CWC 189)	Corps	897,000	229,000	126,000		Support	290,000	290,000
		NonFed	675,000						
			1,572,000						
186	Special Area (Orange County) Wetland Management Plan				300,000				600,000
187	Blufftop Park Shoreline Protection (Orange)								300,000
188	San Juan Creek Watershed Management (Orange) (See CWC 189)	Corps	1,470,000	350,000	259,000		Support	535,000	535,000
		NonFed	1,130,000						
		Total	2,600,000						
189	Whitewater River Basin (Riverside)	Corps	2,080,000	1,468,000	302,000	370,000	Support	310,000	310,000
		NonFed	1,655,000						
		Total	3,735,000						
190	Imperial County Ecosystem Restoration	Corps	1,300,000	557,000	63,000	200,000	Support	265,000	265,000
		NonFed	750,000						
		Total	2,050,000						
191	Santa Margarita River and Tributaries, includes Murrieta Creek (Riverside)	Corps	1,600,000	100,000	245,000	300,000	Support	400,000	800,000
		NonFed	1,500,000						
		Total	3,100,000						
194	San Jacinto River Recon Study (Riverside) (Includes Mystic Lake)					0	Support	0	100,000
195	Mojave River Dam (San Bernardino)	Corps	1,300,000	100,000	250,000	200,000	Support	300,000	300,000
		NonFed	1,200,000						
		Total	2,500,000						
196	Tijuana River Valley Environmental Restoration	Corps	1,100,000	0	100,000	--	Support	150,000	150,000
		NonFed	1,000,000						
		Total	2,100,000						
197	Tahoe Basin, Calif. and Nevada	Corps	1,200,000	100,000	300,000	320,000	Support	400,000	400,000
		NonFed	1,000,000						
		Total	2,200,000						
198A	Lower Truckee River (Washoe County, Nevada)	Corps	515,000	255,000	60,000	177,000	Support	50,000	50,000
		NonFed	250,000						
		Total	765,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final' FY 99 Recomm.
198B	Lower Truckee River	Corps	1,223,000	793,000	200,000	354,000	Support	230,000	230,000
	(Pyramid Lake Paiute Tribe)	NonFed	435,000						
		Total	1,658,000						
Preconstruction Engineering and Design									
201	American River Watershed	Corps	18,173,000	14,949,000	824,000	401,000	Support	50,000	5,000,000
		NonFed	0						
		Total	18,173,000						
207	Yuba River Basin	Corps	1,500,000	0	50,000	50,000	Support	100,000	775,000
		NonFed	500,000						
		Total	2,000,000						
232	South Sacramento County Streams	Corps	1,275,000	0	375,000	500,000	Support	900,000	900,000
		NonFed	425,000						
		Total	1,700,000						
235	Arroyo Pasajero	Corps	4,500,000	0	0	1,000,000	Support	0	1,000,000
	(Also CWC 135 &660A)	NonFed	1,500,000						
		Total	6,000,000						
238	Kaweah River (Tulare)	Corps	3,000,000	535,000	1,300,000	1,100,000	Support	1,165,000	1,665,000
		NonFed	0						
		Total	3,000,000						
239A	San Joaquin River Basin, Tule River (See CWC 139)	Corps							500,000
239B	San Joaquin River Basin, Tule River (Seismic Analysis)	Corps							500,000
251	San Clemente Creek (Marin)	Corps				0	Support	50,000	50,000
		NonFed							
		Total							
252	Napa River Flood Control Project	Corps	15,000,000	13,255,000	1,001,000	1,600,000	Support	744,000	744,000
	(Also see CWC 352)	NonFed	0						
		Total	15,000,000						
254	Pajaro River, Watsonville	Corps	2,270,000	1,387,000	450,000	500,000	Support	433,000	433,000
	(Santa Cruz)	NonFed	0						
		Total	2,270,000						
284	Seven Oaks and Prado Dams Water	Corps	750,000	0	0	0	Support	0	0
	Conservation (San Bernardino,	NonFed	250,000						
	Riverside, Orange)[Local to do PED]	Total	1,000,000						
285	Upper Guadalupe	Corps	1,500,000	0	373,000	750,000	Support	575,000	575,000
		NonFed	500,000						
		Total	2,000,000						
298A	Lower Truckee River	Corps	600,000	0	0	150,000	Support	0	0
	(Washoe County, Nevada)	NonFed	200,000						
	(See CWC 198A)	Total	800,000						
298B	Lower Truckee River	Corps	750,000	0	0	0	Support	0	250,000
	(Pyramid Lake Paiute Tribe)	NonFed	250,000						
	(See CWC 198B)	Total	1,000,000						
299	Truckee Meadows	Corps	7,388,000		600,000			500,000	500,000
Construction - General									
302	Sacramento River Restoration at	Corps	10,650,000	3,713,000	563,000	600,000	Support	700,000	2,000,000
	Glenn-Colusa Irrigation District	NonFed	3,550,000						
	(Glenn) (Also see CWC 622)	Total	14,200,000						
303	Sacramento River Bank Protection	Corps	179,900,000	97,893,000	4,065,000	5,500,000	Support	7,080,000	10,080,000
		NonFed	69,500,000						
		Total	249,400,000						
304A	Mid-Valley Area	Corps	13,250,000	5,276,000	5,259,000	5,600,000	Support	1,700,000	1,700,000
	Levee Reconstruction	NonFed	4,370,000						
		Total	17,620,000						
304B	Marysville/Yuba City	Corps	29,400,000	14,035,000	8,734,000	9,300,000	Support	746,000	12,000,000
	Levee Reconstruction	NonFed	9,800,000						
		Total	39,200,000						
304C	Upper Sacramento Area	Corps	4,800,000	1,641,000	2,583,000	2,700,000	Support	400,000	400,000
	Levee Reconstruction	NonFed	1,580,000						
		Total	6,380,000						
304D	Lower Sacramento Area	Corps	3,910,000	1,080,000	1,878,000	2,000,000	Support	952,000	952,000
	Levee Reconstruction	NonFed	1,290,000						
		Total	5,200,000						
305	American River Watershed - (Levee	Corps	47,600,000	2,143,000	5,828,000	44,744,000	Support	1,000,000	26,000,000
	Improvements on American	NonFed	15,700,000						
	and Sacramento Rivers)	Total	63,300,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final' FY 99 Recomm.
307	American River Watershed (Natomas)	Corps	30,164,000	1,343,000	9,797,000	0	Support	0	14,500,000
	(Includes $100,000 Ueda Parkway feature)	NFed	31,290,000						
		Total	61,454,000						
309	West Sacramento Project	Corps	16,300,000	3,055,000	7,044,000	7,500,000	Support	2,500,000	13,000,000
		NonFed	5,400,000						
		Total	21,700,000						
331	New Melones Lake	Corps	400,500,000	0	0	100,000	Support	0	0
	(Calaveras, Tuolumne)	NonFed	0						
		Total	400,500,000						
332	Merced County Streams	Corps	91,800,000	16,387,000	1,034,000	1,100,000	Support	500,000	900,000
		NonFed	40,900,000						
		Total	132,700,000						
351	Corte Madera Creek	Corps	21,900,000	11,258,000	470,000	500,000	Support	500,000	500,000
		NonFed	15,200,000						
		Total	37,100,000						
352	Napa River Flood Control Project	Corps							1,000,000
	(Also see CWC 252)								
353	Guadalupe River (Santa Clara)	Corps	78,500,000	37,275,000	17,844,000	19,000,000	Support	4,000,000	8,000,000
		NonFed	104,300,000						
		Total	182,800,000						
354	Coyote and Berryessa Creeks	Corps	43,300,000	31,696,000	939,000	1,000,000	Support	100,000	100,000
	(Santa Clara)	NonFed	34,930,000						
		Total	78,230,000						
355	San Lorenzo River (Santa Cruz)	Corps	13,150,000	1,571,000	1,944,000	4,200,000	Support	2,800,000	2,800,000
		NonFed	4,350,000						
		Total	17,500,000						
361	Santa Paula Creek (Ventura)	Corps	21,100,000	11,629,000	2,400,000	4,000,000	Support	2,700,000	2,700,000
		NonFed	1,600,000						
		Total	22,700,000						
381	Los Angeles County Drainage	Corps	180,000,000	29,615,000	19,441,000	40,000,000	Support	11,000,000	60,000,000
	Area Project (LACDA)	NonFed	60,000,000						
		Total	240,000,000						
382	Santa Ana River Mainstem	Corps	885,900,000	519,444,000	48,916,000	52,900,000	Support	20,035,000	76,000,000
	(Includes San Timoteo)	NonFed	468,100,000						
		Total	1,354,000,000						
383	San Luis Rey River (San Diego)	Corps	61,100,000	55,700,000	6,400,000	5,400,000	Support	0	0
		NonFed	20500,000						
		Total	81,600,000						
387	Norco Bluffs Bank Stabilization	Corps	5,580,000	180,000	1,000,000	1,500,000	Support	0	4,400,000
	Santa Ana River(Riverside)	NonFed	1,794,000						
		Total	7,374,000						
400	**Water Resources Development Act, 1996, Section 205, Flood Damage Prevention, Continuing Authorities Program** ($26,500,000 for all programs)								
401	Tehama-Hamilton City Flood Control	Corps	2,276,000	175,000	Nationwide	Support	Support		Support
	Study (Tehama, Glenn) [205]	NonFed	1,120,800		Allocation to				
		Total	3,396,800		Program				
403	Northern California Streams	Corps	4,593,000	646,000	"	Support	Support		Support
	Magpie Creek (Sacramento) [205]	NonFed	5,208,000						
		Total	9,801,000						
404	Northern California Streams,	Corps	1,530,000	0	"	Support	Support		Support
	Winters and Vicinity (Yolo)	NonFed	1,970,000						
		Total	3,500,000						
405	Ledgewood Creek (Solano)								700,000
406	Novato Urban Flood Control (Marin)								600,000
407	San Pedro Creek, Pacifica [205]	Corps	4,558,000	539,000	"	Support	Support		Support
408	Mission Zanja Creek	Corps	1,370,000	1,579,000	"	Support	Support		Support
	(San Bernardino) [205]	NonFed	870,000						
		Total	2,240,000						
410	**Water Resources Development Act, 1996, Section 206, Aquatic Ecosystem Restoration** - ($6,000,000 in President's Budget for all programs)								
411	Clear Lake Basin Watershed Restoration [206]				200,000	1,000,000	Support		2,000,000
	(Lake) (Also see CWC 421)								
412	Northern California Streams - Fairfield			250,000	500,000	Support		500,000	
	Streams, Suisun Marsh, Cache Creek (See CWC 123)								
413	Santa Rosa Vernal Pools	Corps	750,000		750,000	0	Support		Support
	(Sonoma)	NonFed	404,000						
		Total	1,154,000						
414	Stockton Waterfront								1,000,000
415	Penn Mine Remediation [206]	Corps			0	5,000,000	Support		Support
	(Calaveras)	NonFed	5,000,000						
		Total	10,000,000						
418	Elsinore Valley Municipal Water District								100,000
420	**Water Resources Development Act, 1996, Section 503, Watershed Mgt, Restoration & Development** - ($15 million for entire length of program)								
421	Clear Lake Watershed Management				100,000	1,000,000	Support		250,000
	[503] (Lake) (Also see CWC 411)								
422	City of Sacramento, Watershed Management				500,000	3,000,000	Support		200,000
	and combined Sewer System Restoration [503]								

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final FY 99 Recomm.
423	San Pablo Bay Watershed Restoration	Corps	1,100,000		100,000	300,000	Support	100,000	500,000
	and Protection (Sonoma) [503]	NonFed	1,000,000						
	(See CWC 908)	Total	2,100,000						
425	Santa Clara Basin Watershed Mgt Initiative				0				500,000
430	**Water Resources Development Act, 1986, Section 1135, Project Modifications for Improvement of the Environment Program -** ($5,300,000 in Pres. FY99 Budget)								
431	Northern California Streams	Corps	2,776,500	460,000	Nationwide	Support	Support		Support
	Upper Sacramento River	NonFed	925,500		Allocation to				
	Murphy Slough [1135]	Total	3,702,000		Program				
432	Yolo Basin Wetlands (Davis site) [1135]	Corps	4,500,000	970,000	"	Support	Support		Support
		NonFed	1,500,000						
		Total	6,000,000						
433	San Joaquin River	Corps	4,500,000		"	Support	Support		Support
	China Island Habitat Restoration	NonFed	1,500,000						
	[1135]	Total	6,000,000						
434	Sacramento-San Joaquin Delta	Corps	3,750,000	53,100	"	Support	Support		Support
	Prospect Island (Solano)	NonFed	1,250,000						
	[1135]	Total	5,000,000						
435	Putah Creek, South Fork Preserve	Corps	1,575,000	210,000	"	Support	Support		Support
	[1135]	NonFed	525,000						
		Total	2,100,000						
436	Pine-Flat Turbine Bypass [1135]	Corps	3,585,000	270,000	"	Support	Support		Support
		NonFed	1,195,000						
		Total	4,780,000						
437	Wildcat - San Pablo Creeks (Contra Costa) [1135]				0		Support		Support
438	Dominguez Gap [1135]	Corps	1,657,500	100,000	"	Support	Support		Support
		NonFed	552,500						
		Total	2,210,000						
439	Gunnerson Pond (Riverside) [1135]	Corps	3,291,000	0	"	Support	Support		1,500,000
		NonFed	1,097,000						
		Total	4,388,000						
480	**Public Law 101-640/104-303, Infrastructure Seismic Reliability -**								
481	Santa Monica Infrastructure Reliability	Corps			500,000	Support	Support		1,000,000
482	Southern California Infrastructure Studies (Arcadia and Sierra Madre)	Corps	522,000	222,000	525,000	Support	Support		1,000,000
483	Southern California Infrastructure Restoration Study (Huntington Beach)				100,000	Support	Support		700,000
484	Southeast Los Angeles County Water Conservation and Supply Project (Norwalk)				500,000	Support	Support		1,000,000
485	Southern California Infrastructure Restoration (City of Inglewood)				0	Support	Support		300,000
486	Southern California Infrastructure Studies (Twenty-nine Palms Water District)				100,000	Support	Support		700,000
488	Southern California Infrastructure Study (Long Beach)				0	Support	Support		500,000
489	Southern California Infrastructure Study (Beverly Hills)								600,000
490	Southern California Infrastructure Study (Elsinore Valley MWD)								300,000
491	Southern California Infrastructure Study (Yucca Valley)								150,000
492	Southern California Infrastructure Study (Newport Beach)								600,000
493	Southern California Infrastructure Study (Seal Beach)								800,000
494	Southern California Infrastructure Study (West Chino Basin)								800,000
U.S. BUREAU OF RECLAMATION									
500	**Bay-Delta Ecosystem Restoration** (CALFED)	USBR	430,000,000		85,000,000	143,300,000	Support	143,000,000	143,000,000
555	**General Planning Studies**	USBR	Continuing	446,693	300,000	300,000	Support	250,000	250,000
	CVP, Trinity River								
600	Trinity River Restoration Program	USBR	76,434,739	68,544,909	3,000,000	3,000,000	Support	3,454,000	3,454,000
	CVP, Shasta Division								
611	Temperature Control Device -	USBR	49,603,881	46,642,881	2,650,000	2,650,000	Support	311,000	311,000
	Shasta Dam	Restoration	35,516,270	35,516,270				0	
		NonFed	0	0					
		Total	85,120,151	82,159,151					
612	Coleman National Fish	USBR	6,347,000	0	2,000,000	2,000,000	Support	1,500,000	1,500,000
	Hatchery Modification	Restoration	22,099,248	4,692,940	3,773,000	3,773,000		1,000,000	1,000,000
		Total	28,446,248	4,692,940	5,773,000	5,773,000		2,500,000	2,500,000
613	Anderson-Cottonwood Irrigation	USBR	369,296	82,588	200,000	250,000	Support	0	0
	District Diversion Dam	Restoration	5,150,000	306,611	1,000,000	1,000,000			
		Total	5,819,296	389,199	1,250,000	1,250,000			

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final[1] FY 99 Recomm.
615	Clear Creek Restoration	USBR	1,333,253	13.253	500,000	500,000	Support	500,000	500,000
		Restoration	4,988,417	825,626	1,000,000	1,000,000		0	
		Total	6,321,670	838,679	1,500,000	1,500,000			
	CVP, Sacramento River Division								
621	Winter-Run Chinook Salmon	USBR		1,227,000	250,000	241,000	Support	0	400,000
	Captive Broodstock Program	Restoration				259,000			150,000
		USFWS				250,000			400,000
		NOAA				250,000			0
		NonFed				348,000			278,000
		Total	12,709,800			1,348,000			1,228,000
622	Hamilton City Pumping Plant	USBR	46,000,000	5,291,000	4,000,000	4,000,000	Support	7,900,000	10,000,000
	Fish Facility (Glenn) (Also see CWC 302)								
623	Colusa Basin Drain	USBR	1,367,000	617,000	750,000	400,000	Support	0	3,500,000
624	Red Bluff Diversion Dam	USBR	12,677,096	10,074,000	500,000	500,000	Support	310,000	310,000
	Fish Passage Program	Restoration	718,683						
		Total	13,395,779						
626	Red Bluff Diversion Dam	USBR	8,883,000	3,528,000	1,360,000	1,360,000	Support	1,550,000	1,550,000
	Demonstration Research Facility Eval.								
	CVP, American River Division								
630	Reoperation of Folsom Dam	USBR	3,900,000		3,900,000		Support	0	0
635A	Auburn-Folsom South Unit	USBR	2,555,556,309	361,412,139	2,238,000	11,538,000	Support	1,854,000	1,854,000
	(Includes American River Alternative	NonFed	2,202,780	2,202,780					
	Study and On-going Activities)	Total	2,557,759,089	363,614,919					
635B	Auburn-Folsom South Unit	USBR	11,000,000	0	4,000,000		Support	2,000,000	2,000,000
	(Permanent Pump Facility)	NonFed	2,400,000					0	
		Total	13,400,000						
	CVP, East Side Division								
640	New Melones Water Mgmt Study	USBR	190,000	0	100,000		Support	0	0
	(Includes Temp. Control Eval)								
	CVP, Delta Division								
641	Bay-Delta Oversight	USBR	20,359,302	11,363,302	3,600,000	3,600,000	Support	1,200,000	1,200,000
	(CALFED)								
643	Delta Support Program (IEP)	USBR	61,068,718	25,014,988	3,500,000	4,900,000	Support	4,000,000	4,000,000
644	Georgiana Slough Fish Barrier	USBR		750,098	0	300,000	Support	0	0
	(Ongoing Study)	NonFed		1,500,000					
645	Rock Slough Fish Screen (Contra Costa)	USBR	5,277,752	487,045	1,750,000	2,500,000	Support	250,000	4,000,000
646	Suisun Marsh Protection	USBR	64,483,312	30,037,845	500,000	500,000	Support	1,909,000	1,909,000
		NonFed	0						
647	South Delta Barriers	USBR	527,862	279,862	200,000	200,000	Support	16,000	200,000
648	Tracy Fish Facility Improvements	USBR	35,924,136	3,604,044	1,500,000	1,500,000	Support	500,000	500,000
		Restoration	6,190,000	0	640,000	640,000		1,000,000	1,000,000
		Total	42,114,136		2,140,000	2,140,000		1,500,000	1,500,000
	CVP, San Joaquin Division								
651	Land Retirement	USBR	38,847,266	2,610,688	1,000,000	1,000,000	Support	4,000,000	4,000,000
		Restoration	17,833,551	4,790,390	3,000,000	3,000,000		4,000,000	4,000,000
		Total	57,680,817	7,401,070	4,000,000	4,000,000			
652	San Joaquin Basin Action Plan	USBR	11,452,361	845,361	2,300,000	2,300,000	Support	1,900,000	1,900,000
		Restoration	8,104,626	6,534,626	1,570,000	2,570,000		0	
		Total	19,556,987	7,379,987	3,870,000	4,870,000			
653	Water Acquisition	USBR	40,095,380	1,737,380	3,655,000	3,655,000	Support	2,000,000	2,000,000
		Restoration	99,358,506	19,534,543	3,642,000	4,847,000		14,290,000	14,290,000
		Total	139,456,886	21,271,923	7,297,000	8,502,000		16,290,000	16,290,000
	CVP, Friant Division								
655	Friant Upper Basin Optimization Study	USBR	75,000	0	0	0	Support	70,000	70,000
	CVP, W. San Joaquin Division, San Luis Unit								
660A	Arroyo Pasajero Studies	USBR	7,619,240	11,338,044	190,000	390,000	Support	0	200,000
	(Also CWC 135 and 235 - Corps)	NonFed	6,233,923	6,636,500	1,959,000				
		Total	13,853,263	17,974,544	2,149,000				
660B	Arroyo Pasajero Implementation	USBR	4,000,000	0	0			800,000	1,250,000
660C	Cantua Creek Strm Group - EIS	USBR	1,250,000	0	0			250,000	1,710,000
660D	Arroyo Pasajero (Flood Easements)	USBR	12,495,289	4,257,977	0	0	Support	0	1,000,000
665	Real-Time Drainage Mgt. Initiative	USBR	39,412,179	2,119,179	800,000	800,000	Support	4,415,000	4,415,000
	CVP, Miscellaneous Project Programs (Mid-Pacific Region)								
672	Anadromous Fish Screening Program	USBR	68,566,791	14,842,688	6,000,000	6,000,000	Support	750,000	750,000
		Restoration	32,386,719	7,381,018	2,000,000	2,000,000		6,850,000	6,850,000
		Total	100,953,510	22,223,706	8,000,000	8,000,000		7,600,000	7,600,000
673	Anadromous Fish Restoration	USBR	42,091,000	0	0	0		0	0
	Program	Restoration	57,137,904	7,828,688	8,000,000	8,250,000	Support	8,000,000	8,000,000
		Total	99,228,904						
675	Central Valley Assessment/	USBR	10,200,000		0	0		0	0
	Monitoring Program	Restoration	17,011,412	2,118,107	2,500,000	2,500,000	Support	2,500,000	2,500,000
		Total	27,211,412						
676	Dedicated Project Yield	Restoration	5,197,602	3,273,602	250,000	250,000	Support	274,000	274,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final[1] FY 99 Recomm.
677	Ecosystem/Water System Models	USBR	10,169,875	2,369,875	500,000	500,000	Support	1,000,000	1,000,000
		Restoration	982,944	982,944	0	0		0	0
		NonFed							
		Total	11,152,819	3,352,819					
679	Kaweah River Delta Corridor Enhancement Project	USBR	1,021,325	966,325	0	Support	Support	0	0
680	Other CVP Impacts	USBR	14,094,650	5,716,603	1,000,000	1,000,000	Support	1,533,000	1,533,000
681	Private Wetlands/Investigation	Restoration	1,616,057	1,566,057	50,000	50,000	Support	0	0
682	Ongoing Contracts/CWPSC/Melones	USBR	15,372,841	11,535,841	1,170,000	1,170,000	Support	1,604,000	1,604,000
683A	Princeton-Codora-Glenn ID/ Provident ID	USBR	3,938,255	138,255	3,800,000	Support	Support	0	0
		Restoration	5,161,745	5,161,745					
		Category III Salmon Stamp	5,500,000						
		NonFed	561,500						
683B	Reclamation District 108 (Traditional Screened Diversion)	USBR	3,200,000	3,200,000	0	Support	Support	0	0
		NonFed	5,775,000	30,708					
683C	Reclamation District 1004 (Traditional Screened Diversion)	USBR	1,131,347	1,131,347	0	Support	Support	0	0
		NonFed	3,550,000						
684	Reservoir Storage	Restoration	550,000	0	50,000	50,000	Support	0	0
685	Refuge Water Supply	USBR	24,193,634	283,634	3,553,000	4,553,000	Support	3,500,000	5,500,000
		Restoration	24,027,836	3,621,696	4,000,000	4,000,000	Support	0	0
		Total	48,221,470	3,905,330	7,553,000	8,553,000			
686	Refuge Wheeling Costs	USBR	14,869,313	0	0	0		0	0
		Restoration	57,029,607	7,944,607	2,000,000	2,000,000	Support	10,000,000	10,000,000
		Total	71,898,920	7,944,607				10,000,000	10,000,000
688	Salmon (Coho) Program	USBR	1,190,641	378,641	0	Support	Support	0	0
689	Salmon (Spring Run) Program	USBR	1,293,293	533,293	0	Support	Support	0	0
690	Salmon Stamp Program	USBR	460,887	460,887	0	Support	Support	0	0
695	Sacramento Water Management Plan								1,050,000
700	**CVP, Operation and Maintenance (Mid-Pacific Region)**								
701	Central Valley Project (CVPIA)	USBR	Continuing		57,413,000	57,939,000	Support	61,678,000	61,678,000
701A	CVP - San Luis Unit	USBR	Continuing		10,182,000	15,672,000	Support	6,859,000	6,859,000
		Total			67,595,000	73,611,000		68,537,000	68,537,000
701B	Sacramento River Basinwide Management Plan								1,000,000
703	Reclamation Law Administration	USBR	Continuing		1,288,000	1,340,000	Support	881,000	881,000
704	Land Resources Management Program	USBR	Continuing		884,000	884,000	Support	1,810,000	1,810,000
705	**Cachuma Project**	USBR	Continuing		1,046,000	1,046,000	Support	1,007,000	1,007,000
706	Orland Project	USBR	Continuing		476,000	476,000	Support	685,000	685,000
707	Solano Project	USBR	Continuing		1,732,000	1,732,000	Support	1,881,000	1,881,000
740	CVP, Yield Feasibility Investigation	USBR						2,000,000	2,000,000
755	**California Water Management and Technical Assistance**							1,863,000	1,863,000
800	Small Reclamation Projects Admin.	USBR	Continuing		95,000	95,000	Support	15,000	15,000
	Loan Projects (Mid-Pacific Region)								
802	Castroville Seawater Intrusion Project (Monterey)	USBR	15,379,000	4,564,000	2,102,356	2,100,000	Support	2,600,000	2,600,000
		Treasury	17,071,000	4,032,000	2,120,000	617,000		2,940,000	2,940,000
		Federal	32,450,000	8,596,000	4,222,356	2,717,000		5,540,000	5,540,000
		NonFed	11,049,900	10,770,450	279,450	279,450			
		Total	43,499,900	19,366,450	4,501,806	5,096,450			
803	Salinas Valley Reclamation Project (Monterey)	USBR	9,876,000	3,495,199	1,304,801	1,300,000	Support	1,700,000	1,700,000
		Treasury	10,543,000	3,011,000	1,300,000	355,000		1,894,000	1,894,000
		Federal	20,419,000	6,506,199	2,604,801	1,655,000		3,594,000	3,594,000
		NonFed	6,900,000	6,900,000	0				
		Total	27,319,000	13,406,199	2,604,801				
850	Klamath Project (Oregon)	USBR			2,775,000			5,783,000	5,783,000
900	**PL 102-575, Title XVI and Amended by P.L. 104-266 (Mid-Pacific Region)** - ALL PROGRAMS								
901A	Del Norte County/ Crescent City Wastewater Study	USBR	1,100,000	201,451	550,000		Support	0	Support
901B	Fort Bragg Reclamation Study	USBR	750,000	94,163		Support	Support	0	Support
902	Sacramento Reclamation Reuse	USBR	650,000	149,524	500,000	Support	Support	0	Support
903	San Joaquin Area [Tracy] (San Joaquin)				Authorized	Support	Support	0	Support
904	San Francisco Area Water Reclamation Study (General Investigation)	USBR	3,790,033	3,372,063	375,000	375,000	Support	0	500,000
		NonFed	3,790,000	2,290,000	1,500,000			0	
		Total	7,580,033	4,194,946	3,010,087				
905	Southern Alameda County Water Reuse Project					Support Authorization	Support Authorization	0	Support
906	San Jose Area Water Reclamation And Reuse Program (Construction)	USBR	109,959,000	6,968,586	3,000,000	10,000,000	Support	3,000,000	10,000,000
		NonFed	371,021,635	76,500,000					
		Total	480,980,635	83,468,586					
907	Watsonville Area				Authorized	250,000	Support	0	0
908	San Pablo Baylands Water Reuse (Sonoma) (See CWC 423)					300,000	Support	0	500,000
1000	**PL 102-575, Title XVI and Amended by P.L. 104-266 (Lower Colorado Region)** - ALL PROGRAMS								
1001	Southern California Comprehensive Water Reclamation and Reuse	USBR	3,292,000	1,841,029	769,000	769,000	Support	200,000	200,000
		NonFed	3,292,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final FY 99 Recomm.
1004	Calleguas Municipal Water District Recycling Project	USBR	20,000,000	0	0	Support	Support	[1]	Support
		NonFed	53,600,000						
		Total	73,600,000						
1005	Brackish Water Reclamation Demonstration Facility (Ventura) USBR will be finished FY 98	USBR	4,000,000	1,627,565	2,000,000	2,000,000	Support	0	Support
		NonFed	12,000,000						
		Total	16,000,000						
1006	Pasadena Reclaimed Water	USBR	5,750,000	0	0	Support	Support	[1]	Support
		NonFed	17,250,000						
		Total	23,000,000						
1007	L.A. Area Water Reclamation and Reuse (Includes West Basin, East Valley and Terminal Island)	USBR	69,970,000	40,730,000	9,600,000	10,000,000	Support	10,000,000	10,000,000
		NonFed	232,055,000						
		Total	302,025,000						
1008	Long Beach Desalination Research and Development Project	USBR	15,100,000	0	0	Support	Support	[1]	Support
		NonFed	15,100,000						
			30,200,000						
1009	Hi Desert Water District, Yucca Valley	USBR	2,740,000		0	Support	Support	[1]	Support
		NonFed	8,220,000						
		Total	10,960,000						
1010	Orange County Regional Water Reclamation Project - Phase I	USBR	20,000,000	0	0	Support	Support	1,000,000	1,000,000
		NonFed	201,000,000						
		Total	221,000,000						
1011	San Juan Basin Groundwater Management Program (Orange)	USBR	3,750,000	0	0	Support if qualifies as R&D	Support	[1]	Support
		NonFed	11,250,000						
		Total	15,000,000						
1012	San Gabriel Basin Project (Includes San Gabriel Basin, Demo, Rio Hondo & San Gab Valley Wtr Recl.)	USBR	38,090,000	8,904,456	4,945,100	5,235,000	Support	2,500,000	2,500,000
		NonFed	118,290,000						
		Total	156,380,000						
1013	San Diego(North) County Area Recycling Project - Encina Basin, San Elijo, and Olivenhain)	USBR	17,707,000		0	4,900,000	Support	[1]	Support
		NonFed	53,121,000						
		Total	70,828,000						
1014	San Diego Area Reclamation (Includes San Diego, Escondido, Poway Padre Dam Muni WD, Otay WD and San Diego County Water Authority Sweetwater Authority, Tia Juana Valley WD))	USBR	172,590,000	16,165,294	12,480,000	13,000,000	Support	13,000,000	13,000,000
		NFed	517,770,000						
		Total	690,360,000						
1015	Mission Basin (Oceanside) Brackish Groundwater Desalting Research and Development Project (San Diego)	USBR	1,500,000	0	0	1,500,000	Support	[1]	1,500,000
		NonFed	4,500,000						
		Total	6,000,000						
1016	Water Replenishment District of Southern California - Alamitos Barrier Recycled Water Project	USBR	5,750,000	0	0	Support	Support	[1]	1,750,000
		NonFed	19,281,000						
		Total	25,031,000						
1017	Long Beach Water Department - Distribution Expansion								2,000,000
Lower Colorado River Water Management and Technical Assistance Program									
1020	Imperial Valley Water Reclamation and Reuse Study	USBR	500,000	119,805	75,000	75,000	Support	150,000	150,000
		NonFed	500,000						
		Total	1,000,000						
Southern California Water Management and Technical Assistance Program									
1030	Lower Owens River Environmental Study	USBR	300,000	65,360	100,000	100,000	Support	100,000	100,000
		NonFed	300,000						
		Total	600,000						
1031	Southern California Coastal Water Supply Study	USBR	750,000	12,018	350,000	350,000	Support	100,000	100,000
		NonFed	750,000						
		Total	1,500,000						
1032	Mammoth Lakes Water Optimization Study	USBR	350,000	0	80,000	80,000	Support	100,000	100,000
		NonFed	350,000						
		Total	700,000						
1033	Mystic Lake Watershed Mgmt Study	USBR	550,000	0	0			50,000	50,000
		NonFed	550,000						
		Total	1,100,000						
1034	So. Calif. Wtr Recycling Proj Init.	USBR	800,000	0	0			150,000	150,000
		NonFed	800,000						
		Total	1,600,000						
Other Water and Related resource Programs									
1101	Colorado River Water Quality Improvement Program	USBR	Continuing	11,501,599	60,000	60,000	Support	75,000	75,000
1103	General Planning	USBR	Continuing	853,985	355,000	390,000	Support	525,000	525,000
1108	Salton Sea Area Study	USBR	10,000,000	394,366	400,000	400,000	Support	400,000	400,000
		NonFed	10,000,000						
		Total	20,000,000						
1102	Environmental and Interagency Coordination Activities	USBR	Continuing	11,501,599	136,000	175,000	Support	[2]	Support
1105	Investigation of Existing Projects	USBR	Continuing	420,130	50,000	55,000	Support	[2]	Support
1107	Minor Work on Completed Projects	USBR	Continuing	443,356	50,000	55,000	Support	[2]	Support
1109	Technical Assistance to States	USBR	Continuing	2,267,580	394,000	475,000	Support	[2]	Support
Loan Projects (Lower Colorado Region)									
1201	Eastern Municipal Water District Water Facilities Plan (Riverside)	USBR	13,712,011	12,679,377	0	0	Support	0	0
		Treasury	17,387,989	15,565,863					
		Federal	31,100,000	28,245,240					
		NonFed	13,621,400	10,300,000					
		Total	44,721,000	38,545,240					

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/97	Allocation for FY 98	CWC Final Recomm. FY 98	CWC Prelim. Recomm. FY 99	President's Budget FY 99	CWC Final[1] FY 99 Recomm.
1202	Chino Basin Desalination	USBR	10,300,000	6,295,718	1,718,000	1,718,000	Support	2,114,000	2,114,000
	(Santa Ana Watershed	Treasury	21,731,000	15,565,863	3,683,000	3,683,000		6,636,000	6,636,000
	Project Authority)	Federal	32,031,000	21,861,581	5,401,000	5,401,000		8,750,000	8,750,000
		NonFed	15,623,000			4,804,750			
		Total	47,654,000			10,205,750			
1203	San Sevaine Creek Water Project	USBR	28,100,000	0	976,000	976,000	Support	781,000	781,000
	(San Bernardino, Riverside)	Treasury	18,900,000		357,000	357,000		396,000	396,000
	(Funding to commence in FY98)	Federal	47,000,000		1,333,000	1,333,000		1,177,000	1,177,000
		NonFed	33,721,000			20,721,000			
		Total	80,721,000			22,054,000			
1204	Temescal Valley Project	USBR	6,541,000	1,574,299	651,000	651,000	Support	801,000	801,000
	(Elsinore Valley MWD)	Treasury	15,715,000	1,733,574	1,383,000	1,383,000		1,969,000	1,969,000
	(Riverside)	Federal	22,256,000	3,317,873	2,034,000	2,034,000		2,770,000	2,770,000
		NonFed	10,659,000	2,500,000		2,500,000			
		Total	32,915,000	5,817,873		4,534,000			
Colorado River Salinity Control Program									
1302	**Title I Division** (Lower Colorado)	USBR	448,076,000	403,786,410	2,828,200	3,078,000	Support	2,407,000	2,407,000
1304	**Title II Division (Construction)**								
1304A	Grand Valley Unit	USBR	163,391,323	158,018,074	4,300,000			(complete) 0	0
1304B	Basinwide Program	USBR	To be determined	5,445,187	7,600,000			12,300,000	17,500,000
USDA	**Environmental Quality Incentive Program**				200,000,000		–	300,000,000	
1304C	Colorado River Salinity Control Program				3,055,000			Not yet allocated	12,000,000
BLM	**Management of Land and Resources**								
	Soil, Water and Air Management			22,351,000			31,031,000		
1304D	Colorado River Salinity Control Program				Not specifically identified		–	Not specifically Identified	5,200,000
Colorado River Endangered Species Conservation and Recovery Projects (LC only)									
1305	Endangered Species Conservation and Recovery Projects (LC only)	USBR	19,299,000	7,061,770	3,535,000	3,660,000	Support	1,990,000	1,990,000
U.S. Fish And Wildlife Service (Interior Appropriations Subcommittee)									
1500	Bay-Delta Ecosystem Restoration (CALFED) (Also see CWC 100 & 500)	USFWS							1,500,000
U. S. Coast Guard (Transportation Appropriations Subcommittee)									
V1600	Ballast Water Control Programs								Support
U.S. Environmental Protection Agency (VA-HUD and Independent Agencies Appropriations Subcommittee)									
	Sonoma County Water Agency								Support

PREPARED STATEMENT OF FRANK DAL GALLO, PRESIDENT, PETER D. RABBON, GENERAL MANAGER, THE RECLAMATION BOARD, THE RESOURCES AGENCY, STATE OF CALIFORNIA

THE RECLAMATION BOARD, FINAL RECOMMENDATIONS FOR FEDERAL FLOOD CONTROL PROJECTS—1999 SUMMARY

[In thousands of dollars]

	President budget	Board recommends
Corps of Engineers' Projects:		
General investigations—Surveys:		
Sacramento and San Joaquin Rivers Comprehensive Basin Study	3,500	3,500
Northern California Streams:		
Middle Creek	200	200
Lower Strong Ranch and Chicken Ranch Sloughs	.....	100
Preconstruction engineering and design:		
Kaweah River	1,165	1,165
American River Watershed (Long Term Planning)	500	4,000
Yuba River Basin	100	775
Merced County Streams	500	900
Construction—General		
Sacramento River Bank Protection	7,080	10,080
Marysville/Yuba City Levee Reconstruction	746	12,000
West Sacramento	2,500	13,000
American River Watershed (Common Elements)	1,000	26,000
American River Watershed (Long Term)	.....	1,000
Mid-Valley Levee Reconstruction	1,700	1,700

THE RECLAMATION BOARD, FINAL RECOMMENDATIONS FOR FEDERAL FLOOD CONTROL PROJECTS—1999 SUMMARY—Continued

[In thousands of dollars]

	President budget	Board recommends
Kaweah River	.....	500
Lower Sacramento Levee Reconstruction	952	952
Upper Sacramento Levee Reconstruction	400	400
American River Watershed (Natomas)	.....	14,500

THE RECLAMATION BOARD'S RECOMMENDATIONS

The Reclamation Board, as the State agency which furnishes required local assurances for a majority of the Federal flood control projects in California's Central Valley, respectfully submits this statement of support for Corp of Engineer's flood control projects.

The Board in general supports the Presidents budget for Federal flood control projects in the California Central Valley. The projects described below are of particular importance to the health, safety, and well-being of Central Valley residents and are especially important to The Reclamation Board that they are started and/or kept on schedule.

General Investigations—Surveys

Sacramento and San Joaquin Rivers Comprehensive Basin Study.—The study area includes the entire Sacramento River Basin and San Joaquin River Basin in Northern and Central California respectively. Local, State and Federal water resources agencies support a coordinated multi-objective investigation to balance flood damage prevention, environmental restoration, and other water resources purposed along the river. The Feasibility Cost Sharing Agreement was executed in February 1998.

The Board recommends funding to continue this study.

Northern California Streams.—This survey, authorized in 1962, is a study of the Sacramento River and its tributaries in regard to flood control measures. The following are interim study proposals for funding in fiscal year 1997.

MIDDLE CREEK

A reconnaissance study, which evaluated several alternatives near Middle Creek's confluence with Clear Lake on lake county, was completed in 1997. Existing levees which do not provide adequate flood protection need to be repaired and upgraded.

The Board supports funding to continue the feasibility study.

LOWER STRONG RANCH AND CHICKEN RANCH SLOUGHS

In January 1997 areas along lower Strong Ranch Slough and lower Chicken Ranch Slough in Sacramento County were flooded twice by those streams. This area was also flooded in February 1986.

The Board recommends funding for a reconnaissance study.

Preconstruction Engineering and Design

Kaweah River.—Terminus Dam above the city of Visalia was completed in 1962 to provide flood control and irrigation water supply. However, significant flood damages to communities and highly developed agricultural lands along the Kaweah River have continued to occur.

The Board recommends funding to continue preconstruction engineering and design and to initiate construction.

American River Watershed (Long Term Planning).—The Sacramento Urban Area has only a 70-year level of protection from flooding by the American River. Although incremental actions have occurred, a long term plan for high levels of protection must be developed and implemented.

The Board recommends funding to continue: long term planning; preconstruction engineering and design; and to initiate construction.

Yuba River Basin.—The Marysville and Yuba City area has experienced seven major floods. A feasibility study is scheduled for completion in April 1998.

The Board recommends funding to continue preconstruction engineering and design.

Merced County Streams Group (Bear Creek Unit).—Merced narrowly avoided major urban flooding in January and February 1998.

The Board recommends funding to continue preconstruction, engineering, and design.

Construction—General

Sacramento River Bank Protection.—The project, authorized in 1960, is a long-range Federal-State effort to preserve the existing project levee system along 192 miles of the Sacramento River. The Sacramento River Bank Protection Project work consists of providing some form of bank stabilization at those points which are identified each year as the most critical.

The Board recommends funding for continued construction.

Marysville/Yuba City Levee Reconstruction.—This program will reconstruct 44 miles of the 134 miles of federally authorized levees which protect the Marysville/Yuba City area. The first of three construction contracts was awarded in July 1995. Flooding in 1997 demonstrated the need to extend the work sites, modify the design, and investigate new sites in the project area.

The Board recommends funding for continued construction.

West Sacramento.—The Board is the non-Federal sponsor for the West Sacramento flood control project which was authorized for construction by WRDA 1992.

The Board supports funding to continue construction.

American River Watershed (Common Elements).—The Common Elements Project was authorized in WRDA 1996. This project consists of features that would be common to any long term project selected for the American River.

The Board supports Federal funding for the continued construction of this project.

American River Watershed (Long Term).—Discussed previously under preconstruction engineering and design.

Mid-Valley Area Levee Reconstruction.—An evaluation of about 240 miles of the Sacramento River Flood Control Project levees in the Sacramento Mid-Valley area identified about 20 miles of levees that are structurally deficient and require reconstruction.

The Board recommends funding to initiate construction.

Kaweah River.—Discussed previously under preconstruction engineering and design.

Lower Sacramento Levee Reconstruction.—An evaluation of about 295 miles of the Sacramento River Flood Control Project levees in the Lower Sacramento Valley area identified about 47 miles of levees that are structurally deficient. The project includes reconstructing about 2 miles of these levees.

The Board recommends funding for construction activities.

Upper Sacramento Levee Reconstruction.—Federally authorized flood control levees in the Upper Sacramento Area were evaluated and 12 miles were determined to be deficient and requiring reconstruction.

The Board recommends funding for construction.

American River Watershed (Natomas).—The project was authorized but not funded in 1992. The local flood control agency proceeded with the work.

PREPARED STATEMENT OF FLOYD R. SUMMERS, PE, PRESIDENT, CALIFORNIA SOCIETY OF PROFESSIONAL ENGINEERS, SACRAMENTO, CA

The Federal Appropriations for fiscal year 1999 presented to you by the California Water Commission are endorsed by the California Society of Professional Engineers.

The Commission's process of understanding and screening each project, each year, is extensive, exhaustive and thorough. The Commission works with many Federal and State agencies, districts, cities, organizations and individuals throughout the year to understand the projects and their effects on a growing society. This includes deliberative balancing of competing interests. A project does not make the list unless it is well understood and makes sense.

Increases for some of the Bureau of Reclamation and Corps of Engineers projects which are in the feasibility study phase are because of situations encountered during study work that require investigation and were not anticipated when original budgets were developed 2 or 3 years in advance. Without the increases, work in progress on the studies will be seriously adversely impacted, often with detrimental impacts on resource management and people's well being.

The California Society of Professional Engineers is a voluntary organization of 2,500 registered professional engineers of all disciplines (civil, electrical, mechanical, structural, fire protection, chemical, control, etc.) and areas of practice (construction, education, government, industry, and private practice).

PREPARED STATEMENT OF STEPHEN K. HALL, EXECUTIVE DIRECTOR, ASSOCIATION OF CALIFORNIA WATER AGENCIES

On behalf of the members of the Association of California Water Agencies (ACWA), I am writing to request support for Federal funding in fiscal year 1999 to continue ongoing efforts through the CALFED Bay-Delta Program to restore the San Francisco Bay/San Joaquin River Delta ecosystem in California.

The 104th Congress in 1996 passed the California Bay-Delta Environmental Enhancement and Water Security Act, which authorized $430 million over 3 years for this purpose. President Clinton, as he did in his fiscal year 1998 budget, has requested $143 million of these funds as part of his fiscal year 1999 budget. In October 1997, President Clinton signed an energy and water development and appropriations bill containing $85 million for the Bay-Delta system.

Our members strongly support making this fiscal year 1999 request a high priority within the Energy and Water Development Appropriations bill.

The key to the appropriation of these funds was the work of a unique coalition, which brought together environmental, urban and agricultural interest to advocate for the Federal ecosystem funds. The coalition continues to work to secure this second-year appropriation.

The San Francisco Bay/San Joaquin River Delta system is the largest estuary on the West Coast. Millions of birds and 53 species of fish migrate through and live in the Bay-Delta estuary, including many listed as threatened or endangered. The estuary is also crucial to the nation's economy, providing drinking water for 22 million people and irrigation water for over 4 million acres of farmland, including 45 percent of the nation's produce.

One of the unique aspects of the CALFED Bay-Delta Program is that a strategy for funding a long-term solution is being developed as an integral part of the overall program. Costs of the program will be shared by many entities, including Federal appropriations, private-public partnerships, and general obligation bonds. Passage of State Proposition 204 in 1996 has provided more than $430 million for the CALFED Bay-Delta Program's environmental enhancement efforts. Water users also provided seed money to jump-start implementation of ecosystem projects in 1995–97. This funding for early implementation of the Programs' environmental actions reflects the fundamental need to restore the ecosystem as an essential component of a long-term comprehensive solution to Bay-Delta system problems. Funds provided in fiscal year 1999 can be leveraged against other funding sources, including the Central Valley Project Improvement Act Restoration Fund to finance further ecosystem restoration activities.

Again, on behalf of the California water supply community, thank you for your attention to this request to fully fund the President's fiscal year 1999 budget request of $143 million for the CALFED Program.

PREPARED STATEMENT OF NATHANIEL S. BINGHAM, HABITAT DIRECTOR, PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATION

WINTER-RUN CHINOOK SALMON CAPTIVE BROODSTOCK PROGRAM

The Captive broodstock program, which we are requesting continuation funding for, arose from the shared concern about the possible extinction of the winter-run of a wide range of stakeholders and agencies. In 1991 the concerned parties formed the Winter-Run Captive Broodstock Committee which formulated and began the program. Utilizing funding provided by Congress the committee began the program in 1992. Total annual program costs have averaged $1,250,000. Rearing facilities at Bodega Marine Laboratory of the University of California and Steinhart Aquarium of the California Academy of Sciences were constructed around juvenile salmon provided from Coleman National Fish Hatchery. Presently the combined facilities of both institutions are holding four year classes of salmon in captivity. Offspring from the captive adult salmon have been successfully released in the Sacramento River. This years production will be 40,000 juvenile winter-run chinook salmon. The captive broodstock program has required and has provided substantial scientific and technical advances in the husbandry, pathology, and genetics of chinook salmon. In order to conserve the unique genetics of the winter-run, the program has developed a new microsatellite DNA marker technology to determine the parentage and run identity of the captive salmon. These markers are now being further developed and are being used to identify the stock origin of salmon entrained by the State water export pumps in the Sacramento San Joaquin Delta. Thus these markers will have uses in salmon biology far beyond their application to the brood stock program.

For fiscal year 1999 we are requesting $350,000 from the committee in the Bureau of Reclamation funds. The U.S. Fish and Wildlife Service has committed $150,000 from the Central Valley Improvement Act Restoration Fund.

COMMUNITY BASED SALMON HABITAT RESTORATION PROJECTS

Coho Salmon have recently been listed as threatened in Central California under the Federal Endangered Species Act. In addition the National Marine Fisheries Service has also listed Coho in the "Transboundary Evolutionarily Significant Unit" in Northern California and Southern Oregon. This listing is anticipated to impact many users of timber and water resources in California and Oregon. We are requesting that the committee provide $1 million in California, for community based watershed restoration projects to be funded through the National Fish and Wildlife Foundation.

PREPARED STATEMENT OF EMERY POUNDSTONE, PRESIDENT, RECLAMATION DISTRICT NO. 108

Mr. Chairman, Members of the Subcommittee, my name is Emery Poundstone. I am a rice farmer, and I am President of the Board of Directors of Reclamation District No. 108.

I appreciate the opportunity to testify before you this morning regarding the Federal funding priorities for RD 108.

I also want to thank the Committee Members, particularly Congressman Vic Fazio, who represents our region, for their past efforts to address our concerns. In particular, the District is very appreciative of the Committee's strong support for our efforts to construct a state-of-the-art fish screen at our District's main diversion on the Sacramento River.

Reclamation District No. 108 has two funding requests for fiscal year 1999. First, RD 108 requests that the Subcommittee provide an additional $3,000,000 for the Corps of Engineers, under the Sacramento River Bank Protection Program, to complete levee protection work that was begun in fiscal year 1998. The funds will allow the Corps of Engineers to complete reinforcement and protection work on a five mile section of the District's so-called Back Levee, the left bank of the Colusa Basin Drain. In fiscal year 1998, the Committee provided $750,000 to initiate work on this levee protection work.

The fiscal year 1999 funds are needed to permanently protect the District's Back Levee and avoid the need for future repairs under the Public Law 84–99 program.

During the early fall of 1997, the Corps of Engineers repaired 3.4 miles of this levee section, under Public Law 84–99. The levee section was severely damaged during the 1995 flood event and the Corps of Engineers worked to restore the levee to its original condition. However, just months after this work was finished, in February of this year, another flood occurred and caused severe damage to not only the original 3.4 mile section of levee reconstructed by the Corps but also to approximately 1.5 miles of additional levee. Clearly, a permanent remedy to prevent recurring flood damage is required.

The project the Corps of Engineers is currently designing, and that will be completed with the $3,000,000 the District seeks, will permanently protect this important levee. The California Water Commission has endorsed the project, and the State Reclamation Board has indicated its desire and intent to cost-share the project.

Again, the District respectfully requests that the Committee add $3,000,000 to the Sacramento River Bank Protection Project and direct the Corps of Engineers to use these funds to reconstruct and protect the so-called Back Levee of Reclamation District No. 108 from future damage and potential failure.

Second, on behalf of the Sacramento River Settlement Contractors, I respectfully request the Committee provide an additional $1,000,000 for studies that must be undertaken to complete the Sacramento River Basin-Wide Water Management Plan and to update and extend the 1956 Cooperative Study (WMP). The WMP is required by the Memorandum of Understanding between eight Settlement Contractors and the Bureau of Reclamation in January 1997 and must be completed prior to the negotiation of the renewal of the Central Valley Project Sacramento River Settlement Contracts.

The Bureau of Reclamation has allocated $650,000 to these studies in fiscal year 1998. The Bureau has additional $1,000,000, of which $600,000 is for continuation of these studies, in the fiscal year 1999 budget request for the Bureau of Reclamation, under Central Valley Project, Sacramento River Division, Sacramento River Contract Litigation Settlement. While the District and the other Sacramento River

Settlement Contractors are pleased with the Bureau's commitment to completion of the WMP, we believe that financial resources, in addition to those provided by the Settlement Contractors on a cost-share basis, will be needed in fiscal year 1999 in order to ensure that these studies are carried out in a timely and complete process. RD 108 and the other seven Sacramento River Settlement Contractors, therefore, request that the Committee provide an additional $1,000,000, over and beyond the funds included in the budget request, for the Sacramento River Division, specifically to support water user directed studies associated with the preparation of the final WMP. Failure to complete the work that will be carried out with the additional resources, could jeopardize the capability of all Settlement Contractors to complete negotiations with the Bureau of Reclamation on renewal of Sacramento River Settlement Contracts.

Here, again, the California Water Commission has endorsed this request.

Thank you for the opportunity to testify.

PREPARED STATEMENT OF GAYE LOPEZ, MANAGER, COLUSA BASIN DRAINAGE DISTRICT

USBR Fiscal Year 1998 Request: $3,500,000

Mr. Chairman and Members: The Colusa Basin Drainage District appreciates your past support for our Integrated Resources Management Plan for water management that addresses flooding and will provide opportunities for future conjunctive use of water resources to meet the diverse needs of agricultural, urban and wildlife interests in the Colusa Basin.

The 650,000 acre Colusa Basin Drainage District, located on the west side of the Sacramento River, serves a large watershed exceeding one million acres. It covers three counties, Glenn, Colusa and northern Yolo Counties. It not only is a rich agricultural area, but a rich wildlife area as well, including three national wildlife refuges.

Over the decades, devastating floods have repeatedly struck the Colusa Basin resulting in costly damages to public and private property and loss of life. In 1995 and again in 1998 these three counties suffered an estimated 100 million dollars in losses and 1 death due to storms. In November 1995, a majority of landowners voted to implement the District's Integrated Management Plan to address flood damage while obtaining other benefits of increasing groundwater supplies, surface water storage, and improve environmental and wildlife uses in the watershed.

Through a stakeholder/local, State and Federal agency collaborative process, four projects have been initially selected to be developed to serve as a demonstration for integrated resources management: Two small reservoirs, a groundwater recharge detention basin, and management of the 75 mile Drain itself. During 1996, preliminary design for the conjunctive use demonstration projects was completed. Both basin-wide programmatic as well as project specific environmental documentation commenced during 1997 and is scheduled for completion in fiscal year 1998.

The District requests a $3,500,000 appropriation in fiscal year 1999 for final design and construction of one of the District's priority projects. We believe our Integrated Resource approach to solving a number of problems across a large area with the same dollar, is a wise expenditure of public funds.

Thank you for your continued support.

PREPARED STATEMENT OF DICK AKIN, SUTTER COUNTY SUPERVISOR, DISTRICT 5

We are requesting reconnaissance studies within Sutter County because:

—flooding of January 1997, including in our Meridian area, exposed problems along our 200 miles of levees that we were not aware of prior to this;

—the Corps of Engineers has developed new levee stability information subsequent to that flooding;

—as part of a review of alternatives to provide flood control, we hired engineers, in the Fall of 1997, to do some scoping work and identified numerous areas of concern we have placed a one-half cent sales tax for flood control on the June ballot and would like to begin the process of seeking Federal assistance as soon as possible.

While we requested four separate studies, we are willing to work with you and the Corps of Engineers to determine the correct approach. It is possible that there should be some combination of these studies, based on discussions with your staff, and we will gladly accept your advice on that issue.

We just want to get the process started.

Thank you for your time and attention and for the opportunity to speak.

PREPARED STATEMENT OF TIB BELZA, CHAIRMAN, YUBA COUNTY WATER AGENCY

REQUEST

Please appropriate $775,000 for fiscal year 1999 for the U.S. Army Corps of Engineers (USACE) for preconstruction engineering and design for the Yuba River Basin, California, levee flood protection improvements.

ISSUE

The USACE has recently completed the Draft Feasibility Report, Yuba River Basin Investigation, California, January 1998. The report identifies Federal interest in approximately $28 million of improvements to existing levees. To keep the effort to provide critically needed higher levels of flood protection for the area moving forward, the USACE has identified that they need $775,000 of Federal funding in fiscal year 1999. The California State Reclamation Board is on record as supporting this levee improvement work, and the Yuba County Water Agency (YCWA) Board has committed money that is in hand for the local share of this critically needed flood protection work.

IDENTIFIED LEVEE IMPROVEMENTS THAT ARE NEEDED

The USACE recommended plan involves constructing or deepening 6.7 miles of slurry walls, deepening 9 miles of interior toe drains and constructing or modifying 9.5 miles of berms along section of the Yuba and Feather Rivers and constructing about 5 miles of slurry walls and berms along the ring levee around the City of Marysville. The proposed work has an overall benefit-cost ratio of 2.6.

FLOOD PROTECTION NEED

The City of Marysville is located at the confluence of two major California Rivers, the Feather and the Yuba. Historically the area on the average has been subject to major floods about every 8.5 years. During the past 50 years, the area has had five major river floods, resulting in a total of 43 deaths and an estimated total damage cost of $818 million when brought to 1997 dollars. None of these floods have been from levee overtopping, all have been the result of levee failures. The most recent major Yuba County flood in January 1997, took 3 lives, destroyed in excess of 800 homes, flooded 16,000 acres and resulted in the largest evacuation in California history. An estimated 100,000 people were evacuated as a result of this flood. The environmental damage was enormous, including vast destruction of designated habitat for endangered species.

Yuba County has probably done more to provide flood protection for itself than any County in California. Unfortunately Yuba County is consistently in the bottom three counties for per capita income in California. Substantial efforts are continuously being undertaken to bring economic development to the area, but each time progress is being made, another flood occurs, scaring away potential investors.

CONGRESSIONAL SUPPORT LEADING TO WHERE WE ARE

In 1988 Congress appropriated $500,000 for a USACE Yuba River Basin Flood Control Reconnaissance Study. The Reconnaissance Study identified Federal interest in levee improvements and recommended a Feasibility Study. In 1991 the USACE undertook a $2.1 million Feasibility Study that ultimately cost $2.6 million. Half the cost of the Feasibility Study was non-Federal. The Feasibility Study has identified Federal interest in approximately $28 million in levee improvements. The $775,000 being requested is part of the Federal share of levee improvement work identified in the recently completed Feasibility Study that has been underway since 1991. Since 1988, $1.8 million in Federal funds and a total of $3.1 million have been spent identifying the problem. It is now time to move forward with some fixes on the ground.

On behalf of the flood devastated people of Yuba County, I urge that you find a way to provide the USACE with the $775,000 they have identified is needed to keep urgently needed flood protection improvements for our County moving forward. We are grateful for the financial assistance Congress has provided in the past. Thank you.

PREPARED STATEMENT OF WALTER KICKEWIRTH, CHAIRMAN, BOARD OF DIRECTORS, PLACE COUNTY WATER AGENCY

The Bureau of Reclamation is now engaged in a project to construct a permanent pump station located out of harm's way in order to meet its contractual requirements and eliminate the waste of annually installing and removing a major facility.

Last year, Congress supported this project and appropriated $4 million. With this, we hope to issue an initial construction contract late this summer. We anticipate construction activity will span at least three construction seasons and additional funds will be required to complete the project.

The Bureau of Reclamation has requested $13,400,000 through the President's budget, and the Placer County Water Agency is in full support of the Bureau and respectfully asks for your consideration.

In lieu of a large appendix of background material tied to the Auburn Dam saga, I am enclosing only two items: (1) a photo of the Placer County Water Agency pump station, circa 1967, which was removed by the Federal Government to make way for the Auburn Dam, and (2) a copy of the contract between the Water Agency and the Bureau of Reclamation guaranteeing access to our water whenever needed.

If you have questions or need any additional information, feel free to contact, at Placer County Water Agency, General Manager Dave Breninger at (530) 823–4860, or our Special Projects Administrator, Jack Warren, at (530) 823–4986; or at Reclamation, Regional Director Roger Patterson at (916) 979–2207, or Area Manager Tom Aiken at (916) 988–1707.

Thank you for the opportunity to bring this matter to your attention for funding.

SUPPLEMENTAL AGREEMENT TO LAND PURCHASE CONTRACT

THIS AGREEMENT, made this day of 19 , in pursuance of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, between THE UNITED STATES OF AMERICA, hereinafter styled the United States, acting through such officer as is authorized therefor by the Secretary, of the Interior, and PLACER COUNTY WATER AGENCY, a public agency created by Act of the Legislature of the State of California, hereinafter styled Vendor.

2. WITNESSETH:

WHEREAS, on July 25, 1972, Vendor and the United States entered into Land Purchase Contract No. 14–06–859–308, which contract was recorded on August 7, 1972, in Volume 1435 at Page 226, Official Records, County of Placer, State of California; and

WHEREAS, under the terms and provisions of Article 3 of said contract Vendor agreed to convey to the United States those certain lands identified as "Unit AD–32, Rev. 5–11–72, Corrected," and "Unit AD–49–1, 5–29–68," as described in Exhibit "A" of said contract, excepting, therefrom the tunnel intake structure, tunnel, valve house and appurtenant facilities, and reserving to Vendor the perpetual right, power, privilege, and easement to operate and maintain the Auburn Ravine Tunnel and appurtenant parts and structures, including the valve house, in, on, over, and through the lands so described in Schedule "A" of said contract as Unit AD–49–1 and Tract No. 2 of AD–32; and

WHEREAS, Articles 11 and 12 of said contract provide that in the event Vendor demonstrates a need for water, the United States will provide a substitute pumping facility to deliver water into said existing tunnel intake structure at the intake portal of the Auburn Ravine Tunnel, or at its option, the United States could provide water from an alternate source provided delivery was made to a point suitable for its intended use; and

WHEREAS, by letter dated February 9, 1977, Vendor informed the United States of a need for additional water due to an increase in service demands from customers within Vendor's water service area and also that Vendor was faced with a water shortage due to the current drought conditions; and

WHEREAS, the United States has determined that additional water for Vendor' use cannot be obtained economically from an alternate source and that construction of a substitute pumping facility is the most desirable method of providing Vendor with the means for obtaining said additional water from the American River for delivery to said intake portal of the Auburn Ravine Tunnel; and

WHEREAS, in order to expedite construction of a substitute pumping facility by the United States, Vendor proposes to provide the original pumps and motors which were salvaged and removed by Vendor in accordance with Article 4 of said contract; and

WHEREAS, Vendor's proposal to furnish pumps and motors would relieve the United States of the obligation to purchase new pumps and motors and would result in a more timely construction of a substitute pumping facility; and

WHEREAS, it is to the mutual benefit and desire of the parties that said Land Purchase Contract be supplemented and amended to provide that Vendor will furnish the pumps and motors for a substitute pumping facility and that the United States, in lieu of furnishing new pumps and motors, will furnish and install the necessary electric power facilities and repair and install the electrical equipment previously purchased by the Vendor as necessary to make the substitute pumping plant operative.

NOW, THEREFORE, the parties hereto do agree that said contract shall be supplemented by the addition of Articles 19, 20, 21, 22, 23 and 24 as follows:

19. The United States shall construct a substitute pumping facility on the upstream side of the existing cofferdam at the Auburn Dam site on the American River. In lieu of providing new pumps and motors for a substitute facility, the United States will utilize the original pumps and motors which shall be provided by the Vendor. Vendor agrees that said pumps, motors and appurtenant equipment shall be available for United States use in the substitute facility until such time it is determined, by mutual agreement of the parties hereto, that said substitute facility is no longer required. In exchange for the use of Vendor's pumps and motors, the United States shall provide the necessary transmission line, repair and install the Vendor's electrical equipment, and allow Vendor to use United States substation as a source of electric power to make the substitute facility operative. It shall be Vendor's responsibility to arrange with Pacific Gas and Electric Company for installation of the necessary metering equipment at the substation and for billing to Vendor for the power used by the substitute pumping facility.

20. In the event Vendor's need for additional water extends beyond calendar year 1978, it shall be Vendor's responsibility to arrange for an alternate source of power for continued operation of the substitute pumping facility. The United States shall, at that time, as part of the exchange referred to herein, arrange for relocation of the transmission line within the construction area so as not to interfere with the construction of Auburn Dam.

21. Installation of said substitute pumping facility upstream from the existing cofferdam will subject the facility to flooding when river flows exceed 80,000 c.f.s. during the winter months. It shall be the responsibility of the United States to arrange for the removal, storage and reinstallation of the pumps, motors, electrical equipment and such other of the facilities that could be damaged by high water. All other operation and maintenance of said substitute facility shall remain the responsibility of the Vendor as provided for in Article 12 of said contract. The United States shall provide Vendor with a suitable means of temporary ingress and egress through the construction site to their valve house structure and to the substitute pumping facility for operation and maintenance purposes. Said route of temporary ingress and egress may vary from time to time so as to interfere as little as possible with the contractor's activities during construction of Auburn, Dam.

22. Vendor agrees to inform the United States annually of the need for continued use of the substitute pumping facility. Vendor shall give the United States at least sixty days written notice when requesting the United States to reinstall the pumps, motors, and electrical equipment as necessary, to make the substitute pumping facility operational.

23. It is mutually understood and agreed upon by the parties hereto, that all equipment pertaining to the said substitute pumping facility, with the exception of the two 24-inch diameter steel discharge pipelines extending from the ends of the pump manifolds to the Auburn Ravine Tunnel intake structure, is considered to be the property of the Vendor. Said steel discharge pipelines shall remain the property of the United States.

24. In the event Vendor determines that the equipment in use at the substitute facility could be utilized elsewhere by Vendor more effectively, or, that said substitute facility is no longer required to provide Vendor with additional water, the United States shall, upon written notification by Vendor, deliver the pumps, motors and appurtenant equipment to a Project storage site selected by the United States. Vendor shall be responsible for removal of said equipment from said Project storage site to a site selected by Vendor for either permanent storage or installation elsewhere. Vendor shall also be responsible for the removal of any electric transmission line installed by Vendor to provide power to operate the substitute facility.

As to all other provisions in said Land Purchase Contract, the same shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this instrument this day of19 .

UNITED STATES OF AMERICA

By

Regional Real Estate Officer
PLACER COUNTY WATER AGENCY, Vendor

By
Chairman, Board of Directors

On this day of , 19 , before me a Notary Public in and for the County and State aforesaid, personally appeared and , known to me to be the and of the Corporation that executed the within instrument, and to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the within instrument pursuant to its by-laws or a resolution of its Board of Directors.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal this day and year in this certificate above written.

Notary Public

My Commission Expires:

PREPARED STATEMENT ON BEHALF OF THE COUNTY OF SAN JOAQUIN AND THE SAN JOAQUIN COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, CA

San Joaquin County, located in the heart of California's central valley, has both a vibrant agricultural economic base and burgeoning metropolitan growth. Both of these vital elements are vulnerable to the forces of nature. The 1997 flood inundated thousands of acres and threatened our major urban areas. The actual economic loss to the County in 1997 is a staggering ($100+ million) and the potential loss due to flooding is enormous. The heart of Stockton faces a flood threat from the Calaveras River, Bear Creek and Mosher Slough. The San Joaquin Area Flood Control Agency (SJAFCA) has been formed and construction is nearly complete (a $70 million investment) to restore the Stockton area 100-year level of flood protection. We have aggressively moved ahead with this work to protect our people in anticipation that a credit for our work would be forthcoming against a Corps developed project.

At the other extreme of the weather spectrum, San Joaquin is very vulnerable to drought induced water shortages. Due to the export of our water by East Bay Municipal Utility District to the Oakland area and by the Bureau of Reclamation to the CVP, San Joaquin County is deficient of an adequate water supply in quantity and quality. Our ground water levels dramatically drop during a less than average water year. During these drops, the threat of salt water intrusion in our ground water basin from the Delta is a major concern. Our local water district (Stockton-East Water District) has invested $65 million to allow transfer of Stanislaus River flows to supplement our water supplies, but this project is dependent on the coordinated operation of New Melones Reservoir and local storage capability during wet years.

As you can see, we are willing to invest in our future and we will continue to do so. The timely funding of these important studies is crucial to the economic well being of San Joaquin County. These projects represent studies that need to be conducted in order to resolve problems on flood control, water supply, water quality, groundwater and the environment in San Joaquin County. We need Federal help in several of these projects and we request Federal appropriations during fiscal year 1998–99 for the following Corps of Engineers and Bureau of Reclamation projects:

	Fiscal year 1999
U.S. Army Corps of Engineers:	
General Investigations—Surveys:	
(110) Sacramento and San Joaquin Rivers Comprehensive Study	$3,500,000
(125) San Joaquin River Basin Cosumnes and Mokelumne Rivers	18,000
(134A) San Joaquin River Basin Stockton Metropolitan Area	400,000
(134B) San Joaquin River Basin Stockton Metropolitan Area Farmington Dam	500,000
Bureau of Reclamation:	
(647) South Delta Barriers	200,000

DETAILED COMMENTS

U.S. Army Corps of Engineers

(110) Sacramento and San Joaquin Rivers Comprehensive Study, fiscal year 1999—$3,500,000

The Sacramento and San Joaquin Rivers Comprehensive Study is a $9 million study of the water resources needs of the Sacramento and San Joaquin Rivers. Flood control and environmental needs will receive equal consideration. We expect setback levees and re-operation of existing reservoirs will receive a careful review in this Study. The President has proposed $3.5 million for both the San Joaquin and Sacramento Rivers Watershed Studies. At this time, we do not know the allocation, although 50–50 seems likely. The State is the cost-sharing partner in these studies.

(125) San Joaquin River Basin Cosumnes and Mokelumne Rivers, fiscal year 1999—$18,000

The project is a Reconnaissance Study of flood problems on the Mokelumne and Cosumnes Rivers. The fiscal year 1998 Budget includes funding for $100,000 and the President's fiscal year 1999 Budget includes funding for $18,000.

(134A) San Joaquin River Basin Stockton Metropolitan Area, fiscal year 1999—$400,000

This project was analyzed by the U.S. Army Corps of Engineers' 1997 Reconnaissance Report, which concluded that there was a Federal interest in a flood project for the Stockton area. During this same period, a levee project was authorized under Section 211 of the Water Resources Development Act of 1996 for the San Joaquin Area Flood Control Agency (SJAFCA) levee project. Before Federal dollars can be appropriated to reimburse SJAFCA (up to 75 percent reimbursement), a Section 211 Report must be approved by the Secretary of the Army. The requirements of this Report, since the project is essentially complete, and the funding of the report (potentially 100 percent local with reimbursement upon completion), are currently under negotiation.

The President's Budget of $400,000 is adequate to complete the required study if it is determined that the study can be cost shared. The local view is that the Reconnaissance Report by the Corps of Engineers found the project to be highly beneficial and that additional expenditures on studies of nearly constructed projects are unwarranted. The Corps of Engineers proposes $1 million of additional studies to secure approval of the existing project and to analyze the rural areas for a feasible project. The funding in the President's Budget is adequate to allow completion of the studies required. The San Joaquin Area Flood Control Agency will provide local funding for this study.

(134B) San Joaquin River Basin Stockton Metropolitan Area Farmington Dam, fiscal year 1999—$500,000

The study costs for this investigation will determine if a Federal interest may exist for converting the Farmington Dam into a multiple purpose reservoir. In addition to the flood control, the Corps study will determine the viability of using the existing Farmington Dam for a water supply reservoir. The dam currently detains water for flood protection but does not store water for water supply. By making Farmington Dam a multiple purpose project, San Joaquin County's water shortage could be addressed with minimal impact. The fiscal year 1998 Budget includes $225,000. The President has included $500,000 in his fiscal year 1999 Budget. Since this is a feasibility study, all Federal funds must be matched by local funds. The sponsor for this study is the Stockton East Water District.

Bureau of Reclamation

(647) South Delta Barriers, fiscal year 1999—$200,000

The project provides temporary barriers in the south Delta to improve water quality. The fiscal year 1998 Budget includes funding for $200,000 and the President's fiscal year 1999 Budget includes funding for $16,000. In order to maintain the program, $200,000 is needed and the California Water Commission will be requested to recommend an increase in funding.

PREPARED STATEMENT OF THE CITY OF STOCKTON, CA

Mr. Chairman and Members of the Committee: The City of Stockton supports the following Corps of Engineers and Bureau of Reclamation water, flood control and fishery projects:

1. Stockton Metropolitan Area—$400,000
2. Farmington Dam—$500,000
3. San Joaquin Watershed—$9,000,000
4. Consumnes and Mokelumne River—$18,000
5. Water Resources Development Act, 1996, Section 206, Aquatic Ecosystem Restoration, Stockton Waterfront—$1,000,000
6. South Delta Barriers—$16,000

U.S. CORPS OF ENGINEERS

Stockton Metropolitan Area—$400,000

This project was analyzed by the U.S. Army Corps of Engineers' (Corps) 1997 Reconnaissance Report, which concluded that there was a Federal interest in a flood project for the Stockton area. During this same period, a levee project was authorized under Section 211 of the Water Resources Development Act of 1996 for the San Joaquin Area Flood Control Agency (SJAFCA) levee project. Before Federal dollars can be appropriated to reimburse SJAFCA (up to 75 percent reimbursement), a Section 211 Report must be approved by the Secretary of the Army. The requirements of this Report, since the project is essentially complete, and the funding of the report (potentially 100 percent local with reimbursement upon completion), are currently under negotiation. The President's budget of $400,000 is adequate to complete the required study if it is determined that the study can be cost shared. The local view is that the Reconnaissance Report by the Corps found the project to be highly beneficial and that additional expenditures on studies of nearly constructed projects are unwarranted. The U.S. Army Corps of Engineers proposes $1 million of additional studies to secure approval of the existing project and to analyze the rural areas for a feasible project. The funding in the President's budget is adequate to allow completion of the studies required. The San Joaquin Area Flood Control Agency will provide local funding for this study.

Farmington Dam—$500,000

The study costs for this investigation will determine if a Federal interest may exist for converting Farmington Dam into a multiple purpose reservoir. The fiscal year 1998 budget includes $225,000. The President has included $500,000 in his fiscal year 1999 budget. Since this is a feasibility study, all Federal funds must be matched by local funds. The sponsor for this study is the Stockton East Water District.

San Joaquin River watershed—$9,000,000

The San Joaquin River Watershed Management Study is a $9 million study of the water resource's needs of the San Joaquin River. Flood control and environmental needs will receive equal consideration. We expect setback levees and reoperation of existing reservoirs will receive a careful review in this study. The President has proposed $3.5 million for both the San Joaquin and Sacramento Rivers Watershed Studies. At this time, we do not know the allocation, although 50–50 seems likely. The State is the cost-sharing partner in these studies.

Consumnes and Mokelumne Rivers—$18,000

This project is a Reconnaissance Study of flood problems on the Mokelumne and Consumnes Rivers. The fiscal year 1998 budget includes funding for $100,000 and the President's fiscal year 1999 budget includes funding for $18,000.

Water Resources Development Act, 1996, section 206, aquatic ecosystem restoration—Stockton waterfront—$1,000,000

The City of Stockton, CalTrans and the Port of Stockton have combined to initiate a study to restore the aquatic ecosystem of the Stockton waterfront. The assistance of the Corps of Engineers to study, plan and eventually construct improvements will expedite this restoration project. An essential element of the study will be the development of a model of the channel to determine the appropriate level of oxygen required to restore aquatic life and improve water quality conditions in the channel. The channel is currently a deadend slough, contaminated by urban storm runoff and boating discharges. Potential solutions include the installation of pumps to create flow and/or aeration devices to oxygenate the water. This project will not only improve water quality but significantly complement economic development in downtown Stockton. Additionally, restoring this segment of the lower San Joaquin River is consistent with the objectives of American Heritage Rivers Program, a designation recently given by the President to the lower San Joaquin River.

BUREAU OF RECLAMATION

South Delta barriers—$16,000

The project provides temporary barriers in the south Delta to improve water quality. The fiscal year 1998 budget includes funding for $200,000 and the President's fiscal year 1999 budget includes funding for $16,000. In order to maintain the program, $200,000 is needed and the California Water Commission will be requested to recommend an increase in funding.

The City of Stockton opposes the following projects:

BUREAU OF RECLAMATION

Bay-Delta ecosystem restoration—$143,000,000

Current year funding is for $85,000,000 and the President's fiscal year 1999 budget has included $143,000,000. Funds for this program have been used primarily for acquisition of lands and development of the habitat. We are concerned with the loss of agricultural lands and the lack of accountability with the funds. No documentation of benefits will be derived from expenditure of funds. This program does not help with water supply. There are no water quality improvement objectives and the program does not recognize area of origin protections.

NOTE: Recommendation is for opposition unless the California Water Commission supports the following conditions:

1. No expenditure for any project within the boundary of any local agency unless the project is approved by the governing board or boards of such local agency or agencies.
2. At least 30 percent of such expenditures shall be for the purpose of developing new surface or subsurface water storage facilities which increase the total firm water supply yield. At least 50 percent of such 30 percent of such expenditures shall be used for the purpose of developing new surface or subsurface water storage facilities to meet the needs within the watershed in which the water originates or in areas immediately adjacent thereto which can be conveniently served thereby.
3. Funding of $11,900,000 for the Woodbridge Dam fish passage facilities and fish screening portions of the Lower Mokelumne River Restoration Plan (A197).
4. Funding of $10,000,000 to supplement the State contributions to the Delta Levee Maintenance Subvention Program. (California Water Code sections 12980 et seq.).
5. Funding of $10,000,000 to initiate the development of additional water supply to correct the overdraft in the East San Joaquin County groundwater basin.
6. No expenditure for any export of water which is needed by users within the watershed in which the water originates or in the areas immediately adjacent thereto which can be conveniently served thereby.
7. Funding of $1,000,000 for SSJID and OID salmon radio tracking project.

Bay-Delta (CALFED) oversight—$1,200,000

Current year funding is for $4,100,000 and the President's fiscal year 1999 budget has included $1,200,000. Funds pay Federal salaries to participate in the CALFED process. The primary focus of these studies is the export of water from the region. Unless area of origin water rights are acknowledged and protection of the Delta is primary, the process is not beneficial to San Joaquin County.

Water acquisition—$2,000,000

This program obtains upstream water rights to meet fisheries' objectives in the San Joaquin River. The program increases April–May and October flows, but could reduce summer flows. Unless the U.S. Bureau of Reclamation agrees to meet Vernalis flows throughout the year, this program should be opposed. Current year funding is for $8,502,000 and the President's fiscal year 1999 budget has included funding for $2,000,000.

PREPARED STATEMENT OF DAVID OKITA, GENERAL MANAGER, SOLANO COUNTY WATER AGENCY

Mr. Chairman, Members of the Subcommittee, my name is David Okita. I am the General Manger of the Solano County Water Agency, California. The Solano County Water Agency is a countywide special district, which is responsible for flood control and water supply. The Agency is seeking assistance from Congress to fund four Corps of Engineers projects in the fiscal year 1999 Energy and Water Appropriations Bill.

Under General Investigations-Surveys we support Northern California Streams Vacaville, Dixon and Vicinity and Northern California Streams, Fairfield Streams, and Cordelia Marsh (includes Suisun Marsh) projects, both of which are included in the President's fiscal year 1999 budget at $300,000 each.

These surveys are a continuation of the reconnaissance studies completed by the Corps of Engineers in these two flood prone areas of Solano County. The Solano County Water Agency and other local agencies have submitted Letters Of Intent to fund the local share of the continued general investigations for both these projects.

The Vacaville, Dixon and Vicinity project would provide flood protections for the cities of Vacaville and Dixon. Both of these cities have flooding problems that need to be addressed on a regional basis since they are located in the middle of large watersheds. Flooding in the watershed has also caused the closure of Interstate 80, resulting in a disruption of this vital transportation corridor.

The Fairfield Streams and Cordelia (Suisun) Marsh project is on a parallel tract with the Vacaville, Dixon and Vicinity investigation. The reconnaissance studies were done at the same time. The main problem in this watershed is flood-induced siltation in the Suisun Marsh. The Suisun Marsh is the largest tidal wetland in California and is considered a natural resource of international importance. The Suisun Marsh includes managed wetlands, which are a critical part of the Pacific Flyway. Siltation, transported by storm waters, from upstream areas has severely damaged an estimated 200 acres of valuable wetlands. Additionally, homes and businesses have been damaged due to flooding within the watershed. A coordinated plan addressing both siltation and flooding is necessary. The general investigations for this watershed will be coordinated with the two other projects described below.

The Agency supports a new Section 205 (Flood Damage Prevention, Continuing Authorities Program) appropriation for Ledgewood Creek in Solano County. This project is upstream of the completed Fairfield Streams Project improvements done by the Corps of Engineers. On February 3, 1998, flooding occurred in this area that closed Interstate 80 for five hours. During the design of the Fairfield Streams Project the Corps of Engineers predicted that Ledgewood Creek would flood in this manner. Downstream areas were put in the 100-year FEMA flood plain and were required to purchase flood insurance. Extension of the Ledgewood Creek component of the Fairfield Streams project would solve the flooding problems in this area, including the danger of flooding of Interstate 80. We ask Congress for $700,000 for this important project.

Under Section 206 (Aquatic Ecosystem Restoration) we seek funding for the Northern California Streams-Fairfield Streams, Suisun Marsh, Cache Creek project. This project would fund a watershed demonstration project for the design and construction of sediment containment ponds upstream of the Suisun Marsh. Specifically, one proposal calls for the construction of a sediment containment pond on Hennessey Creek, which has been identified as a major source of siltation into the Suisun Marsh. As mentioned previously, the Suisun Marsh is the largest tidal wetland in California and is considered a natural resource of international importance since it is a critical part of the Pacific Flyway. There is clearly a strong interest in protecting this environmental resource. We support funding of $500,000 to continue this project. If the demonstration project is successful, it could act as a model for other tributaries in the Suisun Marsh watershed.

I appreciate the opportunity to provide this testimony on behalf of the Solano County Water Agency, and I urge your support for these four projects in our community.

PREPARED STATEMENT OF THE HON. GEORGE PETTYGROVE, MAYOR, CITY OF FAIRFIELD, CA

Mr. Chairman, Members of the Subcommittee, my name is George Pettygrove. I am the Mayor of the city of Fairfield, CA. The city of Fairfield is seeking the assistance of the Committee in funding three projects in the fiscal year 1999 energy and water appropriations bill.

First, I request the support of the Committee for the Ledgewood Creek Flood Control Improvements within Solano County, CA. The budget request includes $700,000 for this important project. The funding will complete the feasibility study and design for the proposed improvements.

When the Corp of Engineers studied Ledgewood Creek in preparation for the design of the Fairfield Vicinity Streams project improvements, the Corp predicted that Ledgewood Creek, within the unincorporated area of Solano County, could bifurcate and flood Interstate Highway 80 (I–80). On Tuesday, February 3, 1998, the prediction came true. Runoff from the Ledgewood Creek drainage basin could not be

contained within the unimproved creek channel and the creek overflowed. At 7:44 a.m. all four westbound lanes of I–80 and three of the four eastbound lanes were closed. Within an hour after the closure, the freeway became a giant parking lot, spanning nearly 15 miles east to Interstate 505. At its worst, 18 inches of water covered four westbound lanes for roughly 600 feet. Caltrans reopened the freeway at 12:38 p.m., the result of naturally receding water, lighter showers, and Caltrans' crews pumping water back into the creek. The 5 hour closure of I–80 caused some commuters to be 3 hours late to work, not to mention the trucking delay in delivery of goods.

Due to a combination of the construction of the Fairfield Vicinity Streams project and the construction of developer improvements, Ledgewood Creek has been improved to carry a 100-year storm water event from the Fairfield City limits to the Suisun Marsh. The solution to the flooding problem on I–80 is to extend the 100-year improvements from the Fairfield City limits to Abernathy Lane. If the Abernathy Lane crossing and the downstream channel of Ledgewood Creek are improved, bifurcation will be eliminated and so will the flooding of I–80. Also, the Corp of Engineers could submit their design with calculations to FEMA and obtain a letter of map revision to remove all of the properties below I–80 that are within the AO flood zone. The benefit to the community is not only the prevention of the I–80 flooding, but the removal of approximately 300 acres of residential, commercial, and industrial property from the FEMA flood zone, thereby eliminating the need to buy flood insurance.

Second, I request the Committee's support for additional funding in the amount of $500,000, under the Corp of Engineers, Section 206 program, for the Fairfield Streams and Suisun Marsh watershed demonstration project. The project received fiscal year 1998 funding for the Corp of Engineers to begin to develop a solution to the problem of siltation in Suisun Marsh.

The Suisun Marsh is the largest tidal wetland in the State of California and is considered a natural resource of national importance. The marsh includes more than 2,500 acres of managed wetlands and uplands that support habitat for migratory waterfowl. It is a critical part of the Pacific Flyway. Yet, an estimated 200 acres of valuable wetlands in Suisun Marsh have been ruined by the inflow of silt from surrounding streams.

The project will provide for the design and construction of sediment containment ponds upstream of Suisun Marsh. Specifically, one proposal calls for the construction of a sediment containment pond on Hennessey Creek. Hennessey Creek is a tributary to Green Valley Creek, which flows directly into the northern portion of Suisun Marsh. The city of Fairfield has been monitoring water quality in Hennessey Creek during rainfall events. On December 12, 1995, for example, the total suspended solids (TSS) in Hennessey Creek were measured at 12,344 milligrams per liter of water. On January 16, 1996, the TSS were 19,700 milligrams per liter of water. On March 4, 1996, the TSS were 15,620 milligrams per liter of water. On February 19, 1998, the TSS were 13,210 milligrams per liter of water. As a comparison, the California Regional Water Quality Control Board has stated that the TSS should not exceed 100 milligrams per liter.

Clearly, construction of a sediment pond on Hennessey Creek would significantly reduce one major source of sedimentation in Suisun Marsh. And, it is critical that we construct this and other such ponds as soon as possible. Continuing to lose 200 acres of valuable wetlands every few years is not acceptable. That is why we are seeking to accelerate the construction of some portion of the solution.

A demonstration project like the one I have described clearly qualifies for funding under the Section 206 authority. The project is environmentally beneficial, economically justified, and in the public interest, the three criteria for funding under Section 206. For all of the above reasons, we ask that the Committee provide an additional $500,000 in fiscal year 1999 for this important project.

Finally, I request your continuing support for the ongoing feasibility study for Northern California Streams, Fairfield Streams, and Cordelia Marsh for fiscal year 1999 funding of $300,000. This project is complementary and compatible with the above two projects.

Again, I appreciate the opportunity to testify on behalf of the city of Fairfield, and I urge your support for these three priority projects for our region.

PREPARED STATEMENT OF JOSEPH L. CAMPBELL, PRESIDENT, CONTRA COSTA WATER DISTRICT

CONTRA COSTA CANAL (ROCK SLOUGH) FISH SCREEN

The Contra Costa Water District (District) appreciates the funding appropriated to the U.S. Bureau of Reclamation (Reclamation) in the last three budgets for the Contra Costa Canal (Rock Slough) Fish Screen. As a result of that support, the project is on schedule to begin construction this coming summer (1998).

The District requests that Congress appropriate sufficient federal funds in fiscal year 1999 for this project to remain on schedule. According to Reclamation, the Contra Costa Canal (Rock Slough) Fish Screen will require approximately $4 million in federal funds in fiscal year 1999 to proceed with construction and to keep it on the current schedule. The District encourages the Appropriations Committee to recognize the excellent progress being made on the Fish Screen and to appropriate at least $4,000,000 in fiscal year 1999.

The Fish Screen is critical to the needs of 400,000 people who rely on the District. The Secretary of Interior is required to screen Contra Costa Canal intake under Public Law 102–575 (Sec. 3406(b)(5). The intake is the largest municipal and industrial intake in the Central Valley project. The urgency of its completion was underscored by the U.S. Fish & Wildlife Service (FWS) in a 1993 biological opinion that requires the Secretary to complete the screen by October 1, 1998; failure to complete it could jeopardize the District's continued pumping into the Contra Costa Canal. Obviously that completion date will not be met, but the FWS has advised that it will extend the deadline through the completion date if there is progress being made on the project. Failure to fund the project at a sufficient level in fiscal year 1999 could be viewed as lack of progress on this project.

In 1992 Congress passed Public Law 102–575, requiring the Secretary to screen the canal intake. After three years of no action, the District stepped in. The District budgeted nearly $200,000 over the next 3 years to get the process moving. The District obtained priority for the project in Proposition 204, a State of California water bond act passed in 1996, enabling the State to provide its 25 percent mandated match for the Fish Screen.

At the District's request, Congress appropriated $80,000 in fiscal year 1996; $500,000 in fiscal year 1997; and $1,500,000 in fiscal year 1998.

Once the Fish Screen is completed, the District will be responsible for operation of the screen, and the costs thereof, under its 1972 agreement which makes the District responsible for all O&M of the Contra Costa Canal system.

What is the "Bottom Line?" Completion of federally-mandated fish screen on schedule is critical to assure that there will be no adverse impact on the District's water deliveries. An appropriation of $4,000,000 in fiscal year 1999 will keep the project on schedule.

The District appreciates the past support provided by the Appropriations Committee, and asks its continued support at the level of $4,000,000 in fiscal year 1999 to keep this project on schedule.

PREPARED STATEMENT OF ROSS ROGERS, GENERAL MANAGER, MERCED IRRIGATION DISTRICT

Mr. Chairman and Members of the Committee: My name is Ross Rogers, General Manager of the Merced Irrigation District. I am respectfully submitting this statement on behalf of the County of Merced, the city of Merced, and the Merced Irrigation District, which jointly form an informal coalition commonly known as the Merced County Streams Group for the purpose of performing maintenance functions along portions of the Merced County Streams project. The county of Merced, together with the State of California, is the sponsor of the Merced County Streams project. The El Nido Irrigation District and the Le Grand Athlone Water District are also concerned in this matter.

Federal authorization for the project construction was granted as part of the Supplemental Appropriations Act of 1985. Authorized facilities include constructing dry dams on Canal (Castle Dam) and Black Rascal Creeks (Haystack Mountain Dam), enlargement of the existing Bear Creek Dam, and modifications of levees and channels along more than 25 miles of Fahrens, Black Rascal, Cottonwood, and Bear Creeks. The completed project will provide flood protection worth more than $10,000,000 per year to 263,000 acres of urban and agricultural lands. Total project cost is currently estimated to be $139,000,000 of which $40,000,000 or roughly 31 percent will be paid during construction by the local beneficiaries.

When completed, more than 240,000 residents occupying 55,000 housing units within the greater metropolitan Merced area will live with assurance of 125-year flood protection, while the lower rural area will receive 25-year protection.

The first component of the project, Castle Dam, was completed in 1992. This component was constructed under budget, ahead of schedule, and without a lost-time accident. Without Castle Dam during the intense storms of January, February, March 1995, January 1997, and January/February 1998, the city of Merced would have been partially inundated.

As a result of a request by the county of Merced, the Corps of Engineers has re-evaluated project components and will extend the boundaries of the levee and channel portion of the project to better match growth that has taken place in the city of Merced. This willingness to remain flexible throughout the lengthy planning and design process is also a credit to the Corps and its staff.

The Merced County Streams project is a modification and expansion of an earlier flood project constructed between 1948 and 1957. It has undergone considerable review and modification since first authorized as part of the Flood Control Act of 1970. Approximately $15,000,000 has been spent to date on the Merced County Streams project. This has been matched with local contributions of approximately $3,000,000. As partners in the construction of this project, the local agency sponsors have worked closely with the Corps to establish an economic balance between costs and benefits. As a result of this combined effort, nonessential project components were first scaled back and eventually eliminated. This scaling to fit the economic reality resulted in substantial Federal and local savings.

During the New Year's 1997 flood event experienced throughout California, Bear Creek came perilously close to overtopping its banks within the city limits of Merced. If not for the newly constructed Castle Dam and protection it provided the city of Merced, Bear Creek would have surely overtopped and flooded a large area of the city. Mariposa and Miles Creeks did overtop their banks during the event, flooding valuable agricultural lands and damaging Merced Irrigation District facilities. Those project creeks that did not overtop, experienced significant damage to embankment slopes due to prolonged high flows. A total of 130 individual damage sites along project creeks were identified, at a total estimated repair cost of $420,000. Total damage to Merced Irrigation District canals adjacent to project creeks was estimated at $53,000.

On January 15, and again on February 3, 1998, Bear Creek did overtop its banks in several locations within Merced during several severe El Niño-driven storms, flooding 33 homes at an estimated damage cost of $500,000. The January 15 event was caused primarily by what the National Weather Service called a flash flood event in the headwaters of Black Rascal Creek, tributary to Bear Creek, upstream of the site of the project's Haystack Mountain Dam and Reservoir. According to the Corps of Engineer's preliminary estimates, flows in the project's Black Rascal Creek bypass reached in excess of 4,300 cubic feet per second, 1,300 cubic feet per second above the rated capacity of the facility. The Corps estimated that the Black Rascal Creek headwater storm event was a 1-in-100 year event. Additional creek bank overtopping was experienced approximately 1 mile and 4 miles southwest of Merced, causing significant damage to agricultural lands and Merced Irrigation District facilities. Total estimated repair costs to District facilities reached $160,000. Project creek bank damage is still being assessed by the Merced County Streams group. Had Haystack Mountain Dam and Reservoir been in place no flooding would have occurred during the January 15, 1998, event.

The project has the support of State and local authorities and funding of the non-Federal portion has been addressed.

We request the Committee's support for the inclusion of $900,000 in the 1998–99 budget, as recommended by the California Water Commission and the Corps of Engineers, for the orderly progress of the Merced County Streams project, which is so vital to the community, State, and the Nation.

PREPARED STATEMENT OF BRUCE GEORGE, MANAGER, KAWEAH DELTA WATER CONSERVATION DISTRICT

Mr. Chairman and Members of the Subcommittee: My name is Bruce George, and I am the Manager of the Kaweah Delta Water Conservation District in the eastern San Joaquin Valley of California. Thank you for the opportunity to present testimony regarding the fiscal year 1999 budget for the U.S. Army Corps of Engineers.

The President's fiscal year 1999 budget request for the Corps of Engineers includes $1.165 million for the continuation of pre-construction engineering and design (PED) of a project to increase the water storage capacities of Terminus Dam

at Lake Kaweah in California's San Joaquin Valley. The project would add approximately 43,000 acre-feet of flood control and conservation storage space to Lake Kaweah by raising the Terminus Dam spillway by 21 feet. The estimated total first cost of the project is $33 million.

The President's budget also provides $1.57 million for operation and maintenance of Terminus Dam in fiscal year 1999. The Kaweah Delta Water Conservation District and its project cosponsors support these PED and operation and maintenance requests.

In addition to the amounts proposed in the President's budget, we respectfully request a General Construction appropriation of $500,000 to initiate construction of the Terminus spillway project in fiscal year 1999.

The Corps of Engineers has been actively studying and planning this modest project for 10 years. During that time, the Kaweah Delta Water Conservation District and other local authorities have invested $1.8 million of their owns funds in the planning and development process. The State of California this year committed to be the lead non-Federal sponsor of the project. Other local sponsors are the counties of Kings and Tulare, the city of Visalia and the Tulare Lake Basin Water Storage District.

Under the Corps' current schedule, pre-construction engineering and design will be completed before the end of fiscal year 1999. With an additional appropriation of $500,000, the Corps could begin construction work late in the fiscal year. A commitment of construction funding for fiscal year 1999 would save time and money for all parties by allowing formal cost-sharing agreements to be signed sooner, clearing the way for the expenditure of State funds and the timely acquisition of mitigation lands that may not be available later.

The California Water Commission supports a $500,000 General Construction appropriation for the Terminus project in addition to the amounts requested in the President's fiscal year 1999 budget for pre-construction and operation and maintenance.

BACKGROUND

The Kaweah Delta Water Conservation District was formed in 1927 to conserve and protect the surface and groundwater of the Kaweah delta. The District serves 337,000 acres, which include the cities of Visalia and Tulare and several other incorporated and unincorporated areas in Kings and Tulare Counties. Those two counties consistently rank among the most productive agriculture counties in the Nation.

The District's service area encompasses portions of the Congressional Districts of Representatives Bill Thomas, Cal Dooley, and George Radanovich.

Terminus Dam and Lake Kaweah, located on the Kaweah River three and one-half miles east of the District, was completed in 1962 by the U.S. Army Corps of Engineers. The purpose of the project is to provide storage space for flood protection and irrigation on the Kaweah River. The Conservation District manages the irrigation and flood control releases for Lake Kaweah, as well as assisting in the conjunctive use of the surface and groundwater of the Kaweah delta.

Rapid growth, inadequate flood protection and a long-term groundwater overdraft in the region have created a need for greater reservoir storage space for flood control and irrigation storage. With a maximum capacity of 143,000 acre-feet, Lake Kaweah currently provides a less than 50-year level of flood protection for communities downstream. Raising the spillway at Terminus Dam would significantly increase the level of flood protection.

California's growing population will place ever-increasing demands on its water supply. Improving existing facilities such as Terminus Dam is one of the most economical and environmentally sensitive ways to meet those new demands. It is important for Congress to encourage such projects.

We are grateful for the Committee's continued support of the Terminus project.

PREPARED STATEMENT OF R.L. SCHAFER, SECREATERY/WATERMASTER, TULE RIVER ASSOCIATION

Mr. Chairman, and Members of the Committee, the Tule River Association requests your consideration of an appropriation in the fiscal year 1999 Federal budget for the U.S. Army Corps of Engineers, in addition to the $103,000 in the President's Budget for General Investigation, $500,000 for Preconstruction Engineering and Design for the Tule River, Success Reservoir Enlargement project, and an additional $500,000 for the preparation of a Design Memorandum under the Dam Safety Assurance Program (DSAP) for coverage of remediation techniques in the ongoing seismic studies of Success Dam.

The Draft Success Reservoir Enlargement Feasibility Study and EIS/EIR are scheduled to be completed in June 1998, after 10 years in the preparation, and an expenditure by the Federal Government and local sponsor of over 2.2 million dollars. The preferred alternative (NED Plan) is a simple project of raising and lengthening the spillway 10 feet and 100 feet respectively, creating an additional 28,000 acre-feet of flood control storage space in Success Reservoir. The increased storage space improves the flood protection for the city of Porterville and downstream highly developed farmlands from a 1 in 55 year event to a 1 in 100 year event, almost double.

The feasibility study under preparation by the Corps has a projected benefit to cost ratio of 1.4:1 and will be submitted to the USACE this summer. We anticipate, should the Congress process a Water Resources Development Act (WRDA) in 1998, authorization for construction in WRDA 98, perhaps conditionally due to the timing and completion of the feasibility study.

With completion of the feasibility study in June 1998, and with final review by the USACE in late 1998, the Corps of Engineers will need $500,000 in the fiscal year 1998 budget for Preconstruction Engineering and Design for an orderly continuation of the Success Reservoir enlargement project.

During the past 6 years, the Corps of Engineers expended over $3.0 million of Federal funds under the DSAP in the preparation of seismic studies of Success Dam. A draft Evaluation Report was issued in December 1996 with a summary statement of: "Remediation of the susceptible portion of the dam foundation is the recommended course of action. Further definition of remedial requirements would occur in the Design Memorandum studies."

Consequently, we would also appreciate your consideration of funding an additional $500,000 in the fiscal year 1999 budget for the Corps' preparation of a Design Memorandum covering remedial techniques for the continuation of the Success Dam Seismic Studies.

In summary, the Tule River Association requests that the Subcommittee on Energy and Water provide funding of $500,000 for Preconstruction Engineering and Design of the Success Reservoir Enlargement Project in addition to the President's Budget of $103,000 for the General Investigation, and in addition allocate under the DSAP $500,000 for the Corps of Engineers preparation of a Design Memorandum covering remediation techniques for Success Dam.

Prepared Statement of Mark Dellinger, Resources Manager, Lake County Sanitation District

Thank you for this opportunity to submit the following testimony in support of the Lake County, CA, request for funding in the fiscal year 1999 Energy and Water Appropriations Bill. I am Mark Dellinger, Resources Manager for the Lake County Sanitation District.

Lake County is requesting, through the Corps of Engineers, $500,000 in Section 503 funds and $2 million in Section 206 funds for two components of the Clear Lake Basin 2000 initiative. Our fiscal year 1999 request is a continuation of assistance initiated by the Corps during fiscal year 1998.

The Clear Lake Basin 2000 initiative is a cost-shared intergovernmental partnership aimed at restoring the watershed of Clear Lake, the largest freshwater lake completely within California's border. Specifically, the initiative will establish a 25-mile corridor of wetlands supplied with recycled wastewater effluent. Since the turn of the century, the watershed has lost over 80 percent of its wetlands and suffered corresponding declines in wildlife habitat, flood control, and lake water quality. The Basin 2000 initiative will begin to reverse these trends, while also supporting the increasingly important recreation and tourism sectors of our regional economy.

The initiative's $29 million cost is being shared by a partnership of local, State, and Federal agencies that have a significant stake in the watershed's ecological health. The requested Corps of Engineers funding, including out years, is approximately 18 percent of total project costs. Corps funds will be used in two of the initiative's projects: Section 503 funds will help design a pipeline that delivers effluent to the wetlands; and Section 206 funds will help design and construct wetlands and a related effluent flow control facility.

We appreciate the support and assistance already provided by the Corps, and look forward to initiating construction in 1999 with the help of the funds requested herein. Thank you for your consideration.

PREPARED STATEMENT OF VINCE FERRIOLE, CHAIRMAN, BOARD OF SUPERVISORS, NAPA COUNTY

NAPA RIVER FLOOD CONTROL PROJECT

BACKGROUND

The Napa River is the main waterway into which all tributaries of the Napa Valley flow. The river reaches its highest flow and the main point of concentration of stormwater in the heart of the downtown city of Napa. The original town of Napa was established at the head of the navigable Napa River channel in 1848 as its only port for transportation and commerce until the railroad extended from Benicia to Napa in 1902.

The project is located in the city and county of Napa, CA. The population in the city of Napa, approximately 67,000 in 1994, is expected to exceed 77,000 by the year 2000. Excluding public facilities, the present value of damageable property within the project floodplain is well over $500 million. The Napa River Basin, comprising 426 square miles, ranging from tidal marshes to mountainous terrain, is subject to severe winter storms and frequent flooding. In the lower reaches of the river, flood conditions are aggravated by high tides and local runoff. Floods in the Napa area have occurred in 1955, 1958, 1963, 1965, 1986 (flood of record), 1995, 1997 and in February of this year.

Over the years, the community has expressed a strong desire for increased flood management. Since 1862, 27 major floods have struck the Valley region, exacting a heavy toll in loss of life and property. The flood of 1986, for example, killed three people and caused more than $100 million in damage. The city of Napa is particularly vulnerable to floods: during a typical 100-year flood, more than 325,000 gallons flow through downtown per second, with the potential of inundating 2 million square feet of businesses and offices and nearly 3,000 homes.

Flood damage in downtown Napa has recurred in January 1993, March 1995, January 1997, and February 1998, resulting in disaster declarations and substantial Federal assistance and economic losses, reaffirming the urgent need to implement the cost-effective project. In March 1995, January 1997, and February 1998, additional flood disasters occurred and FEMA is reviewing the damage claims.

Damages throughout Napa County totaled about $85 million from the January and March 1995 floods. The floods resulted in 227 businesses and 843 residences damaged countywide. Almost all of the damages from the 1986 and 1995 floods within the project area would have been prevented by the project, as would several million dollars of damage from flooding in early 1998. This was just the latest in a long history of flooding disasters. During the past 36 years of flooding, Napa County residents have suffered devastating loss of lives and livelihoods, and over $542 million in property damage alone. According to the most up-to-date models, uncontrolled flooding over the next 100 years will likely cause $1.6 billion worth of property damage.

Locally developed flood measures currently in place provide minimal protection and include levees, floodwalls, pump stations, upstream reservoirs, restrictive flood plain management ordinances, and designated flood evacuation zones. Vast areas of flood plain are restricted to agricultural and open space uses, precluding development which would be damaged by flooding. These local measures still leave most of the city of Napa vulnerable to frequent damaging floods. Flood control projects have been authorized by Congress since 1944 but due to their expense, lack of public consensus on the design, and concern about environmental impacts, a project has never been realized. The most recent Corps of Engineers project plan consisted of a deepening and channelization project. In mid-1995, Federal and State resource agencies reviewed the plan and gave notice to the Corps that this plan had significant regulatory hurdles to face.

REVISED PLAN—PROJECT OVERVIEW

In an effort to identify a meaningful and successful plan, a new approach emerged which looked at flood control from a broader, more comprehensive perspective. Citizens for Napa River Flood Management was formed, bringing together a diverse group of local engineers, architects, aquatic ecologists, business and agricultural leaders, environmentalists, government officials, homeowners and renters, and numerous community organizations.

Through a series of public meetings and intensive debate over every aspect of Napa's flooding problems, the Citizens for Napa River Flood Management crafted a flood management plan offering a range of benefits for the entire Napa region. The Corps of Engineers served as a partner and a resource for the group, helping

to evaluate their approach to flood management. The final plan produced by the Citizens for Napa River Flood Management was successfully evaluated through the research, experience, and state-of-the-art simulation tools developed by the Corps and numerous international experts in the field of hydrology and other related disciplines. The success of this collaboration serves as a model for the Nation.

Acknowledging the river's natural state, the project utilizes a set of living river strategies that minimize the disruption and alteration of the river habitat, and maximizes the opportunities for environmental restoration and enhancement throughout the watershed. This strategy replaces the former project and now entails floodplain acquisition and restoration, restoration of a geomorphically stable river channel, replacement of bridges and environmentally sensitive stream bank treatment in the urban reaches of the city of Napa.

The revised plan which provides 100-year protection, has been developed by the Corps with the assistance of the community and its consultants into the draft Supplemental General Design Memorandum (SGDM) and its accompanying draft Environmental Impact Statement/Environmental Impact Report (SEIS/EIR). These reports were released for public comment in December 1997 and are now under review by Corps Headquarters. Land acquisition is planned beginning in 1999 with a goal of a new construction start in spring of 1999.

The coalition plan now memorialized in the Corps draft SGDM includes the following engineered components: lowering of old dikes, marsh plain and floodplain terraces, oxbow dry bypass, Napa Creek floodplain terrace, upstream and downstream dry culverts along Napa Creek, new dikes, levees and floodwalls, bank stabilization, pump stations and detention facilities, and bridge replacements. The benefits the plan will provide include reducing or eliminating loss of life, property damage, cleanup costs, community disruption due to unemployment and lost business revenue, and the need for flood insurance. The plan will protect access to business, public services, and create opportunities for recreation and downtown development, boosting year-round tourism. As a key feature, the plan will improve water quality, create urban wetlands and enhance wildlife habitats.

The plan would protect over 5,000 people from the 100-year flood event on the Napa River and its main tributary, the Napa Creek, and the project has a positive benefit-to-cost ratio under the Corps calculation. The Napa County Flood Control District is prepared to meet its local cost-sharing responsibilities for the project. A countywide sales tax, along with a number of other funding options, has just been approved by a majority of the county's voters for the local share.

PROJECT SYNOPSIS

Fiscal year 1998 funding

The 1998 budget included $1,600,000 to revise the key draft SGDM and SEIS/EIR documents.

Necessary fiscal year 1999 funding

Funding for the Napa River project during 1999 in the amount of $1,000,000 (in addition to the budgeted $744,000 for PED) is needed to finalize the Project Cooperation Agreement (PCA) and begin construction of the project in fiscal year 1999.

Recommendation

Based on continuing high flood risk and severe damage from the Napa River, we request that the Committee support $1,000,000 (in addition to the budgeted $744,000 for PED) to complete preconstruction activities and to initiate construction of the Napa River project.

PROJECT ELEMENTS

The current plan, which is the result of the Coalition effort in concert with the Corps of Engineers, includes land acquisition for river widening, levee and flood wall construction, recreational facilities, open space and an oxbow dry bypass, among other items. The Corps has now incorporated the refined design into its key preconstruction documents. After the design documents are approved and the construction drawings prepared, the PCA will be negotiated and signed by the local sponsors and the Corps. Once real estate is acquired and construction funds are appropriated, construction will begin. The county is working to ensure that construction of the project will start in fiscal year 1999.

REDESIGNED PROJECT COMPONENTS

The following redesigned project components were developed by the Community Coalition, incorporated by the Corps and are listed here with a brief description. These components are included in the Corps' draft SGDM.

Marsh Plain and Floodplain Terraces

Providing room for rising flood waters, terraces are natural attributes of all river systems. Two types of terraces are included in the project, beginning near Kennedy Park and extending to the southern end of the oxbow. Marsh plain terraces are submerged during the twice daily high tide cycles, creating a diverse wetland habitat. Elevated slightly from the marsh plain terraces, floodplain terraces are inundated by floods every several years, providing room for large floods.

New and Restored Wetlands

Through concerted planting efforts and the removal and lowering of levees, the project will create 108 acres of new wetland habitat, including emergent marsh, riparian and seasonal wetlands.

BANK STABILIZATION AND PROTECTION

Bank stabilization techniques combined with native vegetative cover in both marsh and floodplains; maintenance of existing trees; planting of new trees; the addition of rock bank toe protection, and a grade control structure all are included in this component.

NAPA CREEK CONVEYANCE

Napa Creek conveyance will be increased by the construction of a flood terrace on the north bank of the creek, removal of a number of bridges and the construction of culvert dry bypasses.

Napa River Dry Bypass

A dedicated dry bypass allows the safe flow of excess water and serves as recreational and open space during normal flows, when the river returns to the meandering oxbow.

Napa Creek Bypass Culverts

Two concrete dry bypass culverts will be constructed, each designed to convey 100-year flood flows.

Roadway Bridge Reconstruction

Overall, a total of seven bridges will be removed and replaced to allow the safe passage of water and debris during a 100-year flood.

Pump Stations and Detention Facilities

During large events, the new floodwalls and levees will trap local stormwater. The project includes the construction of three pump stations to safely return this water through the floodwalls into the Napa River.

Floodwalls

Located at the tops of the river banks, floodwalls offer substantial protection from large floods.

PREPARED STATEMENT OF RODERICK J. WOOD, CITY MANAGER, CITY OF NOVATO, CA

PROPOSED CITY OF NOVATO URBAN FLOOD CONTROL PROJECT—SECTION 205 OF WATER RESOURCES DEVELOPMENT ACT OF 1986 FOR SMALL FLOOD CONTROL PROJECTS

The completion of this project would resolve chronic flood control problems in two areas of the city. Construction of a channel carrying flood overflows from the Baccaglio Flood Control Basin to Scottsdale Marsh, and then to the floodplain downstream from Highway 101 in Novato, will remove the flood threat to homes and businesses in the Hill Road/Yukon Way neighborhoods during major storm events. The project also includes additional improvements needed to protect both residential and commercial properties in the low-lying downtown areas of the city of Novato.

In the recent February storms, a new community teen and gymnastics center was flooded in the downtown area—damage that would be prevented in the future with these proposed flood control improvements. The city's total damage to date in the 1997–98 water year is estimated to be $650,000.

The expected cost for this Section 205 small flood control project in fiscal year 1999 is $600,000 (for both study and construction). The total project cost is $1.8 million. The city of Novato is prepared to cost share this project at the required 35 percent.

In 1985, an election approved benefit assessment funds to locally finance flood control improvements for the city of Novato. These funds are completely expended with a portion of the work left uncompleted.

The January 4, 1982, flood devastated the city of Novato downtown and residential areas located near the downtown area. The community sustained $1.5 million of damage (1982 dollars). The community pays more than $100,000 annually in flood insurance premiums. Two thousand nine hundred and fifty-eight parcels are located within the special flood hazard area based on the flood insurance rate maps prepared by the Federal Emergency Management Agency.

Subsequent to the January 4, 1982, flood, the community approved a $9 million property assessment process to pay for local creek improvements. No Federal funds were utilized for those channel improvements. Federal funds needed at this time are to complete the flood control works started with the assessment monies. Additional channel improvements, bypass culverts, and perhaps a pumping station will be required to protect the remaining flood-prone areas in the downtown area.

The attached letter from the Marin County Department of Public Works supports the proposed project.

The city of Novato sincerely requests approval of an appropriation to complete the study and construction of the subject project.

LETTER FROM RICHARD A. CARLSEN

MARIN COUNTY DEPARTMENT OF PUBLIC WORKS,
San Rafael, CA, March 2, 1998.

RODERICK J. WOOD,
City Manager,
City of Novato, Novato, CA.

Dear MR. WOOD: I have been notified of your request for Federal funding for two projects to reduce flooding in the city of Novato.

It is noteworthy that the residents of Novato have been very proactive in taking tremendous steps to reduce or eliminate a historic flooding problem in the city. As you know, in 1985 Novato area residents approved a substantial self-assessment to construct major flood improvements. That project is virtually complete. Two areas not included in the 1985 election, which are certainly worthy of funding and construction, are the downtown flood control improvements and construction of a connection between Baccaglio Pond and Scottsdale Marsh. Both projects are timely, logical, and necessary extensions of the 1985 flood control project.

Therefore, on behalf of the Flood Control District, I offer this letter as an indication of support by the District, and applaud your efforts to acquire critical funding.

Very truly yours,

S/RICHARD A. CARLSEN,
Assistant Director.

PREPARED STATEMENT OF CARL W. MOSHER, DIRECTOR, ENVIRONMENTAL SERVICES DEPARTMENT, CITY OF SAN JOSE, CA

My name is Carl Mosher, and I am Director of Environmental Services for the City of San Jose, California. I am testifying on behalf of the San Jose Water Reclamation and Reuse Program, now known as South Bay Water Recycling. We are requesting your assistance in increasing the Bureau of Reclamation (BOR) funding for South Bay Water Recycling from the $3.0 million in the President's budget to $10.0 million.

San Jose is the lead agency for a joint powers authority which owns and operates the San Jose/Santa Clara Water Pollution Control Plant, a regional wastewater treatment facility serving more than 1.25 million residents, businesses and industries in California's Silicon Valley.

During the past 4 years, with BOR's assistance, we have designed and built the largest nonpotable water recycling project in Northern California, with three pumping stations, a four-million gallon reservoir and nearly 60 miles of pipe. South Bay Water Recycling was constructed to protect endangered species by reducing wastewater discharge to San Francisco Bay in compliance with a mandate from the EPA and the California Water Resources Control Board.

The first phase of South Bay Water Recycling will be completed this year at a construction cost of $140 million. In 1992, Congress authorized BOR to participate in the program by funding up to 25 percent of eligible costs, or $35 million. However, appropriations to date have totaled $9 million—only 6 percent of project costs—leaving a funding gap of $26 million between authorization and appropriation. To help close that gap, and to allow our community to continue to develop its program of sustainable urban water use, we request an appropriation of $10 million in the 1999 fiscal year.

The environmental mandate from the San Francisco Regional Water Quality Control Board clearly requires the regional wastewater treatment facility to reduce discharges to less than 120 million gallons per day (mgd) without delay. Current discharges exceed 135 mgd, despite intensive water conservation efforts throughout the area. Without this project, the protected salt marsh environment may continue to degrade, and endangered species may become extinct. With no place to discharge their treated wastewater, San Jose, Santa Clara, and other Silicon Valley cities would be unable to provide basic services or manage their development consistent with their publicly adopted general plans. A moratorium on sewer connections, if necessary, would stop the growth of new business and force many industries to relocate overseas.

In response to the urgent need to preserve the environmental and economic health of the region, South Bay Water Recycling was constructed in record time. It was commissioned with the connection of the northern portion of the pipeline in October 1997, only 30 months after inception. When the system is fully operational this summer it will initially deliver approximately 15 mgd of high quality recycled water for landscape irrigation and industrial use, supplementing supplies of potable water in this semi-arid region.

The benefits of South Bay Water Recycling, however, are not limited to San Jose, Silicon Valley, or even the San Francisco Bay area. Since California's watersheds are all linked together through a massive system of dams, pipes and canals, recycled water from this project can help relieve the State's chronic water shortage. This shortage is now projected to exceed 6 million acre feet per year in 2020. The city of San Jose is energetically investigating opportunities to link our program with other water reuse projects in our region. We have taken a lead role in developing a regional master plan, in cooperation with the Bureau and other local agencies, including the Santa Clara Valley Water District.

Furthermore, the technical and institutional lessons learned in implementing South Bay Water Recycling can be applied to projects throughout the country. To that end, we have actively pursued opportunities to share information about our project in professional conferences, seminars, and publications. We are also proposing to perform pilot work under BOR's "Desalination Research and Development Program."

With the continued assistance of BOR, and the support of this Congressional committee, we will be able to proceed with our efforts to create an innovative, sustainable water reuse system on a scale required to meet regional needs. The $10 million requested in fiscal year 1999 is well within the current authorization, and is on a par with appropriations for projects of similar size in other communities supported by the Bureau of Reclamation's Title XVI program.

Thank you for your past support, and for your continued help in making South Bay Water Recycling a reality in our community.

PREPARED STATEMENT OF ROBERT W. GROSS, PH.D., CHAIR/BOARD OF DIRECTORS, SANTA CLARA VALLEY WATER DISTRICT

GUADALUPE RIVER PROJECT

Background

The Guadalupe River is one of the major waterways that flow through the highly developed area of San Jose, CA. Historically, the river has flooded the downtown areas of San Jose and Alviso beyond local prevention capabilities. For example, estimated damages from a 1-percent flood that would inundate the urban center of San Jose is over $526 million. The Guadalupe River started to overflow its banks in April 1982 and January 1983 before the storms receded and avoided major damage. The Guadalupe River overbanked in February 1986, January 9, 1995, and March 10, 1995, causing damage to residences and businesses in the St. John and Pleasant Street areas of the downtown.

Project synopsis

In 1971, the community requested the Corps reactivate its earlier study. Stage 1 started with the Plan of Study and was completed in 1973. The initial problem definition and alternative screening were completed in 1974. More detailed problem definition and alternative studies for the Guadalupe River were completed in 1978. The Stage 2 report was completed in 1980 for the combined Guadalupe River, Coyote Creek and Baylands, establishing the economic feasibility and Federal interest in the Guadalupe River.

The Guadalupe River project received authorization for construction under the Water Resources Development Act of 1986; the final General Design Memorandum was completed in 1992; the local cooperative agreement was executed in March 1992; construction of the first phase of the project was completed in August 1994; construction of the second phase of the project was completed in August 1996.

In an effort to accelerate completion of this project, the local community through the Santa Clara Valley Water District has been providing a substantial technical and financial assistance since 1972. The local community has completed local projects within the Corps' project reach and reaches downstream of the Corps limits. More than $64 million in local funds has been spent on the planning, design, land purchases for, and construction of such improvements.

Fiscal year 1998 funding

Funding for the Guadalupe River project during 1998 was authorized in the amount of $17.2 million to continue construction.

Fiscal year 1999 funding

Funding for the Guadalupe River project during 1999 in the amount of $8 million is necessary to continue project construction and provide critically needed flood protection in the city of San Jose from downtown north to the community of Alviso.

Recommendation

Based upon the present high flood risk and potential damage from the Guadalupe River, it is requested that the Committee support an additional appropriation of $4 million to the $4 million included in the Administration's budget, for a total of $8 million to continue construction of the Guadalupe River project in 1999.

UPPER GUADALUPE RIVER PROJECT

Background

The Guadalupe River is one of the two major waterways flowing through the highly urbanized area of Santa Clara County, CA. Historically, the river has flooded the central district of San Jose and areas south beyond local prevention capabilities. Damages in the Upper Guadalupe River's densely populated residential floodplain south of Interstate 280 would exceed $200 million. The probability of a large flood occurring before implementation of flood prevention measures is quite high. The Upper Guadalupe River overbanked in March 1982, January 1983, February 1986, January 9, 1995, and March 10, 1995 causing damage to several residences and businesses in the Alma Street and Willow Street areas. The flooding of January and March 1995 floods each closed Highway 87, a major commuter thoroughfare.

Project synopsis

In 1971, the Santa Clara Valley Water District (District) requested the Corps to reactivate its earlier study. From 1971 to 1980, the Corps established the economic feasibility and Federal interest in the Guadalupe River only between Interstate 880 and Interstate 280. In light of flooding in 1982 and 1983, the District requested that the Corps reopen its study of the Upper Guadalupe River (upstream of Interstate 280). The Corps completed a reconnaissance study in November 1989 which established an economically justifiable solution for flood prevention in this reach. The report recommended proceeding to the feasibility study phase which began in 1990. The Milestone F4 conference resulted in a reformulation of the project alternatives with a new Feasibility Cost Sharing Agreement signed in July 1995 and scheduled for completion by 1997. In January 1997, the Corps determined that the National Economic Development plan would be sized to only provide a 2-percent or 50-year level of flood protection rather than the 1 percent or 100 year level. The District strongly emphasized overriding and compelling reasons to select a higher level of protection (1 percent or 100 year) as the proposed project plan. The Corps will be requesting a waiver in the Feasibility Report to select the 1 percent or 100 year plan as the basis for cost sharing.

Fiscal year 1998 funding

Funding for the Upper Guadalupe River project during 1998 was authorized in the amount of $750,000 to proceed with the feasibility study that will lead to providing critical flood protection.

Recommendation

Based upon the present high flood risk and potential damage from the Upper Guadalupe River, it is requested that the Committee support the amount of $575,000 as included in the Administration's budget.

COYOTE/BERRYESSA CREEK PROJECTS

Background

The Coyote and Berryessa Creeks investigation was authorized by Congress in 1941 under the Guadalupe River and Adjacent Streams authority. Coyote Creek is one of two major waterways that flow through the highly urbanized areas of San Jose and Milpitas within Santa Clara County, CA. Berryessa Creek flows through a small portion of San Jose and the growing community of Milpitas. Historically, Coyote Creek flooded the north San Jose community of Alviso beyond local prevention capabilities. A 1-percent flood in the Berryessa area would result in damages of $52 million to the homes and industries of Milpitas and San Jose. The probability of a large flood occurring before implementation of flood prevention measures was quite high. A 2-percent flood has an 18-percent chance of occurring during a 10-year period, and a 1-percent flood has about a 10-percent chance of occurring during this same period. Based on the percent flood estimates, there is a strong potential that a damaging flood will occur in the near future.

In January 1983, floodwaters escaped from Berryessa Creek and caused damage to several homes and businesses. Coyote Creek overbanked in April 1982 and again in March 1983 causing damages amounting to several million dollars. Hundreds of people were forced to evacuate their homes where floodwaters stood for many days. Flood damages were avoided in January, March 1995, and again in January 1997 due to the protection offered by project improvements made on the Coyote Creek.

Project synopsis

In 1971, the community requested the Corps to reactivate its earlier Guadalupe River and Adjacent Streams Study which included Coyote Creek. The Plan of Study was completed in 1973. The first phase of work included initial problem definition and alternative screening and was completed in 1974. The second phase of work included more detailed problem definition and alternative studies and was completed in 1978. The third phase, study of freshwater flooding in the Baylands, (which included the lower reaches on Coyote Creek) was completed in 1979. The Stage 2 report could not establish the economic feasibility and Federal interest in Coyote Creek. In light of flooding in 1982 and 1983, the Corps refocused its study on Coyote Creek to address the inadequate level of protection provided by unstable levees. Berryessa Creek originally was a Section 205 study but was combined with Coyote Creek when the project cost exceeded the limits of that program.

In an effort to accelerate the completion of this overall program, the local community through the Santa Clara Valley Water District (District) has provided a substantial amount of technical and financial assistance since 1972. Special planning studies have been completed by the District for inclusion into the Corps' studies. The Coyote/Berryessa Creek project received authorization for preconstruction, engineering and design under the Water Resources Development Act of 1986. The project was authorized for construction under the Water Resources Development Act of 1990. The Project Cooperation Agreement for Coyote Creek was executed in August 1994.

The severe flood problem and the ominous threat of future damages forced the local community to initiate a local project on Coyote Creek in anticipation of future Federal participation. Over $30 million has been spent on the planning, design and construction of improvements on Coyote Creek to date, which are planned for augmentation of and incorporation into the Federal project. The Chief of Engineer's February 1989 report contained $8.63 million Section 104 credit for flood control measures undertaken by the District from San Francisco Bay to Milpitas Sewage Treatment Plant. Congress authorized, in the Water Resources Development Act of 1988 (Public Law 100–676), $3 million in reimbursement to the District for construction of flood control measures upstream of the Milpitas Sewage Treatment Plant. The District has completed this work. A Section 215 agreement was executed with the Corps in December 1993 which provided an additional $3 million for the sponsor to design and construct approximately 7,000 feet of offset levees and over-

flow channel excavation along of Coyote Creek upstream of Highway 237 in the cities of San Jose and Milpitas. The flood control improvements were completed in July 1996. The remaining project work consists of establishing over 20 acres of riparian mitigation plantings.

The Corps completed the Draft General Design Memorandum in November 1993 for Berryessa Creek which indicated an economically infeasible plan with a benefit/cost ratio of less than one. The District commented that a more environmentally protective project design is necessary to garner support of the local community; the District identified insufficient channel capacity existing downstream of the General Design Memorandum project limit at Calaveras Boulevard. Based on the Corps' and District's assessment, the Berryessa Creek downstream reach between Calaveras Boulevard and Lower Penitencia Creek does not have 1 percent capacity. Improvement of this downstream reach must be made prior to the upstream reaches identified in the General Design Memorandum to avoid induced flooding. Therefore, extension of the original General Design Memorandum project scope may be needed to include the downstream reach, which requires the preparation of a General Reevaluation Report.

Fiscal year 1998 funding

Construction funding for the Coyote/Berryessa Creek projects during 1998 in the amount of $1.0 million was authorized to complete mitigation planting construction of the Coyote Creek project.

Recommendation

Based on the need to ensure the success of mitigation revegetation, it is requested that the Committee support the amount of $100,000 as included in the Administration's budget.

UPPER PENITENCIA CREEK PROJECT

Background

The Upper Penitencia Creek watershed is located in the northeast part of Santa Clara County, CA, near the southern end of San Francisco Bay. Since 1978, the creek has flooded in 1980, 1982, 1983, 1986, and 1995. The January 9, 1995, event caused damage to a commercial nursery and deposited mud in a condominium complex and a business park.

The proposed project on Upper Penitencia Creek, from Coyote Creek confluence to Dorel Drive, will protect portions of the cities of San Jose and Milpitas. The watershed is completely urbanized; undeveloped land is limited to a few scattered parcels still used for agriculture and the corridor along Upper Penitencia Creek. Based on the 1995 Reconnaissance Report, 4,300 buildings are located in the floodprone area, 1,900 of which will have water entering the first floor. The estimated damages from a 1-percent or 100 year flood is $121 million.

Study synopsis

The National Resource Conservation Service under the authority of the Watershed Protection and Flood Prevention Act, Public Law 83–566, completed a study of the economic feasibility of constructing flood damage reduction facilities on Upper Penitencia Creek. However, the National Resource Conservation Service watershed plan has been stalled since 1990 by the U.S. Department of Agriculture because the benefits to agriculture are less than 20 percent of the total benefits of the project.

The Santa Clara Valley Water District requested that the Corps proceed with a reconnaissance study in April 1994 while the National Resource Conservation Service plan was on hold. Funds were appropriated by Congress for fiscal year 1995 and the Corps started the reconnaissance study in October 1994. The Reconnaissance Report was completed in July 1995, with the recommendation to proceed with the Feasibility Study Phase. The Feasibility Study is scheduled to be completed in September 1999.

Fiscal year 1999 funding

Funding for the Upper Penitencia Creek project during fiscal year 1999 in the amount of $475,000 to continue the Feasibility Study is essential to provide needed flood protection to citizens in the cities of San Jose and Milpitas.

Recommendation

Based upon the present high flood risk and potential damage from Upper Penitencia Creek, it is requested that the Committee support an additional appropriation of $225,000 to the $250,000 included in the Administration's budget for a

total of $475,000 to conduct the feasibility study of the Upper Penitencia Creek Project.

LLAGAS CREEK PROJECT

Background

The Llagas Creek watershed is located in the southern part of Santa Clara County, CA, serving the communities of Gilroy, Morgan Hill, and San Martin. The creek has flooded in 1937, 1955, 1958, 1962, 1963, 1969, 1982, 1986, 1996, and 1997. The January 1997 flooding caused damage to a recreational vehicle park and many businesses and house in the Morgan Hill and San Martin areas where protection is proposed.

The proposed project will provide flood protection for approximately 1,100 residential buildings, 500 commercial buildings, and 1,300 acres of agricultural land. The project was started in 1954, and is not scheduled for completion until 2012, unless funding is accelerated.

Project synopsis

The National Resource Conservation Service (NRCS) under the authority of the Watershed Protection and Flood Prevention Act, Public Law 83–566, completed a study of the economic feasibility of constructing flood damage reduction facilities Llagas Creek. The NRCS completed construction of the last segment of the channel for the Lower Llagas Creek in 1994, which provides protection to the Gilroy portion of the project area. The NRCS is currently updating the 1982 environmental assessment work and applying for a Corps 404 permit for the Upper Llagas Creek, serving the Morgan Hill and San Martin areas of the project.

Until recently, the project was funded through the traditional Federal project funding agreement (Public Law 566) in which NRCS pays for the cost of channel improvements and the District is responsible for local costs that include relocation, bridge construction and right of way acquisition. Due to the Federal deficit and goals for achieving a balanced budget, funding for the Public Law 566 program has been reduced since 1985. Between 1982 and 1990, NRCS has allocated between $1 and $2 million annually for the Llagas Creek construction project. In fiscal year 1995, Congress did not make any appropriations for the program.

Fiscal year 1999 funding

Funding for the Llagas Creek project during fiscal year 1999 in the amount of $4 million to continue construction is essential to provide needed flood protection to citizens in the cities of Morgan Hill and San Martin.

Recommendation

Based upon the present high flood risk and potential damage from Llagas Creek, it is requested that the Committee support the addition of $4 million in the Administration's budget to continue construction of the Llagas Creek Project.

SAN FRANCISCO BAY SHORELINE PROJECT

Background

After much effort by local agencies and legislators, Congress authorized the San Francisco Bay Shoreline Project tidal flooding study in its passage of Public Law 94–587, the Water Resources Development Act of 1976. The Santa Clara Valley Water District (District) is one of the project sponsors. Santa Clara County was originally included in the first phase of the study, which proposed facilities in Santa Clara County to protect portions of the cities of Palo Alto, Sunnyvale, and San Jose. In 1990, the Corps concluded levee integrity was sufficient and the project has been suspended until adequate economic benefits are proven under Federal criteria. Tidal flooding potential in Santa Clara County has been aggravated by significant land subsidence, as much as 6 feet near Alviso. During periods of high tide and coincident high storm water runoff in the local streams, levee overtopping occurs.

Project synopsis

In 1984, the Corps study identified $15 million to $20 million in needed flood control construction in three areas (Palo Alto, Sunnyvale, and Alviso). The Corps determined the most likely mode of tidal flooding was overtopping and not erosion or levee failure. The Corps attributed significantly fewer potential benefits in making levee improvements because existing non-Federal and nonengineered levees have historically withstood overtopping without stability or erosion failures. The position of the District is that the lack of incidence of levee failure has been because of luck and diligent private and public maintenance programs. The District is concerned existing maintenance programs may not continue under the present regulatory envi-

ronment. The trend toward tougher regulatory controls restricts levee maintenance, potentially making it economically unfeasible to continue historic levels of maintenance activities.

The project has been temporarily suspended and will not be continued by the Corps until there is evidence of adequate economic benefits under Federal criteria. Corps staff in Washington D.C., has attempted unsuccessfully to resolve the differences in their standards for freeboard and stability of levees with the Federal Emergency Management Agency. The experiences in California's Central Valley in the winter of 1997 with levee failures and flooding increased the District's concern about protection provided by existing bayland levees. In April 1997, the District sent a letter to the San Francisco District Corps of Engineers requesting they review their 1990 conclusions in light of recent experiences of catastrophic failure. The Corps proposed a new schedule for development fiscal year 1999.

Fiscal year 1999 funding

Funding for the San Francisco Bay Shoreline project during fiscal year 1999 in the amount of $300,000 is essential to review their 1990 report conclusions.

Recommendation

Based upon the present high flood risk and potential damage from levee failure, it is requested that the Committee support the addition of $300,000 in the Administration's budget to begin the review of the 1990 Corps report conclusions.

SAN JOSE AREA WATER RECLAMATION AND REUSE PROGRAM

Background

The San Jose Area Water Reclamation and Reuse Program, also known as the South Bay Water Recycling Program, will allow the city of San Jose and its tributary agencies of the San Jose/Santa Clara Water Pollution Control Plant to protect endangered species habitats, meet receiving water quality standards, supplement Santa Clara County water supplies, and comply with a mandate from the U.S. Environmental Protection Agency and the California Water Resources Control Board to reduce wastewater discharge to San Francisco Bay.

The Santa Clara Valley Water District (District) is participating with the city of San Jose in the development of the reclamation and reuse program. Towards that end, the District is assisting the city of San Jose in providing financial support and technical assistance for program planning, liaison with water retailers, design, construction, inspection, and other services for the Program. Design, construction, construction administration, and inspection for the Program's Transmission Pipeline and Milpitas 1A Pipeline are being performed by the District under contract to the city of San Jose. The city of San Jose is the program sponsor for Phase 1, now under construction, which involves construction of nearly 60 miles of transmission and distribution pipelines, pump stations and reservoirs, and has an estimated capital cost of $140 million. It is anticipated that Phase 1 will begin operation in March 1998, and will deliver an estimated 15 million gallons per day of nonpotable recycled water for landscape irrigation and industrial use, providing a drought-proof supplemental water supply for this semi-arid region..

In 1992, Public Law 102–575 authorized the Bureau of Reclamation to participate with the city of San Jose and the District in the planning, design, and construction of demonstration and permanent facilities to reclaim and reuse water in the San Jose metropolitan service area. Although authorized to participate in this program by funding up to $35 million (15 percent of the Phase 1 costs), appropriations by the Bureau to date have only been $6 million.

Fiscal year 1998 funding.

The Administration's fiscal year 1998 Budget included $3 million to continue construction of the San Jose Area Water Reclamation and Reuse Program.

Fiscal year 1999 funding

The Administration's proposed budget of $3 million for fiscal year 1999 leaves a "funding gap" of $23 million between authorization and appropriation. By comparison, the Bureau has budgeted more than $20 million per year for similar projects in southern California for each of the past three years.

Recommendation

Based on the San Jose Area Water Reclamation and Reuse Program's water supply and environmental benefits to the area, it is requested that the committee support the $10 million recommended by the city of San Jose. Receipt of fewer funds than required will curtail the program.

SAN FRANCISCO AREA WATER RECLAMATION STUDY

Background

The purpose of the San Francisco Area Water Reclamation Study, also known as the Central California Regional Water Recycling Project, is to develop a Regional Water Recycling Master Plan for maximizing local reuse of recycled water and identify regions in California outside the Bay Area that could use high-quality recycled water for such purposes as agricultural irrigation or salinity control. The master plan will identify sources of freshwater and what potential exchange could result to benefit environmental, urban, or industrial needs. This plan will also include preparation of a technical memorandum to CALFED to summarize recycled water projects for implementation into their Environmental Impact Report.

The feasibility study was completed in 1996. The master plan is expected to be completed in 3 years. The Santa Clara Valley Water District is participating in the master plan and is providing financial, technical, and project management support along with other local water and wastewater agencies.

Fiscal year 1998 funding

Funding in the amount of $375,000 was included in the Administration's fiscal year 1998 Budget for the San Francisco Area Water Reclamation Study to develop the water recycling master plan.

Recommendation

Based on the important water supply and wastewater discharge benefits to the region, it is requested that the committee support the $500,000 recommended by the California Water Commission as an addition to the Administration's budget for 1999.

CENTRAL VALLEY PROJECT OPERATIONS AND MAINTENANCE OF SAN LUIS UNIT JOINT USE FACILITIES

Background

The San Luis Unit of the Central Valley Project is located near Los Banos on the west side of the San Joaquin Valley in Fresno, Kings, and Merced Counties. The San Luis Unit is an integral part of the Central Valley Project, delivering water and power supplies developed in the American River, Shasta, and Trinity River Divisions to users located in the service area.

Certain facilities of the San Luis Unit are owned, operated, and maintained jointly with the State of California. These Joint Use facilities consist of O'Neill Dam and Forebay, San Luis Dam and Reservoir, San Luis Pumping-Generating Plant, Dos Amigos Pumping Plant, Los Banos and Little Panoche Reservoirs, and the San Luis Canal. These facilities are essential to the State Water Project's ability to serve numerous agricultural and municipal and industrial water users in the San Joaquin Valley and Southern California. Costs of the Joint Use facilities are funded 55 percent State and 45 percent Federal, under provisions of Federal-State Contract No. 14–06–200–9755, December 31, 1961.

Within the Central Valley Project, the Joint Use Facilities of the San Luis Unit are an important link to the San Felipe Division, which serves as the largest source of water imported into the Santa Clara Valley Water District (District) and the San Benito County Water District. All of the Central Valley Project water delivered through the San Felipe Division must be pumped through O'Neill Dam and Forebay and San Luis Dam and Reservoir.

Fiscal year 1997 funding

In fiscal year 1997, approximately $6 million was appropriated for San Luis Joint Use facility operation and maintenance costs.

Fiscal year 1998 funding

The Administration provided sufficient funding to cover its portion of the annual operation and maintenance costs.

Recommendation

It is requested that the Committee support the amount of $3.5 million as included in the Administration's budget to continue operation and maintenance of the San Luis Unit Joint Use facilities.

CALFED SAN FRANCISCO BAY-DELTA PROGRAM

Background

In an average year, half of Santa Clara County's water supply is imported from the Bay-Delta watersheds through three water projects: the State Water Project, the Federal Central Valley Project, and San Francisco's Hetch Hetchy project. In conjunction with locally-developed water, this water supply supports the 1.6 million residents of the county and the capitol of the high-tech industry. In average to wet years, there are enough water supplies to meet the county's long-term needs. In dry years, however, the county could face a water supply shortage of as much as 100,000 acre-feet per year, or roughly 20 percent of the expected demand. In addition to shortages due to hydrologic variations, the county's imported supplies have been reduced due to regulatory restrictions placed on the operation of the State and Federal water projects.

There are also water quality problems associated with using Bay-Delta water as a source of drinking water supply. Organic materials and pollutants discharged into the Delta, together with salt water coming in from San Francisco Bay, have the potential to create disinfection-by-products that are carcinogenic. Santa Clara County's imported supplies are also vulnerable to extended outages due to catastrophic failures such as major earthquakes and flooding. As demonstrated by the recent flooding in Central Valley, the levee systems can fail and the water quality at the water project intakes at the Delta can be degraded to such an extent that the projects cannot pump from the Delta.

Project synopsis

The CALFED Bay-Delta Program is an unprecedented cooperative effort among Federal, State and local agencies to restore the Bay-Delta. With input from urban, agricultural, environmental, fishing, and business interests, and the general public, CALFED is developing a comprehensive, long-term plan that will address ecosystem and water management problems in the Bay-Delta.

Restoring the Bay-Delta ecosystem is important not only because of its significance as an environmental resource, but also because failing to do so will stall efforts to improve water supply reliability for millions of Californians and the State's $700 billion economy and job base.

Although the CALFED Bay-Delta Program is a long-range planning process, ecosystem restoration is an immediate priority because of the substantial lead time needed to produce ecological benefits. Species in the Bay-Delta continue to be proposed for listing under the Endangered Species Act (ESA). Recovery efforts cannot begin until adequate funding becomes available to implement the array of critical ecosystem restoration and water quality projects.

Recommendation

It is requested that the Committee support $143 million in the Administration's fiscal year 1999 Budget for ecosystem restoration.

SANTA CLARA BASIN WATERSHED MANAGEMENT INITIATIVE

Background

The Watershed Management Initiative (Initiative) is a stakeholder-driven effort, led by the San Francisco Regional Water Quality Control Board, that commenced in April 1996. The goal of this effort is to establish an on-going process of managing activities and natural processes in the Santa Clara Basin Watershed by maximizing the benefits and minimizing the adverse impacts on the environment for the benefit of the community and recognizing the quality of life and diversity. The Santa Clara Basin Watershed includes the northern Santa Clara county areas which drain to San Francisco Bay, and also includes portions of Alameda and San Mateo Counties.

The Initiative will address integration of activities within the watershed with a focus on water quality protection. Specific activities being addressed include land use and development, water supply, flood management, environmental restoration, and regulatory processes, to name a few.

The District is one of many stakeholders who continue to demonstrate commitment to this multi-year process by providing funds and actively participating on the Initiative's Core and working group. The Core Group provides direction for the Initiative and includes representatives of the business community, local governments, environmental groups, agriculture, resource and regulatory agencies, as well as other interests.

The Initiation Phase was completed in December 1996, and the 4-year Planning Phase has commenced. The schedule for deliverables during the Planning Phase is as follows:

1. *Inventory Document—December 1998*.—Utilizes available data to document the existing physical, chemical, and biological characteristics of the watershed.

2. *Assessment Report—June 1999*.—Provides a preliminary assessment of the condition of the watershed based on available data.

3. *State of the Watershed Report—December 2000*.—Describes alternatives to managing the watershed which address the problems identified in the Assessment Report.

4. *Watershed Management Plan—December 2001*.—This documents the final action plan to manage the watershed, including a program to measure progress and allow for flexible responses to changing community needs.

The final product of the Planning Phase will be a comprehensive watershed plan that incorporates stakeholder input and extensive public outreach, which will guide watershed management activities into the next century as the Santa Clara Basin Watershed Management Initiative moves into its Implementation Phase.

Section 503 of the 1996 Water Resources Development Act, authorizes the Army Corps of Engineers to provide technical and planning assistance in the development of a watershed plan for the Santa Clara Valley. The Initiative has progressed to the point where Corps assistance is needed to participate in the watershed assessment and addressing pressing regulatory issues.

Initiative funding

Approximately $400,000 has been spent on the Initiative project since the project commenced in April 1996. Some of the funding agencies for this effort include the Santa Clara Valley Water District, city of Sunnyvale, and city of San Jose. Costs estimates for the Initiative project are estimated between $4,500,000 and $5,000,000 over the next 4 years.

District funding

The District approved funds totaling $286,562 in fiscal year 1997–98, with an additional $870,000 commitment approved by the Board in September 1997 to support the District's expanded role in the project over the next 2 years. The District's cost to participate in the Initiative process for fiscal year 1998–99 is approximately 1 million dollars, including labor, materials and supplies. This amount has been requested in the District's fiscal year 1998–99 budget process.

Recommendation

In order to continue the progress made to date with the Initiative, the District requests that the Congressional Committee support additional Federal appropriations in the amount of $500,000 in fiscal year 1998–99 to cost-share the Santa Clara Basin Watershed Management Initiative.

PREPARED STATEMENT OF JIM VENABLES, CHAIRMAN, BOARD OF SUPERVISORS, RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RESOLUTION NO. F98–3 SUPPORTING FEDERAL APPROPRIATIONS FOR FLOOD CONTROL PROJECTS FOR FISCAL YEAR 1999

WHEREAS, the United States House of Representatives Committee on Appropriations, Sub-Committee on Energy and Water Development, and the United States Senate Committee on Appropriations, Sub-Committee on Energy and Water Development are holding hearings to consider appropriations for Flood Control and Reclamation Projects for fiscal year 1999 and have requested written testimony to be submitted to the committees prior to March 31, 1998; and

WHEREAS, the Riverside County Flood Control and Water Conservation District supports the continuation of construction of the Santa Ana River Mainstem project, the completion of design and construction for the project to reduce flooding and bank destruction along the Santa Ana River at Norco Bluffs, California, the initiation of land acquisition and construction for the Section 1135 environmental enhancement project at Gunnerson Pond, Lake Elsinore, California, the initiation of a flood control reconnaissance study for the San Jacinto River, and the completion of a feasibility study for a flood control project on Murrieta Creek, a sub basin of the Santa Margarita River watershed in Riverside and San Diego Counties, California; now, therefore,

BE IT RESOLVED by the Board of Supervisors of the Riverside County Flood Control and Water Conservation District in regular session assembled on March 3, 1998, that they support appropriations by Congress for fiscal year 1999 for the following projects:

U.S. ARMY CORPS OF ENGINEERS:

Construction—General Santa Ana River Mainstem	$76,000,000
Construction—General Santa Ana River at Norco Bluffs	4,400,000
Feasibility Study—Flood Control Murrieta Creek Sub-basin, Santa Margarita River Basin	800,000
Section 1135, Environmental Enhancement Projects Lake Elsinore, Gunnerson Pond	1,500,000
Reconnaissance Study—Flood Control and Other Purposes San Jacinto River	100,000

BE IT FURTHER RESOLVED that the General Manager-Chief Engineer is directed to distribute certified copies of this resolution to the Secretary of the Army, Members of the House of Representatives Committee on Appropriations and Sub-Committee on Energy and Water Development, the Senate Committee on Appropriations and Sub-Committee on Energy and Water Development, and the District's Congressional Delegation—Senators Dianne Feinstein and Barbara Boxer, Congressmen Ron Packard and Ken Calvert, and the office of the late Congressman Sonny Bono.

SANTA ANA RIVER—MAINSTEM

The Water Resources Development Act of 1986 (Public Law 99–662) authorized the Santa Ana River—All River project which includes improvements and various mitigation features as set forth in the Chief of Engineers' Report to the Secretary of the Army. The Boards of Supervisors of Orange, Riverside, and San Bernardino Counties continue to support this critical project as stated in past resolutions to Congress.

The Local Cooperation Agreement (LCA) was signed in December 1989 by the three local sponsors and the Army. The first of five construction contracts started on the Seven Oaks Dam feature in the Spring of 1990. Significant construction has been completed on the lower Santa Ana River Channel and on the San Timoteo Creek Channel. Construction activities on Oak Street Drain and the Mill Creek Levee have been completed. The Seven Oaks Dam construction effort is approximately 70 percent complete, and proceeding ahead of schedule. We currently anticipate construction on Seven Oaks Dam to be completed in the summer of 1999. Design efforts on Prado Dam are sufficiently complete that construction of improvements to the outlet works and dam embankment can be initiated promptly upon receipt of a fiscal year 1999 appropriation.

An appropriation of $35 million is necessary to complete construction activities on the Seven Oaks Dam, while $18 million is needed to initiate and complete construction of "Reach 8", the last remaining segment of the lower Santa Ana River Channel. A total of $23 million is being sought to fund a new construction start on the essential Prado Dam project. We, therefore, respectfully request that the Committee support an overall $76 million appropriation of Federal funding for fiscal year 1999 for the Santa Ana River Mainstem project.

SANTA ANA RIVER AT NORCO BLUFFS

The Santa Ana River passes along the northerly border of the city of Norco. The southerly bank of the river is a bluff varying in height from 46 to 96 feet above the streambed, atop which is a residential neighborhood. The floods of January and February 1969 caused flow impingement on the riverbank, which undermined the toe of the slope, causing severe bank sloughing. Although 50 to 60 feet of the bluff retreated to the south, and no improvements were lost, the threat to improvements from future river actions became apparent. The floods of 1978 and 1980 impinged further, causing another 30 to 40 feet of bluff retreat, and the loss of a single family residence.

Section 101(b)(4) of the Water Resources Development Act of 1996 provided for the authorization of the project, dependent upon the project receiving a favorable Chief's Report. On December 23, 1996 the Corps' Chief of Engineers issued a Chief's Report recommending the Norco Bluffs project for construction.

We are requesting Congress, through the Committee, appropriate $4,400,000 to provide sufficient Federal funding to complete construction in fiscal year 1999 on the Santa Ana River at Norco Bluffs project. The Riverside County Flood Control and Water Conservation District is fully prepared to meet its cost-sharing obligation.

SANTA MARGARITA WATERSHED—MURRIETA CREEK FEASIBILITY STUDY

The Santa Margarita Watershed lies in the south and northwesterly areas of Riverside and San Diego Counties, respectively. Murrieta Creek passes through the cities of Murrieta and Temecula in Riverside County, then confluences with Temecula Creek to form the Santa Margarita River which flows into San Diego County, through the Camp Pendleton Marine Base, and into the Pacific Ocean.

Murrieta and Temecula experienced severe flood damage in January 1993, estimated in excess of $10 million dollars, from Murrieta Creek overflow. Camp Pendleton also suffered extensive flood damage, estimated at $88 million, to facilities and aircraft due to overflow of the Santa Margarita River. For the past several years, a coalition of local citizens, community leaders, environmentalists, and developers have worked closely with the District to identify solutions to the flooding problems within the Murrieta Valley.

A Feasibility Study addressing flood control, environmental enhancement, and recreation for Murrieta Creek was initiated in fiscal year 1998. We request that the Committee approve $800,000 in fiscal year 1999 appropriations to complete the Feasibility Study for a flood control project on Murrieta Creek within the Santa Margarita Watershed.

GUNNERSON POND

In 1995, the Corps of Engineers, Los Angeles District, began an investigation under Section 1135 to evaluate the possibility of a wetlands restoration project at Gunnerson Pond. The site is in the northerly portion of the city of Lake Elsinore, adjacent to and downstream of the Corps-built Lake Elsinore Outlet Channel, a Section 205 project.

The proposed modification of the outlet channel would allow floodwater from Lake Elsinore and discharge from a nearby wastewater treatment plant to flow into Gunnerson Pond, creating a permanent wetland in that area. The purpose of this modification would be to enhance and develop waterfowl habitat, endangered species habitat, emergent wetlands vegetation, and riparian vegetation. The proposed project would significantly expand and enhance existing wetland and riparian areas along the Temescal Creek flood plain.

The Corps Headquarters approved the Preliminary Restoration Plan in August 1996. The Project Modification Report which will provide final definition of the project is complete, and currently awaiting approval at Corps Division level.

We request that the Committee approve $1,500,000 in fiscal year 1999 appropriations to provide for construction of the project to restore a critical wetland and riparian area for the Gunnerson Pond project under the authority of Section 1135.

SAN JACINTO RIVER

The San Jacinto River watershed encompasses approximately 730 square miles that drains into Lake Elsinore in western Riverside County. The San Jacinto River originates in the San Jacinto Mountains and passes through the cities of San Jacinto, Perris, Canyon Lake and Lake Elsinore. The only major flood control structures on the river are levees in the city of San Jacinto built by the Corps of Engineers in the early 1960's. In the 30-mile reach of the river between Lake Elsinore and the city of San Jacinto, only minor channelization exists as the river is characterized by expansive overflow areas, including the Mystic Lake area. The San Jacinto River has caused major flooding damage to agricultural areas and rendered Interstate 215 and several local arterial transportation routes impassable. However, the river is an important resource that provides water supply, wildlife habitat, drainage, and recreation values to the region.

The District and its co-sponsor Eastern Municipal Water District are requesting that the Corps of Engineers conduct a reconnaissance study of the San Jacinto River between the city of San Jacinto and the city of Lake Elsinore to investigate whether there is a Federal interest in flood control, environmental enhancement, water conservation and supply, recreation and related purposes.

We wish to request that the Committee approve $100,000 in fiscal year 1999 appropriations to undertake a Reconnaissance Study on the San Jacinto River.

PREPARED STATEMENT OF JERRY EAVES, CHAIRMAN, SUPERVISOR, FIFTH DISTRICT, COUNTY OF SAN BERNARDINO

The Board of Supervisors of San Bernardino County, State of California, appreciates the opportunity to bring the following flood control and water conservation

projects to your attention for consideration in the fiscal year 1998–1999 Federal Budget.

Corps of Engineers

Santa Ana River Mainstem.—Construction on this extremely important flood control project for San Bernardino, Riverside, and Orange counties began in 1990. Construction of several project features has been completed while others are underway. The funding proposed in the President's budget, $20,035,000, is $56,000,000 short of funding necessary to keep three key project elements, Seven Oaks Dam, Lower Santa Ana River Reaches 8 and 9, and Prado Dam from moving ahead with construction on schedule and in accordance with the Corps of Engineer capabilities. At Seven Oaks Dam alone, the proposed funding is $15,000,000 short of the amount needed to keep the contractor working for a full year. Failure to provide adequate funding for this feature, in its final year of construction, will undoubtedly result in a premature shut down of construction and considerable costs to de-mobilize, re-mobilize, and probable expensive contractor claims for both the Federal Government and the local project sponsors. We ask for your support of Santa Ana River Mainstem project funding in the amount of $76,000,000 for fiscal year 1998–99.

Bureau of Reclamation

San Sevaine Creek Water Project (Public Law 84–934 Small Watershed Project Loan Program).—Upon completion, the project will provide environmental enhancements, flood protection, and water conservation in the western portion of the San Bernardino Valley. The funding proposed in the President's budget is $1,177,000. We ask for your support of the President's proposed budget.

The Board once again wishes to express its deep appreciation for your past and present support of these priority programs in San Bernardino County.

SANTA ANA RIVER MAINSTEM PROJECT

Project Description

The Santa Ana River Project includes seven interdependent features: Mill Creek Levee, Oak Street Drain, San Timoteo Creek, Lower Santa Ana River, Seven Oaks Dam, Prado Dam and Santiago Creek. Mill Creek Levee, Oak Street Drain, San Timoteo Creek Reach 1, and Reaches 1, 2, 3, 4, 5, 6, 7 and 10 of the Lower Santa Ana River are complete. Completion of all of the features will provide (a) the necessary flood protection within Orange, Riverside, and San Bernardino Counties; (b) enhancement and preservation of marshlands and wetlands for endangered waterfowl, fish and wildlife species; (c) recreation amenities; and (d) flood plain management of the 30 miles of Santa Ana River between Seven Oaks Dam and Prado Dam.

San Bernardino County Features Status

Seven Oaks Dam.—Intake structure excavation, abutment stripping and outlet works/diversion tunnel contract is complete. Embankment and spillway construction contract was awarded in March 1994. Construction is progressing satisfactorily and is 77 percent complete as of February 1998. Construction can be completed in fiscal year 1999 if $35,000,000 in Federal funding is provided.

San Timoteo Creek.—San Timoteo Creek/Reach 1 construction was completed in September 1996. Construction has been proceeding on Reaches 2 & 3A and is scheduled for completion by March 1998. Overall, construction is approximately 50 percent complete as of February 1998.

Funding Required

To continue construction of the Mainstem Project on schedule in fiscal year 1998–99, Federal funding in the amount of $76,000,000 would be required as follows: Seven Oaks Dam—$35,000,000; Lower Santa Ana River—$18,000,000; Prado Dam—$23,000,000. The funding amount required exceeds the President's proposed budget by $56,000,000. The funding required for the Seven Oaks Dam feature alone exceeds the proposed budget by $15,000,000. This feature can be completed in fiscal year 1998–99 with adequate funding. Failure to provide full funding for this feature will probably result in a cessation of construction and substantial cost (in $millions) to demobilize and re-mobilize at a future time.

Project authorized: Public Law 94–587, Section 109, Approved October 22, 1976, Public Law 99–662, Water Resources Development Act of 1986

Total project cost: $1.4 billion—Includes $473 million local share.

President's budget Fiscal Year 1998–99: $20,000,000

Funding shortfall Fiscal Year 1998–99: $56,000,000

Required funding: Fiscal Year 1998–99: $76,000,000

Requested action: Approval of $76,000,000 for Santa Ana River Mainstem, fiscal year 1998–99.

SAN TIMOTEO CREEK

Project Description

The San Timoteo Creek is a major tributary to the Santa Ana River in the east San Bernardino Valley. A large watershed of approximately 126 square miles drains into the creek which flows through the cities of Redlands, Loma Linda, and San Bernardino before discharging into the Santa Ana River. The existing creek in all three cities has an earthen bottom and partially improved embankments reinforced with rail and wire revetments.

Major storm flows along the creek in 1938, 1961, 1965, 1969, and 1978 caused considerable damage to the creek itself as well as over-topping the banks and causing loss of life and severe property damage. The Energy and Water Development Appropriations Act of 1988 authorized improvement of San Timoteo Creek as part of the Santa Ana River Mainstem Project. The improvements include the construction of approximately 5.5 miles of concrete lined channel from the Santa Ana River upstream through the cities of San Bernardino, Loma Linda, and Redlands plus the construction of debris retention facilities at the upstream end of the project in the form of in-channel sediment storage basins.

Project Status

Overall project construction is 50 percent complete. An alternative is being investigated that would re-configure the sediment storage basins, currently located in the final Reach 3B, by decreasing their overall length. Plans for the final phase will be developed during the remaining 1998 fiscal year with completion anticipated during the early 1999 fiscal year.

Completed Phases:	
Reach 1:	
0.7 Mile of Channel	September 1996
Waterman Avenue Bridge	September 1996
Reach 2:	
1.9 Miles of Channel	December 1997
Redlands Boulevard Bridge	March 1998
Reach 3A: 0.8 Mile of Channel	April 1998

Remaining Construction and Schedule:

Reach 3B: 3.0 to 3.6 Miles of Channel and/or Sediment Basins, depending on the option chosen.

Plans and Specifications	June 1998-February 1999
Right-of-Way Acquisition	August 1998-September 1999
Construction Start	April 2000
Construction Completion	September 2001

Estimated Project Cost

The total estimated project cost is $58,000,000 with the Federal participating cost at 75 percent or $43,500,000 and the local participating cost at 25 percent or $14,500,000. The cost of the remainder of the project is estimated to be $29,000,000, with the Federal share at $21,750,000 and the local share at $7,250,000

Requested action: Approval of continued funding for the San Timoteo Creek Project.

SAN ANTONIO CREEK CHANNEL FEASIBILITY STUDY

Project History.—The San Antonio Creek Channel was constructed by the Corps of Engineers in the 1950's. Its watershed encompasses an area of approximately 89 sq. miles at the western border of San Bernardino County. Most of this channel is concrete lined or improved with rock slope protection. Approximately one-third of the primarily undeveloped watershed is tributary to the San Antonio Dam, which is located about 11 miles downstream from the headwaters of the watershed.

Current Status.—The feasibility study found that the existing channel will be sufficient to convey 100-year flows if a re-operation plan of the existing San Antonio Dam is developed and implemented. The County of San Bernardino Flood Control District thanks you for your past support of this project. The information gleaned during this study will be of great use in our maintenance of the floodway for the San Antonio Creek System.

Requested action: No further funding required

SAN SEVAINE CREEK WATER PROJECT

Project Description

The San Sevaine Creek Water Project, will provide environmental enhancements, water conservation and flood control facilities in the western portion of the San Bernardino Valley. A 132-acre area is being set aside to protect a sensitive plant community, wetlands and wildlife enhancement. In addition, several water conservation basins will percolate an estimated 25,000 acre-feet of storm water runoff per year into the Chino Groundwater Basin benefiting agricultural, municipal and industrial water users in the Valley. This increased water conservation will occur as the result of an additional 5,400 acre-feet of water storage which will reduce the need to purchase imported water.

Project Status

The loan application was signed by Commissioner Eluid Martinez on April 11, 1996, and approved by the Secretary of Interior, Bruce Babbitt, on May 9, 1996, starting the 60-day congressional approval process. As of July 25, 1996, the San Sevaine project completed the 60-day calendar for review by Congress as required under the Small Reclamation Loan Act. On December 17, 1996, the project Repayment Agreement was approved by the Board of Supervisors San Bernardino County and approved on January 8, 1997, by Robert Johnson, Regional Director of the Bureau of Reclamation. The 1998 fiscal year Federal Budget included $1,333,000 for a project new start, and the Bureau has indicated an 8-year construction schedule with project completion by the year 2006. Although considerable levee, channel and interim basin work has already been completed at various locations on this major water project, continued Federal assistance in the form of a Small Project Loan is urgently needed to allow for the construction of major improvements that will provide a fully integrated and functional project. Without these funds, it will be decades before local interests can accrue sufficient funds to construct this vital project. The California Water Commission has consistently since the late 1980's supported the construction of this project.

Federal authority: Public Law 84–984, as amended 1956.

Bureau of Reclamation grant contribution: Approximately $27.4 million.

Bureau of Reclamation loan contribution: Approximately $19.2 million.

Total B of R project (not additive): Approximately $52.9 million.

Total local contribution: $33.7 million

1997–98 Fiscal year Federal budget: $1.3 million.

President's budget fiscal year 1998–99: $1.177 million.

The County coordinated with the Bureau of Reclamation and the National Water Resources Agency (NWRA) in a cooperative effort to obtain a project new start in the amount of $1,333,000 end fiscal year 1998. Due to the size and complexity of the project, the Bureau has estimated an 8-year construction funding schedule with project completion by year 2006. We appreciate the continuing support provided by the Bureau of Reclamation for this project.

Requested action: Support President's proposed fiscal year 1998–99 budget in the amount of $1.177 million.

PREPARED STATEMENT OF JOHN E. HOAGLAND, GENERAL MANAGER, ELSINORE VALLEY MUNICIPAL WATER DISTRICT

Mr. Chairman and Members of the Subcommittee, my name is John Hoagland, and I'm the General Manager of the Elsinore Valley Municipal Water District (EVMWD). The District serves the city of Lake Elsinore and the surrounding communities in western Riverside County in southern California.

I respectfully request the Committee's continued support for the Bureau of Reclamation's Temescal Valley Project and for two modest new efforts under the Corps of Engineers to enhance both the environment and the reliability of the region's domestic water supplies. These requests have the full support of the California Water Commission.

Mr. Chairman, first, I request the Committee's continued support for the Temescal Valley Project under the Bureau of Reclamation's Loan Program Account. Specifically, for this important project, which will dramatically improve the EVMWD's ability to service the water supply needs of the Temescal Valley, I request the Committee's approval of $2,770,000, the same as the budget request.

Second, I request $300,000 for the Corps of Engineers, under General Investigations, for a special study to improve the seismic reliability of the EVMWD water system. Much of the water system infrastructure is in a seismically active area. The Corps of Engineers assistance under Public Law 101–640 and Public Law 104–303 will help the District to develop the means to minimize the likelihood that water supply interruptions will occur during an earthquake event in our area.

Third, and finally, Mr. Chairman, I request your support for $100,000 under the Corps of Engineers, Construction General, Section 206, Aquatic Ecosystem Restoration program. These funds will be used to initiate work on a small, but important environmental restoration project on the San Jacinto River. The project involves clearing invasive plant growth and replanting native growth along approximately 4,000 linear feet of the San Jacinto River. The work will be cost-shared by the District, and the entire project can be completed for an estimated $300,000.

Mr. Chairman, the Committee's favorable consideration of these requests would be greatly appreciated.

PREPARED STATEMENT OF CARL L. BLUM, DEPUTY DIRECTOR, DEPARTMENT OF PUBLIC WORKS, LOS ANGELES COUNTY, CA

Summary of recommendations by Los Angeles County Department of Public Works concerning budget allocations to the U.S. Army Corps of Engineers.

We strongly support the California Water Commission's recommendation to the Committee for $60 million to fund the continuing construction phase of the Los Angeles County Drainage Area (LACDA) project.

Mr. Chairman and Members of the Committee: We appreciate your Committee's continued support of critical flood control and water conservation projects in Los Angeles County, CA.

BACKGROUND

Floods are a part of the history of the Los Angeles area. Widespread floods have periodically devastated vast areas of the region and were responsible for taking lives, damaging property and interrupting commerce and trade.

The U.S. Army Corps of Engineers and county of Los Angeles, acting on behalf of the Los Angeles County Flood Control District, have built one of the most extensive flood control systems in the world. Construction of the major elements of the system began in the 1920's and consisted of 20 major dams, 470 miles of open channels, and many other appurtenant facilities. Fifteen of these major dams are owned and/or operated by the county while the remaining five dams (Hansen, Lopez, Santa Fe, Sepulveda and Whittier-Narrows), are owned and operated by the Corps. Since the major segments were completed, it is estimated that the system has prevented $3.6 billion in potential flood damage.

Development which occurred after World War II exceeded the projections the Corps used in the 1930's and has increased runoff to the point where, even in a moderate storm, the runoff could exceed the design capacity of portions of the system. For example, the lower Los Angeles River in the city of Long Beach can only provide protection from a 25-year flood and came close to overtopping in 1980. A storm of greater magnitude would have a tremendous impact, both personal and economic, on Los Angeles County, the nation's second largest metropolitan area.

At the request of the county of Los Angeles, the U.S. Army Corps of Engineers analyzed the adequacy of the existing major flood control facilities serving the Los Angeles basin in the LACDA Review study. In 1990, a project to upsize a portion of the LACDA system received Congressional approval subject to a favorable report by the Chief of Engineers (received in 1995), and signature of the Record of Decision by the Secretary of the Army, which was obtained in July 1995.

The final report by the Corps identified 100-year flood damages totaling $2.25 billion covering an 82-square-mile area which houses over 500,000 people. These damages would occur in the heavily-urbanized Los Angeles basin, where adequate protection from a 100-year flood was previously provided.

The LACDA project is a critical modification to existing facilities. Obtaining funds to do the modification is critical for two reasons: first, because of the threat of flooding to over one-half million people; and second, because FEMA's final Flood Insurance Rate Maps (FIRM's) for the area that would be affected by overflows from the

lower Los Angeles River and Rio Hondo Channel will be in affect starting July 6, 1998. The financial impact on the affected property owners could reach as high as $131 million annually for flood insurance premiums. Any delay in construction causes a great financial hardship on thousands of people, who thought the existing river provided adequate protection and will now need to buy flood insurance until such a project is completed. An economic impact study done by the University of Southern California also indicated that failure to construct the needed flood control measures will result in the loss of as many as 120,000 jobs. Economic losses in the region of over $30 billion over a 10-year period could also be realized due to stringent building restrictions.

This project, currently estimated to cost approximately $240 million, is scheduled, pending adequate funding, to be completed within the next 4 years. The 1994–95 budget included $500,000 to initiate the first construction contract awarded in September 1995. The 1995–96 budget included $11.3 million to continue the first contract. The 1996–97 budget included $14.4 million to complete the first contract and two other contracts awarded in August and September of 1996. The current 1997–98 budget includes $20.7 million to complete two new construction contracts. Additional construction contracts will be ready for advertising later this fiscal year and design of the entire project should be completed by the end of 1998. In order to complete the project within an appropriate schedule in light of the serious flood threat and the devastating financial impacts of the mandatory flood insurance premiums, it is critical to move the level of construction activity to $60 million a year. As a result, we strongly support the California Water Commission's recommendation for $60 million of Federal funds to continue construction of the LACDA Project.

PREPARED STATEMENT OF THE VENTURA COUNTY AND VENTURA COUNTY FLOOD CONTROL DISTRICT

Project: Santa Paula Creek flood control project, Ventura County, CA.

Action requested: Inclusion of sufficient funds in the Federal Budget for completion of the Santa Paula Creek Project

The Santa Paula Creek project in Ventura County is unusual in the annals of the Corps of Engineers. It was authorized by Congress in 1948 and construction of the first phase was completed in 1974. However, after bids for the second phase had been received and a contract awarded in 1974, a preliminary injunction was issued which prevented this contract from proceeding. Subsequently, construction of the project was permanently enjoined for failure to comply with the National Environmental Policy Act.

In the ensuing years the first phase facility, which was dependent on upstream debris retention that was not constructed, had been severely damaged and deteriorated to the point where it constituted a hazard and could have caused damages to adjacent property including the Route 126 freeway which passes over it. Although the first phase facility was within right-of-way owned by the Ventura County Flood Control District (VCFCD), it had not been accepted for maintenance and remained the responsibility of the Corps.

As provided in the original project cooperation agreement, the Flood Control District acquired more than 2.7 miles of right-of-way but the Corps had not fulfilled its obligations under the agreement, since the project remained to be completed. During the declared disaster of 1995, it was necessary for VCFCD to spend more than $300,000 for emergency measures within this right-of-way beyond the limits of the original first phase facility.

During the almost 25 years since the project was enjoined, the Corps attempted to develop an environmentally sensitive project, and prepared a General Reevaluation Report which, along with a new EIS, was completed in the spring of 1996.

Because of the dismal condition of the first phase facility, it was essential that construction of the project be reinitiated at the earliest possible date, and the Corps commenced replacement of the deteriorated first phase facility with a new facility consistent with the project recommended in the General Reevaluation Report. That project, also referred to as Phase 1, is currently underway. However, as a result of the severe storms of February, 1998, the Phase 1 construction was seriously damaged, and the channel was substantially filled with debris. The Corps was required to spend approximately $300,000 for emergency repairs and to excavate a pilot channel through the debris. The balance of the debris will have to be removed before Phase 1 can be deemed complete. We also believe the Corps will discover other damage beneath this debris.

During the recent storms, the existing streambed just upstream of Phase 1 threatened to overtop its banks on February 23, 1998. Because of this threat, the city of Santa Paula ordered evacuation of 2000 residents in harm's way.

The VCFCD subsequently spent approximately $40,000 to buttress the reach where overtopping was threatened. (This amount does not include costs for emergency response on February 23, 1998, borne by the VCFCD and the city of Santa Paula.)

The Corps also authorized expenditure of approximately $110,000 for emergency activities in the area upstream of the work performed by VCFCD, under its Public Law 84–99 authority, and is considering additional expenditures.

Unless the project is completed at the earliest possible date, VCFCD, the city of Santa Paula, and the Corps will continue to bear substantial expense for emergency actions, and the citizens of Santa Paula remain at grave risk.

As another indicator of the importance of completing this project the city of Santa Paula, the following figures are pertinent. About 4,000 homes are located, and about 13,000 people live, in the flood plain mapped by the Federal Emergency Management Agency. This flood plain also includes the entire downtown area, the city's historic neighborhoods, and five of seven schools in the elementary school district.

The problem is that only $2.7 million is proposed for appropriation in the President's budget for fiscal year 1999, and $2.1 million from funds previously appropriated has been reprogrammed to other projects. The result is that sufficient funds are not available to enable the Corps to complete the project, which is imperative for the reasons stated above. We are, therefore, requesting that sufficient funds to ensure completion be included in the budget and would sincerely appreciate the subcommittee's consideration in this regard.

PREPARED STATEMENT OF DICK LYON, MAYOR, CITY OF OCEANSIDE, CA

The City of Oceanside requests that the Subcommittee support an appropriation of $1.5 million in the fiscal year 1999 Federal budget for 25 percent of the Mission Basin Groundwater Desalting Research and Development Project.

The city of Oceanside currently owns and operates the Mission Basin Groundwater Desalting Facility. It is the only project of its kind in San Diego County. The current operation produces about 2 million gallons per day (MGD) of potable water by treating brackish groundwater through a reverse osmosis process. Based on the successful operation of the existing plant over the past 4 years, the city plans to expand production capacity of the groundwater desalting program to 6.3 MGD, or 22 percent of the city's average daily demand. The cost for the expansion is estimated to be $6 million. The additional water supply is expected to be available by early 2000.

The city of Oceanside is fortunate that the Mission Basin aquifer holds about 30 billion gallons or 92,000 acre feet of water. Water rights to this dependable aquifer were established over 100 years ago. Eventually, the city would like to utilize its reclaimed water to recharge the Mission Basin and maintain an environmentally safe water level in the aquifer. Oceanside anticipates that at least 50 percent of its future water supply can ultimately be derived from this source.

Expansion of the Mission Basin Desalting Facility has several important benefits:

—It provides the city of Oceanside with an independent water source that will serve the community in the event of a natural disaster, such as an earthquake.

—It reduces the city's reliance on imported water, thereby reducing the region's demand for imported water from the Colorado River and the environmentally sensitive Sacramento/San Joaquin River Delta.

—It produces a water of significantly better quality than that of the city's imported source (400–500 total dissolved solids [TDS] versus 600–700 TDS for imported water).

—It creates a new, highly reliable water supply which is critical to the San Diego region's long-term economic health and its ability to attract and retain businesses.

—It provides an emergency water supply for Marine Corps Base Camp Pendleton, which receives no imported water. The city recently signed an agreement to provide Camp Pendleton with up to two MGD of emergency water.

The local water supply produced through the Mission Basin Desalting Facility saves the city of Oceanside $150,000 per year today and will save at least $500,000 per year when it is expanded to its 6.3 MGD capacity. These cost savings are amplified by the environmental benefits of utilizing an existing resource that can be sustained through reclamation.

The city of Oceanside respectfully requests your support for this vital project.

PREPARED STATEMENT OF THE CITY OF SAN DIEGO, CA

The city of San Diego provides water service as well as wastewater collection, treatment and disposal service to a growing metropolitan area of two million people. The city receives 90 percent of its water supply from the Colorado River and northern California sources, hundreds of miles distant from the city. Located at the tail end of this extensive aqueduct supply system, San Diego is most vulnerable to outages or reductions in supplies from these sources. In conjunction with its wholesale water supplier, the San Diego County Water Authority, the city is engaged in a long-term effort to reduce regional reliance on imported water supplies. The San Diego Water Reclamation Program is critical to the success of this effort.

The city will have invested over $350 million in water reclamation facilities through this fiscal year, and has programmed another $70 million in fiscal year 1999 to continue these efforts. Upon completion of the water reclamation and recycling projects in the next 20 years, the city will have an estimated $1 billion of capital investment in this program. The city's projects include 4 new water reclamation plants with a combined capacity of 57 million gallons per day (construction of the 30 mgd North City Water Reclamation Plant was completed last year) and over 100 miles of reclaimed water distribution system pipelines; an innovative water repurification project to treat reclaimed water to a quality suitable for potable reuse; and a groundwater project providing for conjunctive use of reclaimed water and other sources of supply.

Section 1612 of Public Law 102–575, the Central Valley Project Improvement Act, authorizes the Secretary of the Department of Interior to provide financial support for water reclamation projects in the San Diego area. The U.S. Bureau of Reclamation is authorized to participate in the planning, design and construction of water reclamation projects serving the San Diego area at a Federal cost-share of up to 25 percent. Based on the criteria established by the Bureau of Reclamation regarding funding eligibility, approximately $110 million through this fiscal year, and $157 million of the projected expenditures through fiscal year 1999 are eligible for Federal funding. Nearly half of the $1 billion of projected expenditures over the next 20 years would be eligible for the 25 percent Federal funding.

These costs represent a heavy financial burden for the city to bear alone. Federal participation will help make this innovative water supply program a reality. Therefore, the city of San Diego respectfully requests the Committee to recommend appropriating funds in the amount of at least $13 million in fiscal year 1999 for the San Diego region through the Bureau of Reclamation program.

SAN DIEGO AREA WATER RECLAMATION PROGRAM

The San Diego Area Water Reclamation Program is an ambitious, long-term program designed to decrease regional reliance on imported water supplies. The Program is a cooperative effort by the cities of San Diego, Escondido, and Poway; the Otay Water District; the Padre Dam Municipal Water District; the Sweetwater Authority; the Tia Juana Valley County Water District; and San Diego County Water Authority. Together, these agencies have developed a system of interconnected water reclamation projects that will make the best use of existing and planned water reclamation facilities and result in a cost effective and efficient use of local water resources.

When completed, the San Diego Area Water Reclamation Program will serve an area of more than 700 square miles, from the agricultural valleys near the city of Escondido in the north to the expanding business centers along the international border with Mexico in the south. Ultimately, almost 20 billion gallons (61,550 acre-feet) will be added annually to the region's scarce local water supply, more than doubling the current average local water supply. Facilities to be constructed include up to ten new or expanded water reclamation plants, a state-of-the-art water repurification facility, and hundreds of miles of reclaimed water delivery pipeline.

Implementation of the San Diego Area Water Reclamation Program will produce both economic and environmental benefits. The development of local reclaimed water supplies will provide opportunities for environmental enhancement projects within San Diego County and reduce the demand for imported water from the Sacramento-San Joaquin River Delta, an environmentally sensitive water body of national significance. The availability of a reliable local water supply is also critical to the region's long-term economic health and its ability to attract and retain employers. In the near-term, construction of the reclamation facilities will stimulate the local economy by creating jobs in construction-related industries. After the facilities are completed, many high-wage, high-skill jobs will be created in the operation and maintenance fields.

Construction is already under way for a number of these reclamation facilities. The city of San Diego has completed the construction of its flagship reclamation facility, the North City Water Reclamation Plant. While still in the planning stages, the proposed Water Repurification Program could have far-reaching consequences for both the San Diego region and the State of California. This innovative water supply project will treat reclaimed water to a quality standard equal to that of untreated water supplies. The repurified water would be stored in a local reservoir for subsequent potable uses. If implemented on a wide scale, water repurification technology could help to solve California's long-term water supply problem.

With an annual cost in the range of $900–$1,200 per acre-foot, the San Diego Area Reclamation Program is competitive with the development of new imported or other local water supplies. However, the level of capital investment makes it a heavy financial burden for the local agencies. The vast majority of the capital costs would have to be funded by local ratepayers. The financial feasibility of this ambitious water supply development project, if funded solely with local resources, is questionable. Federal participation would provide the means to ensure the project is constructed and the benefits realized.

CITY OF SAN DIEGO REGIONAL WATER RECLAMATION PROJECT

The city of San Diego is undertaking a regional water reclamation program which will ultimately provide over 9.5 billion gallons (29,200 acre-feet) of reclaimed water annually to users within the city of San Diego and surrounding communities. The proposed regional reclamation system will include four new water reclamation plants: one in northern San Diego, one in central San Diego, and two in southern San Diego near the international border with Mexico. These water reclamation facilities will serve commercial, industrial and residential customers through a network of over 125 miles of distribution pipeline.

Northern/Central Regional Water Reclamation System

The city of San Diego completed construction of its flagship reclamation facility, the 30-million-gallon-per-day (mgd) North City Water Reclamation Plant (North City WRP), in April 1997. The North City WRP could ultimately provide over 2.8 billion gallons (8,700 acre-feet) of reclaimed water annually to meet commercial, industrial and landscape irrigation demands in northern and central San Diego and the southern portions of the neighboring city of Poway. Reclaimed water will be delivered to over 750 user sites via an extensive network of pump stations and pipelines. The city of Poway has completed a portion of its southern reclaimed water distribution system and will complete the remaining portions of the system in time to take deliveries from the North City WRP. Initial users will include the internationally known Torrey Pines Golf Course, Miramar Naval Air Station, and CalTrans, as well as numerous schools, parks, nurseries and residential homeowner associations.

Construction of the North City WRP created badly needed jobs in San Diego's construction-related industries. The city estimates that this project alone generated 4,400 job-years of work for the local community. Construction of the northern/central distribution system is expected to generate an additional 4,200 job-years of work. Now that the plant is completed, many high-wage, high-skill jobs have also been created in the operation and maintenance fields. The development of a reliable local water supply will improve the long-term health of the San Diego economy by enhancing the region's ability to attract and retain employers.

A future reclamation plant is planned for the commercial center of San Diego to supplement reclaimed water from the North City WRP. The proposed 8-mgd Mission Valley Water Reclamation Plant (Mission Valley WRP) could provide 1.3 billion gallons (4,000 acre-feet) of reclaimed water annually for the irrigation of schools, parks, commercial and tourist facilities, cemeteries, nurseries, golf courses, freeway embankments and street medians. This supplemental source of reclaimed water would allow the North City WRP to serve new customers in the developing communities in northern San Diego.

South Bay Regional Water Reclamation System

Construction of the North City WRP will be followed by the construction of the 7-mgd South Bay Water Reclamation Plant (South Bay WRP) near the international border with Mexico. The South Bay WRP will provide almost one billion gallons (3,000 acre-feet) of reclaimed water annually to approximately 50 commercial, industrial, and agricultural users in Southern San Diego County. The South Bay WRP and southern distribution system, currently scheduled for completion by 2001, will complement reclamation projects proposed by Otay Water District, the Sweetwater Authority, and the Tia Juana Valley County Water District.

The estimated costs (in 1998 dollars) for the city of San Diego Water Reclamation Program are as follows:

Northern/Central Regional Water Reclamation System:	
North City WRP	$48,108,000
Mission Valley WRP	17,040,000
Optimized Northern San Diego Distribution System	94,213,000
Subtotal	159,361,000
South Bay Regional Water Reclamation System:	
South Bay WRP	22,049,000
Southern San Diego Distribution System	25,768,000
Otay Valley WRP	14,880,000
Subtotal	62,697,000
Total	222,058,000

SAN DIEGO WATER REPURIFICATION PROGRAM

The city of San Diego, with assistance from the San Diego County Water Authority (SDCWA), is planning to use cutting-edge technology to purify almost 4.9 billion gallons (15,000 acre-feet) of reclaimed water annually to a level equivalent to that of existing imported water supplies. The Water Repurification Project is the natural outgrowth of a multi-year health effects study conducted by the city of San Diego. The health effects study showed that the quality of repurified water is comparable to the quality of imported raw water supplies and has no health effects.

The city of San Diego proposes to construct a water repurification facility with a capacity of 18-million-gallons-per-day (mgd) to treat reclaimed water from the North City Water Reclamation Plant. The repurified water would be transported over 20 miles to the San Vicente Reservoir for blending with imported raw water supplies. The blended water would eventually be conveyed via the existing El Monte Pipeline to the Alvarado Filtration Plant. There the water would undergo additional filtration and disinfection before being introduced into the city's potable water delivery system.

The city of San Diego and the SDCWA conducted a detailed feasibility study which indicated the proposed project is both technically and economically feasible. The State of California Department of Health Services reviewed the feasibility study and conceptually approved the proposed project. A citizens advisory committee convened by the city and the SDCWA concluded that there is sufficient information available to establish the suitability of water repurification as a supplement to the San Diego region's water supply. The city of San Diego has begun design and environmental review of the project.

The Water Repurification Program is expected to replace the less cost-effective elements of the city of San Diego's proposed non-potable distribution system. Implementation of the Water Repurification Program in combination with selected elements of the non-potable distribution system would allow the city to achieve the most efficient use of water from its North City WRP. Should the Water Repurification Program prove feasible, it could begin operation in late 2001.

The proposed Water Repurification Program has potentially far-reaching consequences for both the San Diego region and the State of California. California has a wastewater stream of some 2.5 to 3 million acre-feet per year, the vast majority of which is going unused. By providing for the near total recovery of this non-traditional resource, the Water Repurification Program could help to solve California's chronic water supply problem.

The estimated cost of the Water Repurification Program in 1998 dollars is $169,349,000. Cumulative expenditures through fiscal year 1999 are projected to total $46,098,000.

SAN PASQUAL GROUNDWATER PROJECT

The city of San Diego recently completed a comprehensive Water Resource Management Plan for the San Pasqual Valley. The San Pasqual Valley (Valley) is an agricultural preserve located within the incorporated limits of the city of San Diego. The majority of the land is owned by the city of San Diego and is located between the city of Escondido to the north and the community of Rancho Bernardo and city of Poway to the south. Based on recommendations resulting from the Management Plan, San Diego plans to upgrade the existing 1 mgd San Pasqual Reclamation Plant to 5 mgd. The reclaimed water from the treatment facility would provide a reliable and noninterruptible water supply for agricultural irrigation purposes with-

in the Valley and residential and commercial markets within the surrounding community of Rancho Bernardo and the northern region of the city of Poway. The reclaimed water would also be recharged into the 50,000 acre-foot alluvial groundwater basin within the Valley. Groundwater would then be extracted and used as peaking water for the reclaimed system in the summer months, as well as for domestic potable water supply.

The San Pasqual Reclamation Plant would include advanced water treatment in addition to tertiary treatment. Injection of the high quality water from the plant would reduce the salinity of the groundwater within the basin. This will enhance sensitive environmental habitats as well as help farmers reliant on groundwater supplies remain economically viable and maintain the San Pasqual Valley's agricultural identity. This reuse/groundwater regional project will add approximately 2.6 billion gallons (8,000 acre-feet) to local water supplies. Design of the project is expected to start in 1998.

The estimated cost of the city of San Diego San Pasqual Groundwater Project in 1998 dollars is $66,547,000.

PREPARED STATEMENT OF JERRY C. HARMON, COUNCIL MEMBER AND FORMER MAYOR, CITY OF ESCONDIDO, CA, AND KEITH E. BEIER, COUNCIL MEMBER, CITY OF ESCONDIDO, CA

Mr. Chairman and members of the subcommittee, as representatives of the city of Escondido, we are pleased to submit this testimony in support of funding for the San Diego Area Water Reclamation Program, including the Escondido portion. We are delighted again to be able to thank you for your efforts last year to continue funding for this important and critical project. Last year you provided $13 million for the full project which has allowed all segments to go forward in accordance with our agreement with the Bureau of Reclamation. We hope you will be able to provide at least the same level of funding this year, $13 million, as is contained in the President's fiscal year 1999 budget request.

For the last 4 years, you have demonstrated a commitment to our project to benefit the people of San Diego County and its surrounding environment. Despite recent El Niño-related storms and flooding in California and even in the San Diego area, the fact remains that much of our area is still a desert with very limited access to usable water. The Escondido Water Reclamation Program continues our proactive effort to make the most of our very limited water resources by reclaiming and using much of it again and again instead of pumping it into the Pacific Ocean.

THE ESCONDIDO WATER RECLAMATION PROGRAM

San Diego County, especially the north county where Escondido is located, continues to experience a tremendous population influx that has gone on since the early 1960's. With the population growth that Escondido continues to experience, has come dramatic new economic development, both in the number of new businesses and our existing, historical agriculture industry. All place new demands on our infrastructure and our water supply—both potable and nonpotable. Through local planning and leadership, Escondido continues to attempt to meet the challenge of maintaining a high quality of life for its people, and, with this subcommittee's continued support, can make it a reality.

While our specific program is important to the citizens of Escondido, we remain a key part of the overall water planning effort of San Diego County. As part of the San Diego Area Water Reclamation Program, we are pleased with the increased amount of water that will be made available to the county as a result of this program.

As you may know, we have had to change the nature of the project to reflect the fact that we have lost one of our major projected customers, the city of San Diego. The city of San Diego conducted studies that lead them to the decision to withdraw from the Escondido Regional Water Reclamation Program. San Diego has chosen to conduct the San Pasqual Valley water repurification project without using tertiary effluent from the city of Escondido. Instead San Diego will construct treatment facilities in the San Pasqual Valley. As a result, Escondido has been required to reduce the capacity of both the advanced treatment processes at our Hale Avenue Resource Recover Facility (HARRF) and reclaimed water transmission pipelines from those planned for the Escondido Regional Water Reclamation Program and discussed in past years.

The Escondido Regional Water Reclamation Program of reduced size will now serve the city of Escondido and the Ricon del Diablo Municipal Water District. Advanced treatment processes at the HARRF will be downsized from 18 million gallons

per day to 9 million gallons per day. The pipelines carrying reclaimed water in a southerly direction, toward the San Pasqual Valley will be downsized considerably. Detailed engineering and financial studies of the downsized project indicate that it remains a financially viable project, and, of course, it remains a necessary project for our area.

COST AND FUNDING DATA

Through fiscal year 1997, Escondido has spent more than $10 million on design, preliminary studies, environmental documents, right of way purchases and construction of reclaimed water pipelines. With your approval, since fiscal year 1994, the Bureau of Reclamation has provided $2.5 million of the total monies spent. We have reduced the total cost of our project to $61.6 million, with the Bureau's share reduced to $15.4 million.

SCHEDULE

Phase I of the project is scheduled to advertise for construction bids in March 1998. This portion will provide new aeration facilities necessary to insure water quality for the advanced treatment processes to be constructed in Phase II. Phase I will be completed in March 1999, and at that time Phase II will advertise for construction bids. Phase II will complete the Escondido Regional Water Reclamation Program, and will take 2 years to construct. Reclaimed water deliveries are anticipated in early 2001.

The Bureau of Reclamation's fiscal year 1999 budget request includes $3.195 million for the Escondido Water Reclamation Program, as part of a larger appropriation for the San Diego Area Water Reclamation Program. That funding will support the major construction under Phase II of the project.

We are pleased that the California Water Commission again has supported our program as a recommended program, and continue to be thankful for the support of our sister agencies that comprise the San Diego Area Water Reclamation Program. This program has been favorably reviewed by this subcommittee and your counterpart in the other body, the Bureau of Reclamation, the California Water Commission, and regional officials back home in San Diego County.

We respectfully request your continued support.

PREPARED STATEMENT OF MARK HOLMES, EXECUTIVE DIRECTOR, PARTNERSHIP FOR SAN PABLO BAYLANDS

Mr. Chairman, Members of the Subcommittee, my name is Mark Holmes. I am the Executive Director of the Partnership for San Pablo Baylands. The Partnership for San Pablo Baylands works to preserve, restore and enhance wildlife habitats and agriculture in the San Pablo Baylands Region.

The Partnership believes that it is critical to preserve agriculture in the region not only because it provides significant extensive economic benefits, but also because it enhances habitat values and preserves the area's open space and scenic beauty.

To help meet our program mission and goals, the Partnership is seeking the assistance of the Committee on two funding requests for fiscal year 1999.

First, the Partnership is seeking $500,000 in fiscal year 1999 from the Corps of Engineers under Section 503 of the Water Resources Development Act of 1996. Section 503 authorized the Corps to join with the Partnership to develop a watershed restoration-protection project in the San Pablo Bay watershed. Last year, $100,000 was appropriated to initiate this work. In fiscal year 1999, the Corps will continue to assist the Partnership in examining opportunities for wetlands and riparian restoration activities on public and private land, develop a regular maintenance program for management of public lands and water resources, and the need to stabilize and/or change the existing levee system for the benefit of wildlife habitat and continued agricultural uses.

Your favorable consideration of this appropriation would be appreciated.

Our second request for the San Pablo Baylands Partnership is for $500,000 for the Bureau of Reclamation, under Water and Energy Management Development (Mid-Pacific Region), to prepare a study of water reclamation and reuse opportunities in Sonoma County. The San Pablo Baylands area, like so many areas in the State, is water short. While recycled water may provide a new source of supply, there are a number of implementation issues that must be addressed to determine the practicality of increasing development and use of recycled water. These include the proximity of the supply to the potential users, the cost of delivered recycled water, water quality and the flexibility and reliability of the supply.

The funds requested in fiscal year 1999 are needed to enable the Bureau of Reclamation to assist the Partnership and its partners, Sonoma County Water Agency, to address these technical issues that must be addressed before the use of recycled water in the region can be expanded.

Again, the Partnership would appreciate the Committee's favorable consideration of these requests, and I appreciate the opportunity to submit this testimony on behalf of the Partnership.

PREPARED STATEMENT OF THE CITY OF SEAL BEACH, CA

SURFSIDE COLONY SHORELINE PROTECTION RECONNAISSANCE STUDY

The city of Seal Beach appreciates this opportunity to ask for your support and assistance in conjunction with its infrastructure reliability program. We request the subcommittee appropriate $100,000 in fiscal year 1999 for a Special Reconnaissance Study which will focus on the prevention of coastal flooding/storm wave damage and related emergency response infrastructure in the city of Seal Beach.

During WWII, the U.S. Navy built two rubblemound arrowhead jetties at the entrance of Anaheim Bay to provide port facilities for the Naval Weapons Station. The Surfside Colony beach has experienced major erosion problems since the construction of the jetties. The erosion is caused by increased wave energy directed at Surfside Beach from the combination of reflected waves with incident waves as a result of the installation of the East Anaheim Bay Jetty. A great amount of beach nourishment has been required to replenish the beach. Since 1947, approximately 15,850,000 cubic yards of beach sand has been deposited on the Surfside-Sunset beach to mitigate the erosion caused by these jetties. The present value of this work totals over 80 million dollars. Under current Congressional authorization, the U.S. Army Corps of Engineers has conducted replenishment projects every 4 to 6 years ranging in size from 1 to 1.5 million cubic yards each project.

Much of the early replenishment work during 1947 through 1964 was the result of harbor construction and channel deepening. Recent work includes maintenance dredging and offshore borrow. The majority of the large replenishment projects since 1979 have utilized offshore borrowing. The sand quality of the offshore material, in terms of grain size, seems to be steadily declining. The grain size of the sand is directly related to the littoral transport of the beach sand along the coast through wave action. Sand with smaller grain size will be transported down the coast faster than larger grain size. The quality of the sand from the most recent project (1996) was significantly lower than previous projects. Also of concern is the need to go offshore approximately three miles to find acceptable sources of sand. The quality of sand as it relates to its longevity on the beach and the overall cost effectiveness of these projects should be reviewed.

Although the replenishment project seems to be meeting the overall goal of nourishing the coastal beaches from Surfside-Sunset to Newport Beach, isolated erosion immediately adjacent to the jetty poses a hazard for the Surfside Colony. After only one winter storm season (since the recent replenishment project in 1996), the present condition of the beach is severely eroded. It is highly likely that Surfside Colony will experience coastal flooding and high surf problems before the next scheduled beach replenishment project by the Corps of Engineers. The city of Seal Beach is extremely concerned about the potential shoreline hazards to the Surfside Colony. Potential private and public infrastructure damage could total into millions of dollars.

Reconnaissance Study Overview

This special shoreline protection reconnaissance study would conduct a research and assessment of conditions and parameters affecting the shoreline within the city of Seal Beach at Surfside Colony and the causation of and remedies for shoreline erosion due to the adjacent Federal project, Anaheim Bay/U.S. Naval Weapons Stations harbor entrance jetties. The specific limits of this study will include the portion of the San Pedro littoral cell immediately southeasterly of the Anaheim Bay/U.S. Naval Weapons Station harbor entrance jetty.

Conceptual Scope of the Reconnaissance Study

The primary objectives of this study would include:

Analysis of Existing Conditions and Historical Records.—Research and assessment of existing potential shoreline erosion hazards and historical damage costs.

Data Collection.—Various data would be collected to establish the effects of shoreline erosion elements including historical ocean swell data, wave energy, wave runup, wave direction, sand transport, and beach sand grain size.

Existing Facilities Assessment.—Assessment and evaluation of the existing Anaheim Bay/U.S. Naval Weapons Station harbor entrance jetty (originally constructed by the U.S. Army Corps of Engineers, 1945–47) and its effect on adjacent beaches.

Deficiency Analysis.—Define specific deficiencies in shoreline protection including primary causation factors.

Alternatives Analysis.—Develop and prioritize potential strategies to mitigate shoreline erosion.

Economic Base Study.—Conduct an economic study to ascertain the benefit versus cost of the various alternative mitigation strategies on an avoided cost basis, due to potential damage to private and public infrastructure as a result of a major winter storm event.

Action Plan.—Research and evaluate potential comprehensive action plans to implement mitigation strategies.

Technical assistance, in the form of this Special Reconnaissance Study, from the Corps of Engineers will enable the city of Seal Beach to embark on a program which will significantly improve public safety and reduce damage costs in the event of a major coastal winter storm event. The Federal Government has paid billions of dollars for emergency response and restoration costs after major winter storm events in coastal areas. Similar events in our region could cause similar levels of damage and potential loss of life. The funding and implementation of programs such as this can prevent loss of life and costly damage and recovery efforts.

Thank you for your consideration of this funding appropriation request. We are looking forward to your continued support of these and other programs that prevent loss of life and expend taxpayer dollars in a cost-effective manner.

EAST BEACH SHORELINE PROTECTION RECONNAISSANCE STUDY

The city of Seal Beach appreciates this opportunity to ask for your support and assistance in conjunction with its infrastructure reliability program. We request the subcommittee appropriate $100,000 in fiscal year 1999 for a Special Reconnaissance Study which will focus on the prevention of coastal flooding/storm wave damage and related emergency response infrastructure in the city of Seal Beach.

During WWII, the U.S. Navy built two rubblemound arrowhead jetties at the entrance of Anaheim Bay to provide port facilities for the Naval Weapons Station. The East Beach in the city of Seal Beach has experienced continuous erosion problems since the construction of the jetties. The erosion is caused by increased wave energy directed at East Beach from the combination of reflected waves with incident waves as a result of the installation of the West Anaheim Bay Jetty. In 1959, the U.S. Army Corps of Engineers constructed a concrete sheet pile groin to mitigate the erosion caused by the West Anaheim Bay Jetty. Although the groin does slow the migration of sand, East Beach still sustains a net loss of about 8,000 cubic yards of beach sand annually. This causes the beach to recede at approximately 1.75 to 3.25 feet per year. The city of Seal Beach has facilitated protection of adjacent private and public infrastructure from winter storms by constructing a sand dike on the beach each year. This practice has generally been successful but reduced beach widths lessen the effectiveness of the dike. Severe storm waves have often overtopped the dike and flooded adjacent residences and public facilities causing extensive damage in the past.

Recent inspections of the existing groin have revealed that the groin is deteriorating and is in danger of failing. Existing gaps allow the transmission of sand to the West Beach which further reduces available sand on East Beach. The city of Seal Beach is extremely concerned about the potential shoreline hazards to the failure of the groin and the continuing shoreline erosion problems. Potential private and public infrastructure damage from severe winter storm waves could total into millions of dollars.

Reconnaissance Study Overview

This special shoreline protection reconnaissance study would conduct a research and assessment of conditions and parameters affecting the shoreline within the city of Seal Beach and the causation of and remedies for shoreline erosion due to the adjacent Federal project, Anaheim Bay/U.S. Naval Weapons Stations harbor entrance jetties. The specific limits of this study will include the portion of the San Pedro littoral cell between Anaheim Bay and the San Gabriel River.

The primary objectives of this study would include:

Analysis of Existing Conditions and Historical Records.—Research and assessment of existing potential shoreline erosion hazards and historical damage costs.

Data Collection.—Various data would be collected to establish the effects of shoreline erosion elements including historical ocean swell data, wave energy, wave runup, wave direction, sand transport, and beach sand grain size..

Existing Facilities Assessment.—Assessment and evaluation of the existing Anaheim Bay/U.S. Naval Weapons Station harbor entrance jetty (originally constructed by the U.S. Army Corps of Engineers, 1945–47) and the existing shoreline protection groin at the Seal Beach Pier (originally constructed by the U.S. Army Corps of Engineers in 1959) and their effect on adjacent beaches.

Deficiency Analysis.—Define specific deficiencies in shoreline protection including primary causation factors.

Alternatives Analysis.—Develop and prioritize potential strategies to mitigate shoreline erosion.

Economic Base Study.—Conduct an economic study to ascertain the benefit versus cost of the various alternative mitigation strategies on an avoided cost basis, due to potential damage to private and public infrastructure as a result of a major winter storm event.

Action Plan.—Research and evaluate potential comprehensive action plans to implement mitigation strategies.

Technical assistance, in the form of this Special Reconnaissance Study, from the Corps of Engineers will enable the city of Seal Beach to embark on a program which will significantly improve public safety and reduce damage costs in the event of a major coastal winter storm event. The Federal Government has paid billions of dollars for emergency response and restoration costs after major winter storm events in coastal areas. Similar events in our region could cause similar levels of damage and potential loss of life. The funding and implementation of programs such as this can prevent loss of life and costly damage and recovery efforts.

Thank you for your consideration of this funding appropriation request. We are looking forward to your continued support of these and other programs that prevent loss of life and expend taxpayer dollars in a cost-effective manner.

INFRASTRUCTURE RELIABILITY STUDY

The city of Seal Beach appreciates this opportunity to ask for your support and assistance in conjunction with its infrastructure reliability program. We request the subcommittee appropriate $600,000 in fiscal year 1999 for a special study which will focus on the water, sewer, and drainage systems and related emergency response infrastructure in the city of Seal Beach.

Present Authorization under Public Law 101–60, enacted by Congress on November 28, 1990, and reauthorized in 1996 exists for the U.S. Army Corps of Engineers (Corps) to conduct in consultation with the Federal Emergency Management Agency (FEMA) special studies in southern California. These studies are related to protecting infrastructure assets including water, sewer and drainage systems as well as the restoration of these systems to full service following major seismic events.

It is our understanding that the House of Representatives is currently considering the subject supplemental appropriations Bill, which could allow for the addition of language for a comprehensive Infrastructure Reliability Study in the Seal Beach area of Orange County, California. This special study will provide for a conceptual feasibility level review of conditions and parameters affecting the city's water, sewer and drainage systems as well as the Emergency Response Infrastructure related to each element. Funding of the water, sewer and drainage system study of these elements of the city's infrastructure is the subject of this request to Congress.

Study Overview

The special study will focus upon water, sewer and drainage systems and related emergency response infrastructure in the city of Seal Beach that will potentially be affected by major seismic activity on the Newport/Inglewood Fault which is in near proximity to the community. Primary elements of the study effort would include: groundwater basin optimization and effects of fault systems thereon, seismic reliability of water storage facilities and water systems, seismic reliability of sewerage system elements including collection and trunk facilities and pumping stations, seismic reliability of closed and open channel storm drain systems and pumping stations, and development of alternative recycled and imported water backup supplies for the area.

Conceptual Scope of Study

A more detailed breakdown of the potential range and scope of the Special Study would include:

Seismic Reliability of Water System.—Analysis and assessment of seismic upgrading of water system facilities in the area including: reservoirs, transmission and distribution pipelines, bridge crossings, pump stations, wells, control centers and imported supply facilities.

Groundwater Supply Reliability.—Evaluation of the potential effects upon groundwater supply reliability in the Seal Beach area due to faulting and major seismic events.

Hydraulic System Model.—Prepare a complete hydraulic system model of the city's domestic water system in order to ascertain its ability to provide fire suppression flows to the city's residential, commercial and industrial developments in the event of a Design Base Earthquake (DBE) event. The model platform shall be computer based, tied to a Geographic Information System (GIS) base map.

Backup Emergency Water Supplies.—Assessment of the potential to provide backup level fire protection in high value areas of the city through the backup source of recycled water through the Green Acres Regional system of the Orange County Water District or other nonpotable sources.

Regional Water Supply Augmentation.—Analyze the feasibility of expanded use of regional imported and groundwater supplies through the West Orange County Water Board facilities or private water companies as additional firm backup supply to the area.

Seismic Reliability of Sewer System.—Completion of the analysis and assessment of seismic upgrading of sewer system facilities in the area including: collection and trunk pipelines, siphons and channel crossings, pump stations and control systems.

Seismic Reliability of Drainage System.—Analysis and assessment of seismic upgrading of drainage system facilities in the area including: lateral and main pipeline systems, open channels, pump stations and control systems.

Temporary and Standby Power Assessment.—Evaluate and ascertain temporary and standby power requirements for all water, sewer and drainage pumping system and emergency response infrastructure load demands.

Comprehensive Emergency Preparedness Plan.—Develop a comprehensive Emergency Preparedness Plan in conjunction with the city's Fire and Police Departments to ensure that fully coordinated efforts of staff, materials, equipment and communications systems are brought to the fore in the event of a major seismic occurrence. An evaluation of the physical infrastructure reliability of the city's Emergency Operations Center and related physical plant elements such as Corporation Yard Facilities, Fire and Police Facilities will be conducted.

Capital Outlay Requirements.—Develop a complete Capital Improvement Program (CIP) based upon the results of the analyses and study elements noted above to bring seismic protection reliability to the areas water, sewer and drainage systems and emergency response infrastructure. The CIP would have a planning horizon of no less than 20 years for full program implementation. Funding strategies for Federal, State and Regional assistance to finance infrastructure system improvements would be developed, including new legislative strategies where deemed appropriate.

Economic Base Study.—Conduct a survey level economic base study to ascertain the benefit versus cost of planned improvements on an avoided cost basis, due to potential damage to water, sewer and drainage system elements and EOC facilities from a major seismic event.

Technical assistance, in the form of this special study, from the Corps of Engineers will enable the city of Seal Beach to embark on a program which will significantly improve public safety and reduce damage costs in the event of a major seismic event. The Federal Government has paid billions of dollars for emergency response and restoration costs after major seismic events such as the 1994 Northridge Quake. Similar events in our region and the proximity of Seal Beach to the Newport-Inglewood fault could cause similar levels of damage and loss of life. The funding and implementation of programs such as this can prevent loss of life and costly damage and recovery efforts.

Thank you for your consideration of this funding appropriation request. We are looking forward to your continued support of these and other programs that prevent loss of life and expend taxpayer dollars in a cost-effective manner.

PREPARED STATEMENT OF PAT MALLOY, MAINTENANCE SERVICES DIRECTOR, MAINTENANCE SERVICE DEPARTMENT, CITY OF ARCADIA, CA

The cities of Arcadia and Sierra Madre, CA, appreciate continuing Congressional support of the Water System Seismic Reliability Project. This project began in 1996 with the reappropriation of the Water Resources Development Act (WRDA) (Public Law 104–303), and is now entering its third year. To this point, Federal, State and local government have invested $1,125,000 in the technical research and analysis of this critical project through the Arcadia/Sierra Madre Water Reliability Study (ASMWSRS) . For fiscal year 1999 the cities of Arcadia and Sierra Madre are requesting funding in the amount of $1,000,000 for the subsequent design and devel-

opment phase of this project (Stage 4 Technical Assistance for Phase 2 Project Development).

BACKGROUND

The preliminary stages of this project consisted of the Arcadia/Sierra Madre Water System Reliability Study which was conducted jointly by the U.S. Army Corps of Engineers and State, local, and regional water agencies. This study evaluated the performance of the water systems that serve our communities, and specifically the vulnerability of our systems to disruption after a major earthquake. It evaluated the ability of the water systems to function properly following a seismic event. Following the evaluation stage of the study necessary system improvements were identified to increase reliability and reduce property damage and economic losses resulting from a major seismic event in, or near, the cities of Arcadia and Sierra Madre. Some of the structural deficiencies and system inadequacies identified in the report included; emergency power supply sources, inadequate storage facilities and system breaks that would prevent adequate local fire suppression capabilities.

Stage 3 Technical Assistance for Phase 1 project development was approved by Congress in fiscal year 1998. Arcadia and Sierra Madre are requesting that necessary funding be appropriated for Stage 4 Technical Assistance for Phase 2 project development in fiscal year 1999.

PHASE 2—PROJECT OVERVIEW

As mentioned earlier, several system deficiencies and inadequacies were identified in the special study. The study determined that the problem areas would be exacerbated in the event of a major earthquake. Storage capacity in Sierra Madre is insufficient; conveyance pipes are undersized, antiquated and composed of brittle materials. Interconnections between purveyors are inadequate and there is insufficient standby power to maintain pump operation when electrical service is disrupted. In addition, individual components of both systems, i.e. Arcadia and Sierra Madre, are susceptible to failures such as; regional power grid, pipeline leaks and breakage, and valve shearing at key storage facilities. The combined effect of these deficiencies and inadequacies would likely result in reliability problems ranging from limited water flow at reduced pressure to total system failure. These type of failures could in turn result in the inability to provide potable water to local residents and to provide emergency fire suppression capabilities.

To mitigate the deficiencies found in the special study, a comprehensive project of system improvements has been identified. The primary elements of the improvement project include the construction of high capacity water supply wells in the Main San Gabriel Basin within the city of Arcadia sufficient to provide emergency water supply to neighboring Sierra Madre in the event of a partial or complete collapse of the domestic water system following an earthquake. Creating adequate capacity in the well supply system also allows for full back-up supply of Arcadia's key area wells. A transmission main facility to deliver water back and forth between Arcadia and Sierra Madre is included with metering structures and associated control equipment. A loop transmission main within Sierra Madre is also included to deliver emergency back-up water supply to the city's main plant facility. The proposed project continues the development of policies and programs to improve emergency response including standby and temporary power sources and design of seismic protection components needed to maximize water system function following a major earthquake.

It must be reemphasized that available and adequate water supply in the time immediately following a seismic emergency is critical not only to general public health and safety but is also directly linked to local fire suppression efforts. The consistent availability of water during these emergencies, particularly for the purposes of fire suppression can assist in the localities in preventing of hundreds of millions of dollars in economic losses and property damage to the two communities. During the last major area earthquake economic losses were estimated at $330,000,000. An investment of $30,000,000 in design and construction of adequate facilities will reduce the potential for localized economic losses to an estimated $42,000,000 which results in a potential savings of nearly $260,000,000. The continuing support of the U.S. Congress in funding the Water System Seismic Reliability Project is imperative to the safety, welfare and economic well being of the southern California communities of Arcadia and Sierra Madre in the event of future major seismic event.

Again, we greatly appreciate past Congressional support of this project and we are prepared to match the requested funding amount of $1,000,000 in Federal technical assistance with $330,000 of non-Federal funding sources.

PREPARED STATEMENT OF THE CITY OF SIERRA MADRE, CA

The cities of Sierra Madre and Arcadia, CA, appreciate your continuing support for the Water System Seismic Reliability Study and request that the Subcommittee appropriate $1,000,000 in fiscal year 1999.

The Water Resources Development Act of 1996 (Public Law 104–303) authorizes the Corps of Engineers to provide technical assistance for public infrastructure seismic reliability projects. These funds will be used to design improvements identified in the seismic reliability study which the Corps completed last year.

Improvements recommended by the special study include high capacity water supply wells, reconstruction of reservoirs, and a transmission main facility along with metering structures and associated control equipment. A loop transmission main is recommended to deliver emergency backup water supplies. Also provided for is the rehabilitation of the two area replenishment basins and the development of policies and programs for enhancing emergency response. Such emergency response includes standby and temporary power and the design of the seismic protection components needed to maximize the ability of these water systems to function properly following a major seismic event.

The study and the next stage of technical assistance provided by the Corps of Engineers will significantly improve public safety and reduce damage costs in the event of an earthquake. Damage resulting from the 1994 Northridge earthquake, which measured 6.7 on the Richter Scale, totaled more than $20 billion. The Federal Government paid billions of dollars for emergency response and restoration costs. Large quakes predicted for our region could cost thousands of lives and as much as $70 billion in property damage. Lives can be saved and damages reduced if steps are taken to improve public infrastructure and prepare for emergency response.

Again, we appreciate your past support. We understand that the $1,000,000 in Federal funds are to be matched by $333,000 in non-Federal funds. We are exploring the various options available to the city of Sierra Madre to provide our share of the matching funds. We look forward to your continued support.

PREPARED STATEMENT OF THE CITY OF BEVERLY HILLS, CA

The city of Beverly Hills appreciates your support of water system seismic reliability programs in the Los Angeles basin. We request that the subcommittee appropriate $600,000 in fiscal year 1999 for our Phase 1 "Water Infrastructure Reliability Study" project.

The city of Beverly Hills owns and operates an aging water distribution system that supplies water to the city's of Beverly Hills and West Hollywood. This system has many deficiencies with regard to its ability to withstand a major seismic event. Our Engineering staff has determined that a study to assess/suggest seismic upgrades to the system would improve the city's ability to provide water for both fire protection and public use following a seismic event.

The city of Beverly Hills water supply relies primarily upon imported sources through the Metropolitan Water District of Southern California (MWDSC) system. The major facilities of the water system include two connections to the MWDSC's Santa Monica Feeder, 11 booster stations, 11 storage reservoirs, 9 pressure reducing stations and a network of distribution and transmission lines. This system feeds 11 pressure zones in Beverly Hills and two pressure zones in West Hollywood.

Five of the reservoirs are above-grade steel tanks that may require seismic retrofitting along with the appurtenant valve and piping structures. These tanks were constructed in the 1950's. Two partially exposed concrete reservoirs, 7 million and 2 million gallons, respectively, may also require upgrading. In addition to the reservoir facilities, the distribution system may require installation of one new pumping station and eight new pressure-reducing stations to allow for critical water redistribution in the event of a failure in any one of the 13 pressure zones. This is especially critical to provide fire protection in the city's previously identified high fire severity zones; hillside areas that are located above the major storage facilities.

Study Scope.—To review the existing facilities in the water supply system to determine the susceptibility to structural damage and to optimize water supply capabilities during a significant seismic event. Specifically, the study will evaluate the individual reservoirs and the water supply distribution system and recommend improvements that will ensure better system reliability. In addition, the city is currently in the final stages of developing a program to utilize the city's groundwater supplies. The study will analyze and recommend an operational plan for the proposed water treatment plant and the system improvements to maximize that facility for optimal water delivery.

The study will include emergency operational procedures for city staff in the event of disruption of import supply from the Metropolitan Water District and the emergency connections to the city of Los Angeles, Department of Water and Power. The procedures will include augmenting imported water with local groundwater following a seismic event. This will improve the city's ability to provide water to any of the 13 pressure zones if the connections to primary water sources are severed.

The city of Beverly Hills water system storage lies near the Hollywood, Santa Monica and Newport-Inglewood faults. In addition, most of the city's reservoirs are located in the hillside portion of the city; some of them are adjacent to steep inclines and located above residential properties. Experts predict these faults are capable of a maximum credible earthquake of magnitude 7.0. During a seismic event of this size, the city will most likely experience ground accelerations similar to those of the 1994 Northridge Earthquake, which was a magnitude 6.7 earthquake and resulted in over $20 billion worth of damages in the region.

The city intends to conduct structural evaluations of the city's existing reservoirs and perform additional geotechnical studies as well. Ultimately, the study should supply recommendations for future Capital improvement programs and an emergency operation plan.

The city is prepared to partner with the Federal Government to provide a $200,000 match from non-Federal sources. We are looking forward to your support of this program and thank you for your consideration.

PREPARED STATEMENT OF THE CITY OF HUNTINGTON BEACH, CA

BEACH SHORE PROTECTION STUDY

The city of Huntington Beach requests $300,000 and the enclosed language be included in the fiscal year 1999 Energy and Water Development Appropriations Bill for the Corps of Engineers to initiate a cost-shared Feasibility Study for Federal assistance in a project to protect the Huntington Cliffs coastline, in Huntington Beach, CA.

The Corps of Engineers completed a reconnaissance study in 1995 on the Federal interest in improvements to reduce the potential for coastal erosion and storm damage to city facilities and Pacific Coast Highway. This study indicated that there is potential for substantial erosion and storm damage to public properties and uses of the bluff area, and that plans to reduce damage potential appear to be justified. However, the Corps did not recommend proceeding to the feasibility study phase because the most cost-effective plan identified at that time was relocation of public facilities, which they claimed is a local responsibility. They also claimed that most of the benefits that would result from the shore protection improvements were associated with reducing the loss of public access and use of the bluff for recreation, which they claimed is a low priority for the Administration.

Since completion for the Corps of Engineers reconnaissance report, the cliffs have experienced further significant erosion during coastal storms. This erosion created eight new embayments, resulting in the undermining of pedestrian, and bike trails, and damaging other public facilities. This was required the city to close public access to these popular coastal areas, which were being used by about a million people a year. We are concerned that additional storms will continue to damage these facilities, as well as adjacent parking areas, utilities, and perhaps in the not so distant future, threaten Pacific Coast Highway. The significant erosion that occurred during recent events also demonstrated that relocation of the facilities, which was considered in the Corps of Engineers study, is no longer a reasonable alternative. Accordingly, the city would like the Corps to proceed with a modified Reconnaissance Study.

City of Huntington Beach Shore Protection Study, California.—$300,000 is appropriated for the Corps of Engineers to initiate a reconnaissance study for Federal participation in a project to reduce erosion and storm damages along the Huntington Beach coastline. The corps shall consider the reduction damages to the existing public facilities and the associated loss of public access and use of these facilities as benefits in determining economic justification of a project.

INFRASTRUCTURE SEISMIC RELIABILITY/RESTORATION STUDY

Mr. Chairman and members of the Subcommittee, the city of Huntington Beach appreciates your past support for the Infrastructure Seismic Reliability/Restoration Study which was initiated in fiscal year 1996. The city requests $700,000 to complete the study in fiscal year 1999.

The Water Resources Development Act of 1990 (Public Law 101–640) and amendments in 1996 (Public Law 104–303) authorized the Corps of Engineers to address the seismic reliability and restoration of Southern California's public works infrastructure to ensure full service levels in the event of a major seismic event. The Huntington Beach study includes an assessment of conditions and parameters affecting the city's water, sewer, and drainage systems, as well as the emergency response infrastructure related to each of these systems. Conducting this study now and constructing the necessary improvements will significantly improve public safety and reduce damage repair costs after a major earthquake.

Two faults run through the city of Huntington Beach, leaving the city vulnerable to significant earthquake damage. Application of generic principles to the unique nature of seismic activity in southern California is not a cure. Obviously, this information is helpful, but real cost benefit will be derived only through an evaluation of Huntington Beach's needs and studying that mitigation which will guarantee the delivery of essential water related services to our citizens.

The third phase of the study to be conducted with fiscal year 1999 funds will focus on the following six elements:

—Seismic upgrading of water system facilities, including reservoirs, transmission and distribution pipelines, bridge crossings, pump stations, wells, control centers and imported supply facilities.
—Backup emergency water supplies, including regional water supply augmentation.
—Seismic reliability of sewer and drainage systems.
—Temporary and standby power requirements for all water, sewer, and drainage pumping systems and emergency response.
—Capital outlay requirements.
—Economic base study to ascertain the benefit versus cost of planned improvements on an avoided cost basis due to potential damage to public infrastructure.

Natural disasters cost the economy and local, regional, State, and Federal Governments billions of dollars in damage, emergency response, and reconstruction of public infrastructure. The 1994 Northridge earthquake in our region was the most costly natural disaster in U.S. history. A larger quake on the San Andreas fault or the Newport-Inglewood fault near Huntington Beach could cost thousands of lives and approximately $70 billion in property damage. This type of disaster would be significantly exacerbated if water systems did not survive the quake, or were not restored quickly afterwards.

The Huntington Beach study will result in more reliable water systems for hundreds of thousands of residents in southern California. We urge the Subcommittee to provide funds for this critical work.

PREPARED STATEMENT OF THOMAS COLE EDWARDS, MAYOR, CITY OF NEWPORT BEACH, CA

WATER AND WASTEWATER SYSTEM SEISMIC RELIABILITY STUDY

The city of Newport Beach requests your support for the Water and Wastewater Seismic Infrastructure Reliability Study and the Subcommittee's appropriation of $600,000 in fiscal year 1999.

The Water Resources Development Act of 1996 (Public Law 104–303) authorized studies and design assistance to safeguard water, wastewater and other public infrastructure systems in southern California from earthquake damage. The Act also authorized the Corps of Engineers to provide technical assistance for these projects.

The city of Newport Beach's water supply relies upon both imported sources from the Metropolitan Water District of Southern California (MWDSC) and groundwater supplies pumped from the Orange County Groundwater Basin, managed by the Orange County Water District (OCWD). The water system consists of the following major components: terminal reservoir, treatment facilities, wells, booster pump stations, storage reservoirs, transmission and distribution systems and meter facilities. All of these systems are served by emergency operations facilities situated in the city's Utilities Corporation Yard. The city's wastewater system is comprised of local and collector wastewater system elements and wastewater pump station facilities serving this coastal community connecting to trunkline wastewater facilities operated by the County Sanitation Districts of Orange County (CSDOC) of which the city is a member agency. All of these water and wastewater system components could be vulnerable in varying degrees to potential seismic activity and its resultant ground movement. The Newport-Inglewood fault crosses through the western portion of the city. A major seismic event along this fault or other nearby fault could

cause significant disruption in the city's infrastructure providing domestic water and fire protection to the community. In addition, the potential exists for significant property damage from fires, breaching of reservoir facilities, water main breaks, and sewage spills to the adjacent ocean, bays and estuaries abutting the city.

The study begins with a research and assessment phase that involves collection and review of all known existing data and information about the city's water and wastewater infrastructure systems. The study concludes with the technical and economic phase that develops an improvement plan to enhance infrastructure reliability to minimize losses, protect public health and safety, and to avoid environmental damage in the event of an earthquake.

Thank you for your consideration of this request. The city looks forward to partnering with the Corps of Engineers in the development and implementation of this program.

PREPARED STATEMENT OF ELEANOR L. ZIMMERMAN, MAYOR, NORWALK, CA

WATER SYSTEM SEISMIC RELIABILITY IMPROVEMENTS

The city of Norwalk appreciates your continued support and assistance for technical assistance in conjunction with its water system seismic reliability program. We request that the subcommittee appropriate $1,000,000 in fiscal year 1999 for our Phase 2 project under the program.

The Water Resources Development Act (WRDA) of 1990 (Public Law 101–640), authorized a study in southern California to address the restoration of this region's public works infrastructure to full service following major earthquakes. WRDA 1996 (Public Law 104–303) authorized the Corps of Engineers to provide technical assistance to public infrastructure seismic reliability projects. Federal funds are matched by a factor of 25 percent by the local sponsor. These funds will be utilized to design improvements identified in the seismic reliability study conducted by the U.S. Army Corps of Engineers (Corps) in 1996 entitled, the "Southeast Los Angeles County Water Conservation and Supply Study"—Special Study (SELAWS). This special study evaluated the performance of water systems that serve communities in southeast Los Angeles County, and the vulnerability of these systems to disruption following a major earthquake. The Special Study focused on the six water systems that serve the city of Norwalk and assessed the ability of these systems to function adequately following a major earthquake. The special study identified improvements to these systems to increase their reliability and reduce damage losses. In addition, a companion document to the Special Study report, entitled "Capital Improvement Program for Water System Seismic-Reliability Improvements" was also prepared estimating the preliminary costs and proposed schedule of implementation for the improvements. Stage 2 Technical Assistance for Phase 1 project development was approved by Congress in fiscal year 1998. Preparation of design related documents for Phase 1 is underway in fiscal year 1998 and will complete in fiscal year 1999.

Based on the Special Study, the Corps of Engineers concluded that there is a need and opportunity for the seismic upgrading of the water supply facilities for the city of Norwalk. The study concluded that there are inadequacies and structural deficiencies in the water system which would increase in severity after a major earthquake. Storage capacity is inadequate; conveyance pipes are undersized, old, and composed of brittle materials; interconnections between purveyors are inadequate; and there is insufficient standby power to keep pumps operating when electrical service is disrupted. Furthermore, the evaluation indicates that the flow of water throughout the city will be disrupted following a major earthquake because individual components of each system are susceptible to failure, including pipeline leaks and breakage, and valve shearing at storage facilities.

The resulting disruption will likely range from a total loss of water to limited flow at reduced pressure. This lack of water could lead to widespread property damage by fire.

Adequate water for fire suppression is the most important factor in minimizing direct economic damage caused by an earthquake-induced water system failure. The principal damage resulting from inadequate water for fire suppression is the loss of property and the loss of business and residential service. Other costs include repair of the damaged water system, loss of revenue from lack of water consumption, and loss of business revenue due to lack of adequate water. This cost is estimated at $219 million.

To reduce the damage associated with a major earthquake, three alternatives have been developed to enhance the ability of the water system. The improvements in the three alternatives range in cost from an estimated $23 million to $105 mil-

lion. The $219 million in repair costs could be reduced by an estimated $74 million to $101 million, if these improvements are made. The proposed Phase 2 project follows upon the current Phase 1 project and also includes the continued development of policies and programs for enhancing emergency response, and the design of the components needed to maximize the ability of these water systems to function properly following a major earthquake as recommended in the special study.

Technical assistance from the Corps of Engineers, for the Phase 2 project, will significantly improve public safety in the area and reduce damage costs in the event of a major seismic event. Damages from the 1994 Northridge Earthquake, which was 6.7 on the Richter Scale, totaled over $20 billion. The Federal Government then paid billions of dollars for emergency response and restoration costs in that area. Similar large quakes in our region and in the proximity of Norwalk could cause similar levels of damage and loss of life. Lives can be saved and damages reduced through the funding and implementation of programs such as this.

Thank you for your past support of our program. The city is prepared to partner with the Federal Government to provide a $333,333 match from non-Federal sources. We are looking forward to your continued support of this program.

PREPARED STATEMENT OF CRAIG PERKINS, DIRECTOR, ENVIRONMENTAL AND PUBLIC WORKS MANAGEMENT DEPARTMENT, SANTA MONICA, CA

The city of Santa Monica appreciates your continued support for technical design assistance in conjunction with the water system seismic reliability program. We request that the subcommittee appropriate $1,000,000 in fiscal year 1999 for our stage 3 project under the program.

The Water Resources Development Act (WRDA) of 1990 (Public Law 101–640), authorized a study in southern California to address the restoration of this region's public works infrastructure to full service following major earthquakes. WRDA 1996 (Public Law 104–303) authorized the U.S. Army Corps of Engineers (Corps) to provide technical assistance to public infrastructure seismic reliability projects. Federal funds are matched by a factor of 25 percent by the local sponsor. These funds will be utilized to design improvements identified in the seismic reliability study conducted by the U.S. Army Corps of Engineers in 1997 entitled, "City of Santa Monica Water Infrastructure Restoration Special Study, Los Angeles County, (Reconnaissance Phase)," and the Stage 2 work of the study currently being conducted by the Corps. The study evaluates the performance of the city of Santa Monica's water system and the vulnerability of the system to disruption following a major earthquake. The special study identifies necessary improvements to the system to increase water reliability and reduce damage losses.

The special study concluded that there is a clear need for the seismic upgrading of the city of Santa Monica water supply facilities. The study points out that there are inadequacies and structural deficiencies in the water system which would increase in severity after a major earthquake. The deficiencies which were identified include insufficient and unreliable local and imported water resources, insufficient water storage capacity, old and undersized sections of the conveyance system, inadequate interconnections with adjacent local retailers and insufficient standby power. The vulnerability of the city's water system was demonstrated during the Northridge earthquake when the Metropolitan Water District supply system was disrupted and the city had to rely entirely on groundwater pumping. Due to the recent contamination of groundwater by MtBE (a chemical in reformulated gasoline), the groundwater supply is now severely limited and the city must rely upon imported water sources for over 80 percent of the water demand. In addition, the flow of water throughout the city may be disrupted following a major earthquake because individual components of the system are susceptible to failure, including transmission pipe breaks, valve shearing and failures at storage facilities.

Adequate fire suppression is the most important factor in minimizing direct economic damage caused by an earthquake-induced water system failure. The principal damage resulting from inadequate water for fire suppression is the loss of property. Other potential damage costs include repair of the damaged water system and loss of business revenue due to lack of water service for commercial and manufacturing activities.

In order to reduce potential damages from a Design Base Earthquake (DBE) event, a project has been conceptually identified as a result of the Corps of Engineers study. The projects' primary elements include the construction of new high-capacity groundwater supply wells in the Santa Monica Groundwater Basin to provide sufficient capacity for a backup emergency water supply in the event of a partial or full loss of the existing water supply sources. A parallel transmission main

facility to deliver water from the city's most important water wells in the Charnock Sub-Basin would be included along with associated metering, pumping and control equipment. Transmission main improvements within the city are identified as well in order to deliver emergency water to the city's treatment plant from the proposed new backup groundwater supply wells.

Also provided for in the proposed project is the rehabilitation of the city's Arcadia Water Treatment Complex in order to guarantee the city's ability to treat and deliver a safe and dependable water supply following a seismic emergency. The construction of groundwater injection wells to allow replenishment of the city's groundwater resources is also included in the plan. These facilities would utilize off-peak water supplies delivered from the Metropolitan Water District of Southern California. Utilization of these injection facilities would assist in replenishment of the groundwater basins and increase the available emergency supply from the city's wells. The proposed project also includes the development of policies and programs for enhancing emergency response including installation of standby emergency power supplies and the design of the seismic protection components needed to maximize the survivability of the water system following a major earthquake.

Santa Monica greatly appreciates your past support of our efforts. The city is prepared to partner with the Federal Government to provide a $250,000 match from non-Federal sources for the requested technical design assistance. We are looking forward to your continued support of this critically important program.

PREPARED STATEMENT OF PHILIP C. CISNEROS, PRESIDENT, TWENTYNINE PALMS WATER DISTRICT

Mr. Chairman and Members of the Subcommittee, the Twentynine Palms Water District is requesting $700,000 for the continued development of the Water Infrastructure Restoration Study—Feasibility Report (Stage 2) to be conducted by the Corps of Engineers Los Angeles District—Planning Division. The Feasibility Study Phase shall be based upon the results of the Financial Special Study Report (Reconnaissance—Stage 1) currently underway.

Critical information pertaining to the continued provision of water to the inhabitants of the District in the event of a seismic event will be supplied through this study phase. The information gained will enable the District, the sole provider of water in a somewhat isolated high desert area, to prepare its infrastructure for maximum service capabilities.

The feasibility stage of the Special Study effort shall provide for the following elements:

Groundwater Supply Reliability Analysis

A definitive groundwater supply reliability analysis shall be conducted which shall include the development of a groundwater model capable of emulating both groundwater flow and quality regimes for the Twentynine Palms Groundwater Basin. Areas of the groundwater basin subject to high mineral content of VOC contamination shall be identified and cataloged in terms of treatment requirements under the Safe Drinking Water Act and related Federal and State drinking water standards. An investigation shall be made into the potential to optimize the reliability of groundwater supplies to the District. An assessment shall also be made in terms of alternative groundwater supply options to augment the District's existing supplies. A draft AB 3030 Groundwater Management Plan document shall be prepared in accordance with State of California law.

Treatment Facility Reliability Analysis

Reliability issues related to the District's new water treatment plant, and potentially well head treatment facilities which may be required, shall be identified. Conceptual level designs to upgrade, expand or construct such facilities shall be prepared. The consultant shall coordinate its efforts during this phase of the work with the District's Engineer and consultants working on the design and construction of the new defluoridation plant.

System Hydraulic Model Development

A hydraulic network model, utilizing an H20 Net or equivalent software platform, shall be prepared for the District's domestic water system. The model shall be based upon current land use conditions as identified in the city of Twentynine Palms or the county of San Bernardino's General Plan and any Specific Plans related to development or redevelopment in the District's service area over a 20-year planning horizon. The model shall be based upon existing production and distribution condi-

tions as a baseline level to allow the determination of effects upon the system due to the occurrence of the Design Basis Earthquake (DBE) event utilized in the study.

Seismic Hazard Study of Water System Facilities

A seismic hazard study shall be conducted based upon the development of a DBE event occurring in the proximity of the District. Both deterministic and probabilistic methodologies shall be employed to ascertain maximum horizontal and vertical ground acceleration parameters for use in the analysis. An assessment of the effects upon the District's water system components shall be made in order to establish baseline level damage conditions for use in the study.

Temporary Power Analysis

An evaluation of the District's existing stationary and portable power generation facilities shall be conducted to determine if sufficient generation capacity is available to provide for full backup power capability, in the case of a broad scale grid power outage of primary electrical power, to the District. The consultant shall take into consideration the potential that portable generation equipment may not be able to cross the District' service area in the event of ground rupture conditions associated with the DBE event.

Water System Deficiency Analysis

The water system shall be analyzed to determine its potential deficiencies related to seismic reliability following the DBE event. Potential damages shall be identified and cataloged in a site specific manner, based upon an assessment of ground acceleration in the horizontal and vertical direction. The analysis shall also include a determination of deficiencies related to power system reliability of Southern California Edison's electrical system grids providing power to the District's water production and treatment facilities. The hydraulic model shall be utilized to assess the ability of the existing water system to suppress fire events occurring on a widespread basis following the DBE event. Specific consideration shall be given to the potential to hydraulically isolate separate zones of the systems to assure individual integrity in each zone.

Water System Improvement Programs

Program level conceptual designs and estimates shall be prepared to construct retrofits and betterments to the District's water system infrastructure to mitigate operational and structural deficiencies identified in the water system deficiency analysis. These proposed improvements shall be cataloged in a System Improvement Program (SIP) utilizing a minimum of a 20-year planning horizon for planning, designing and constructing said improvements. The location of the proposed system improvements shall be incorporated into a Geographical Information System template compatible with the District's GIS database platform. The SIP shall be available in an electronic format utilizing Microsoft Office platform elements for word processing, spreadsheets, database and presentation formats.

Institutional and Regulatory Strategy Development

An assessment of institutional and regulatory constraints which may present themselves at the Federal, State and regional level shall be conducted as related to program development and implementation.

Comprehensive Emergency Response Plan

A focused and comprehensive Emergency Response Plan (ERP) shall be prepared to optimize its effectiveness in cooperation with local, regional, State and Federal agency support to the District. This work shall be conducted in concert with the District's SERS (State Emergency Response System) program.

Economic Base Study

An economic base study, employing methodologies utilized in previous Corps Special Study efforts conducted for the cities of Norwalk, Arcadia and Sierra Madre California shall be performed to ascertain the benefits of the planned improvements through an avoided cost basis economic analysis.

PREPARED STATEMENT OF THE WEST CHINO WATER DISTRICT

BACKGROUND

The Water Resources Development Act (WRDA) of 1990 (Public Law 101–640), authorized studies in southern California to address the restoration of this region's public works infrastructure to assure full-service levels following major earthquakes.

This special study would conduct a research and assessment of conditions and parameters affecting the water system infrastructure and local water supplies providing baseline and supplemental resources to the water systems in West San Bernardino County and Los Angeles County, including water and wastewater service areas of the cities of Chino, Chino Hills, Claremont, Montclair, Upland, and the Monte Vista Water District. The effort will also include the preparation of a special study defining the primary elements of a Water Infrastructure Reliability program which would complete the study efforts in fiscal year 1999.

PROGRAM OVERVIEW

The primary study objectives for the State 1 efforts include the following:

Program Research and Assessment

Work under this task would involve the conduct of a Research and Assessment phase of the Chino Basin Water Infrastructure Reliability Study (WCB–WIRS). Research efforts would focus on the following areas:

—Identification of the Design Base Earthquake (DBE) event which will serve as the basis for assessing seismic damage risk in the study area.

—Data Collection for Water Infrastructure Elements to be analyzed, including mapping, as-builts, reports, and operational data relevant to the water and wastewater systems in the area.

—Collection of Extant Literature and Studies relative to local groundwater conditions as they relate to faulting features and groundwater supply conditions in the area.

—Assembling Relevant Report, Regulatory, and Study Materials from Regional, State, and Federal agencies relevant to planned programs affecting District water supplies.

—Developing a Compendium of Information relative to existing emergency preparedness programs of the District and other responsible public entities.

—Ascertaining the Nature of the Regional Power Grid serving the study area and determining the Nidre and extent of portable and standby power equipment serving the water infrastructure elements under consideration.

—Conducting a Field Review and Defining System Deficiencies from the perspective of the District's and participating agencies Administrative, Operational, and Engineering staff.

—Researching and Evaluating the Water Master Plans and Capital Improvement Programs relative to the study elements and establishing a baseline for future augmentation of the CIP's through later studies which will identify new programs and projects.

The results of the Research and Assessment phase of the work will be summarized in a Summary Technical Memorandum compiled with appropriate appendices of hard copy and electronic data and information assembled.

Preparation of Special Study

Following the completion of the Research and Assessment phase of these efforts, a Special Study shall be prepared which define and assess the major study elements to be considered in the establishing the WIRS Program. The primary focus areas in the Special Study should include but not be limited to the following:

Summary of research and assessment phase findings.

Definition of the study area setting: General characteristics; Primary study issues; Water system infrastructure components; Water system baseline parameters; Groundwater conditions/water supply; Emergency response conditions; and Federal authority and responsibility.

Assessment of without project conditions: Establishment of seismic criteria—hazard assessment; Water system infrastructure system evaluation criteria; and Water system assessment.

Economic analysis: Damage repair costs; Revenue impacts; Business losses; Property loss—residential, commercial, institutional; and Summary of Economic Damage from Design Base Earthquake.

Plan formulation: Statement of problem; Federal interest determination; Program opportunities and constraints; Alternatives determination; and Evaluation of alternatives.

Program conclusions and recommendations; System improvement plan; and Emergency Response Program.

The results of the special study will be presented along with a comprehensive appendix in a format which clearly identifies the scope and extent of future technical assistance leading to project design.

Requested Funding

The requested funding for fiscal year 1999 for the development of the special study for the West Chino Basin Water Infrastructure Reliability Study is $800,000.

PREPARED STATEMENT OF THE HI-DESERT WATER DISTRICT

Authority.—Public Law 101–640, Public Law 104–303. Fiscal Year 1999 Funds Request $150,000. Southern California Infrastructure Study.

Project.—This study will conduct research and assessment of conditions and parameters affecting the water system infrastructure and local water supplies providing baseline and supplemental resources for the area served by Hi-Desert Water District, i.e. Town of Yucca Valley and surrounding area.

PROJECT PRIMARY OBJECTIVES

1. Identify Design Base Earthquake. Geologist will identify what level of movement will occur on specific portions of the delivery system and storage facilities.
2. Data Collection of Water Infrastructure Elements. This will provide a physical inventory and identify all elements of the system and location of each element.
3. Develop Compendium of Existing Emergency Response Information. The inventory will assist in developing a timely emergency response procedure.
4. Ascertain the Nature of Regional Power Grid Serving Water Infrastructure Elements. It is important to the continued service during a seismic event that there be an inventory of where power is located to serve the system.
5. Define System Deficiencies from the Perspective of Administrative, Operations and Engineering Staff to Optimize Administration and Continued Operation.
6. Research and Evaluate Water Master Plan and Capital Improvement Program. The review of existing master plan will assist in developing an emergency plan to assure continued service.

Background.—Hi-Desert Water District (HDWD) serves an area of 50 square miles. In June 1992, the area experienced a 7.5 earthquake with the epic center only 6 miles from the center of the HDWD service area. Forty percent of the delivery system was destroyed and one major storage tank moved during the quake.

Tens of thousands of aftershocks have been experienced over the past five and one-half years. Each has taken its toll on the system costing the residence hundreds of thousands of capital dollars.

HDWD serves a population of nearly 25,000. Thirty-six percent of the population are senior citizens living on a fixed income. About the same percentage of the population are living within the Federal poverty level.

With all the ongoing seismic activity and continued improvements needed to protect the system from future destruction should another major event is experienced, a plan needs to be developed to identify the weak links in the system.

Results of the Study.—The study will identify the problem areas, assist in the planning of the infrastructure improvements and will be a useful tool to assist in responding to emergencies based on the end result model that will be developed from the data gathered during the study.

PREPARED STATEMENT OF THE KARUK TRIBE OF CALIFORNIA

The Karuk Tribe of California (Karuk Tribe) is requesting that $500,000 be added to appropriations for the Karuk Tribe as part of the Bureau of Reclamation's budget for Klamath Basin Area Office operations. The funds requested will enable the Karuk Tribe to continue to government-to-government agreement signed with the Bureau of Reclamation and other Interior agencies in November 1995. Increased costs are due to the Karuk Tribe's dependence on water deliveries from Bureau of Reclamation facilities (average 80 percent in summer months), and the growing need for Tribal participation in development of an Environmental Impact Statement beginning this up-coming fiscal year. The Memorandum of Agreement provides for the implementation of government-to-government responsibilities that will lead to the operation of Reclamation facilities involving:

—Identification of Tribal Water and Fishing Rights affected by Project Operations.
—Assessment of the impacts of Project operations on Tribal trust resources and species of concern under the Endangered Species Act.
—Direct and effective communications with the Tribal governments and their authorized representatives in developing and completing Project operations plans.

—Conducting scientific research and data collection regarding stream flows, lake levels, water quality, fish populations, water needs and supply forecasts, and evaluating and assessing overall river and lake operations.
—Management decisions and actions implementing the Project Operations Plan, including the technical evaluation of the data used, collected and analyzed, and technical conclusions drawn form such data.

Funds Requested:

Tribal and Project Operations Planning (Items 1, 2, and 3)	$250,000
Scientific Research and Project Implementation (Items 4 & 5)	250,000
Total	500,000

MEMORANDUM OF AGREEMENT FOR THE GOVERNMENT-TO-GOVERNMENT RELATIONSHIP IN THE DEVELOPMENT OF THE KLAMATH PROJECT OPERATIONS PLAN

This Memorandum of Agreement (Agreement) provides a guide for the implementation of the government-to-government relationship between the United States, acting through the Bureau of Reclamation (Reclamation), in coordination with the Fish and Wildlife Service, National Marine Fisheries Service, and the Bureau of Indian Affairs (these four will hereinafter be referred to, separately and together, as the United States), and the Klamath, Yurok, Hoopa, and Karuk Tribes (Klamath Basin Tribes or Tribes), with respect to the development of the long-term operations plan, the Klamath Project Operations Plan (KPOP), for Reclamation's Klamath Project. Several meetings have been conducted between the Tribes and the United States with regard to the KPOP. These meetings have served to clarify the proposed structure of the government-to-government relationship.

The United States Government has a unique legal relationship with Native American tribal governments as set forth in the Constitution of the United States, treaties, statutes, and court decisions. The elements of this unique relationship include: (a) recognition of the rights of tribes as sovereign entities; (b) recognition of the right of tribes to delegate representation; (c) consultation with tribal governments prior to taking actions that affect tribal governments, rights, or trust resources; and (d) participation by tribes in planning and managing the trust resource base. Recent expressions of the relationship between the United States Government and Native American tribal governments are found in President Clinton's Memorandum of April 29, 1994, and order No. 3175 of the Secretary of the Interior, issued November 8, 1993. These documents are attached as Exhibits A and B, respectively.

(A) Tribes as Sovereigns

The President's Memorandum and the Secretarial Order recognize the sovereign nature of tribal governments and are intended to ensure that the rights of sovereign tribal governments are fully respected.

A memorandum prepared by the Regional Solicitor, Pacific Southwest Region, of the Department of the interior dated July 25, 1995, provides the legal framework developed by the Regional Solicitor for the guidance of the United States regarding the Tribal water rights, among others, that may be affected by development of the KPOP and Project operations. The Regional solicitor's memorandum describes certain rights of the Tribes, including water and fishing rights recognized by treaty, statute, executive order and case law, and sets out the relative priority of the Tribes' water rights. The Regional Solicitor's memorandum is attached as Exhibit C.

With respect to the development of the KPOP, the government-to-government relationship involves the following:

—Identification of Tribal water rights and hunting, fishing and rights that may be affected by Project operations.
—Assessment, in consultation with the Tribes, of the impacts of the KPOP on Tribal trust resources and species of concern under the Endangered Species Act, and assurance that Tribal governments' rights and concerns are considered during the development of the KPOP.
—Direct and effective communications with the Tribal governments and their authorized representatives in developing and completing the KPOP.

(B) Tribal Delegation of Authority

The Tribes have delegated certain responsibilities to the Klamath River Inter-Tribal Fish and Water Commission (the "KRITFWC"), which is an inter-tribal resources management entity comprised of representatives of each of the Tribes. The United States will communicate and coordinate with the KRITFWC and the Tribes. Communications will be directed to those listed on Attachment D.

(C) Consultation

Consistent with the responsibilities of Federal agencies to respect the government-to-government relationship with tribal governments, in developing the KPOP, the United States will consult with the Klamath Basin Tribes prior to taking actions that affect these Tribal governments, and will consider the comments and concerns of the Tribes in a timely and meaningful way, before decisions are made.

A consultant has been hired to conduct the bulk of the technical work related to developing the KPOP. The consultant will communicate with the Tribes and their representatives, seek data and other information from the Tribes, and include the comments and program of the Tribes in its analysis related to the KPOP. The United States will consider the data and information submitted by the Tribes and will either incorporate the data and information, or provide reasons for not doing so.

Consultation with respect to the development of the KPOP will take the following form:

—The United States, together with the consultant, will meet with the Tribes and provide copies of working documents for tribal review and comment to further the government-to-government relationship.

—The United States will communicate on a monthly or more frequent basis with the designated representatives of each Tribe. Written communications and reports shall be sent to the representatives of the Tribes and the United States, as identified in Attachment D.

(D) Tribal Management and Participation in the KPOP Process

Water resources management involves extensive decision making. Building Tribal participation into agency planning and decision making is a necessary, foundational component of the government-to-government relationship and future decision making, as it is essential to incorporate the perspective that only the Tribes can provide regarding the impact of management decisions on Tribes and their resources.

The KPOP is being developed and will be adopted by Reclamation as a means of managing water resources within its authority related to the Klamath Project. The Tribes have responsibility for the management of trust resources within their authority. Tribal involvement in the development of the KPOP is an important component of the government-to-government relationship. This involvement of the Tribes is a major means of assuring that the development of the KPOP reflects the United states' trust obligation and Tribal rights.

With respect to the KPOP, Tribal involvement will include the following:

—Reclamation and the Tribes will, to the maximum extent practicable, coordinate their resource management activities as they affect on another.

—Tribal involvement will include but not be limited to conducting scientific research and data collection regarding stream flows, like levels, water quality, fish populations, water needs and supply forecasts, and evaluating the assessing overall river and lake operations.

—The Tribes will provide data and input to Reclamation in a timely fashion for development of the KPOP.

—The Tribes will be involved in the technical evaluation of the data used, collected and analyzed, and technical conclusions drawn from such data.

—The Tribes will participate with the United States regarding management decisions and actions implementing the KPOP that affect Tribal trust resources.

—The United States will seek Tribal involvement at the earliest time to assure an opportunity for the Tribes to provide input regarding data collection, analysis and management decisions.

In developing and implementing the KPOP, Reclamation, consistent with its trust responsibility, will protect Tribal rights, including the Tribes' water rights and rights to other trust resources.

(E) Effect of Agreement

This agreement is to provide for the effective implementation of the government-to-government relationship between the parties, and is in furtherance of the responsibility of the United States to protect Tribal trust resources. It does not by itself create, change, or alter any rights of any of the parties to the Agreement, nor by itself does it create an independent right subject to Judicial review. Nothing in this Agreement is intended to or shall have the effect of constraining or limiting the United States in carrying out its obligations under law, including its trust obligations. All communications under this Agreement are in furtherance of federal responsibilities.

Nothing in this Agreement is intended to or shall apply to the relations of the parties in connection with the Klamath Basin Water Rights Adjudication pending before the State of Oregon.

This Agreement may be modified or amended upon the mutual consent of the parties.

This agreement may be executed in counterparts.

PREPARED STATEMENT OF DAVID JOHNSON, DIRECTOR OF PUBLIC WORKS, CITY OF SANTA BARBARA, CA

As your distinguished Subcommittee writes the fiscal year 1999 Energy and Water Resources Appropriations bill, I would like to bring the Santa Barbara County Streams, Mission Creek flood control project to your attention.

The Santa Barbara County Streams, Mission Creek flood control project, which runs through downtown Santa Barbara, would construct a natural bottom channel with vegetated stabilized sides. The City of Santa Barbara paid for an extensive Alternatives Analysis that defined the project. It has been approved by the Santa Barbara City Council, the Santa Barbara County Board of Supervisors and local environmental and business representatives.

The Mission Creek project will improve protection for 94 residential and 45 commercial properties in the 100-year flood plain. Funding in the amount of $129,000 was recommended for the feasibility study in the President's fiscal year 1999 Budget Request. I respectfully request that your distinguished Subcommittee maintain that amount in the fiscal year 1999 Energy and Water Development Appropriations bill.

PREPARED STATEMENT OF DAVID SKIDMORE, PROJECT MANAGER FOR THE SANTA CRUZ JOINT VENTURE

Mr. Chairman, I would like to thank you and the members of the subcommittee for inviting me to submit testimony on behalf of the Santa Cruz Joint Venture (SCJV) regarding the In Situ Technology Development program managed by the Bureau of Reclamation.

I would also like to commend the committee for its support in providing funds, $1,300,000, for fiscal year 1998 to conduct the final phase of research and complete the field test.

As you know, President Clinton exercised his line-item veto authority and rejected the appropriation of $1.3 million. That funding would have provided $300,000 for Bureau oversight, $1,000,000 for the field test, and would have required an additional cost-sharing contribution by the SCJV of 25 percent. The reason provided by the President was that enough research had been accomplished and that the funding wasn't justified.

However, it had been the judgement of the SCJV, and others closely associated with the management of the project, that an additional year of research related to the circulation of mining fluids and a determination of the economic viability of the technology was necessary to meet the original goals of the research program. There was certainly no intent to simply extend the project. It has always been in our interest to complete the program as soon as possible and, if feasible, commence a separate commercial-scale in situ mining operation.

The in situ project has been, from the beginning, an agency-initiated program with agency oversight and separate agency research. Its purpose was to introduce, test and validate technology that could produce copper metal, specifically from copper oxide minerals—with minimum environmental impacts—without open-pits, underground mines, or smelting! The congress first provided funding in fiscal year 1986 to the Bureau of Mines to examine the concept. In fiscal year 1987, funding was provided to develop the "design manual" which outlined the goals and objectives of a research program. It was at this point that the agency sought out the SCJV to participate in the research program. It was understood from the beginning that this was a federal project. None of the research data was to be the exclusive property of the SCJV. All information would be shared publicly.

Congress concluded in 1987 that the objectives of the program were in the national interest and the field test was funded for fiscal year 1988. The appropriations committee determined that the program would be cost-shared at 75 percent federal and 25 percent non-federal—using a private mineral deposit for the research program. We then accepted those terms, despite our concerns about a lack of multi-year commitment on the part of the federal government.

In each successive year, the Congress has taken the initiative to continue the project.

The recent veto report from the President stated that funds were included in the fiscal year 1996 appropriation bill to "close out" the project. That is inaccurate. As the congress was closing out the Bureau of Mines in fiscal year 1996, funds were included in the bill to continue the in situ project "* * * through a logical completion point to ensure that the federal investment is not lost." Additional funds were subsequently added by the congress in fiscal year 1997 and fiscal year 1998 to reach that logical completion point.

The veto report also noted, accurately, that the project expenditures are under original budget estimates. This is because both partners have been very conscious of costs and have guided a research program on new technology carefully through a very lengthy and uncertain permitting requirement with the Arizona Department of Environmental Quality, including input from EPA. We were also faced with comprehensive testing in the Environmental Assessment (EA) to verify environmental protection. As a result, the research effort has taken longer than expected, but costs are still well under original estimates.

After the veto by the President, several news reports suggested that the project was halted because of environmental concerns. There were even quotes from some groups insinuating that causal relationship and claiming credit. The fact is that the SCJV sponsored one of the most comprehensive and elaborate public information efforts ever associated with a federally funded project. Additionally, the Arizona DEQ had an extensive public comment strategy as part of the permitting process and the Bureau of Mines had two well-publicized public meetings—and an extensive mailing for comments—as part of the formal Environmental Assessment. Not one negative comment, or "concern," was expressed by anyone. Not one!

As a result of the President's veto, the research program is being terminated. Comments in the "veto report" to the effect that the private sector partner might continue the program independently reveal a thorough misunderstanding of the program and the partnership relationship. Additionally, the prospect of a Supreme Court action overturning the veto is months away and speculative. As a consequence, the final piece of the puzzle—data as to conclusive economic feasibility—will remain elusive.

However, we are pleased to report that virtually all of the technical goals of the project were met. We encountered numerous technical problems related to adapting oil well technology to the in situ mining of a deep undisturbed ore body. The unanticipated obstacles were studied and resolved, adding significantly not only to the knowledge of the technology, but also to the efficiencies of research instruments and methods employed. Ultimately, thirty-five thousand pounds of copper were recovered during the test phase, demonstrating unequivocally that copper can be mined using this technology.

Of equal, if not greater, importance is the assurance of environmental protection demonstrated in the tests. This was evaluated in the formal NEPA process conducted by the agency. And, after nearly two years of injection of the acid solution, no undesirable or unanticipated effects have been detected in the monitor well system.

The project was also valuable in establishing a permitting pathway for in situ mining with the Arizona Department of Environmental Quality. It was a lengthy and complex procedure with a new department, but it answered questions and established procedures, protocols and parameters that are becoming standards in the industry. Development of a closure plan for in situ mining will also be a first for the industry.

One of the unstated benefits of the research is the "spinoff" applications to other water-related disciplines. The technology can be utilized in environmental clean-up in the containment and remediation of deep groundwater contaminants, or in other efforts to manipulate sub-surface flows. The committee has included Report language in the past to encourage the Bureau of Reclamation to explore the opportunities to utilize the technology in applicable programs. We would strongly recommend that the committee continue to encourage the Bureau, and other government agencies, to apply the valuable knowledge accumulated over this ten year effort.

Mr. Chairman, the federal and non-federal managers have available funds from previous appropriations to meet expected project close-out obligations. We believe sufficient funds are on hand. However, negotiations with the Arizona DEQ have not yet begun, so long-term closure and monitoring requirements, and costs, are not yet fully determined.

We are in the process of completing a closure plan which we will submit to the Arizona DEQ by the end of April. The plan will include measures to ensure protection of the overlying aquifer by continued use of the monitor well system. We will then begin negotiations on the plan. Anticipating that our proposed plan is generally acceptable to DEQ, the closure operations could last 4 to 6 years. In keeping

with project agreements, the close-out costs are apportioned 75 percent federal, and 25 percent non-federal.

Post-injection pumping of the well field to reduce the copper bearing leach solutions was completed. The SXEW plant and other surface facilities are being "mothballed," and on-site personnel and operations are all but terminated. Only monitoring and closure activities will continue until the final closure is approved by Arizona DEQ.

The Bureau has the further responsibility of technology transfer. The final reports will be written and disseminated during this calendar year.

Mr. Chairman, if the Supreme Court should overturn the President's line-item veto authority, it should be clear that the in situ project is being closed-out and terminated. The $1 million which was appropriated for the project for fiscal year 1998 would obviously not be reinstated for the field test. And, although it was the original intent that the funds be cost-shared by the non-federal partner, that would no longer be applicable. The SCJV would not be, in any way, the recipient or beneficiary of those funds. However, the funds should remain available within the Bureau's research program to cover longer term close-out costs and liability.

Those funds could also be utilized within the Bureau's research effort to look at applications of the in situ technology to the cleanup and protection of groundwater. In this way, the very significant federal investment could be more fully recaptured.

Finally, Mr. Chairman, I would like to comment on the nature of a federal/non-federal cost-sharing partnership in a program of this kind. In news articles about the veto, the project was sometimes characterized as "corporate welfare" or "pork." These misplaced comments come from individuals who demonstrate ignorance of the history of the in situ project. They also undermine the potential of generating interest in the private sector to participate in research programs with the federal government in the future.

This research program was underway for two years—and was advanced and funded by congress—before there was any decision to even conduct a field test. After the "Design Manual" was funded and completed by the Bureau of Mines, the agency approached the SCJV because we had ownership of ore bodies that fit the characteristics required by the research.

We were very wary of any participation with the federal government under any terms. Although we would be expected to make a commitment to see the program through, the government exempted itself from any commitment to future appropriations. The government could simply decide to terminate the program at any point, regardless of the investment of public funds or the expenditure of private funds.

In fact, that is exactly what happened! Our fears were indeed realized. After ten years and a total of $15,508,000 million for the field test by the Bureau, and an SCJV expenditure of $5,169,201, the President simply said, "enough." The private sector "partner" was never consulted. The important, low cost and final increment was vetoed and the critical information about the viability of the technology was simply lost. And, ironically, a very promising mining technology that provided the level of environmental protection that is publicly championed by this administration might also be lost.

Mr. Chairman, in joining a federally funded program, a company gives up whatever privacy or proprietary rights it might otherwise have. Inevitably, it provides international and domestic competitors with an uncomfortable amount of information about its holdings and operations. We participated in a joint effort that was often described as a "model," but it may ultimately be perceived negatively throughout the private sector.

We sincerely commend the congress for its annual support and willingness to judge the program on its merits. The support by members of the Arizona congressional delegation has been bi-partisan and very strong. Former Senator Dennis DeConcini, former Congressman Morris Udall, Rep. Jim Kolbe, Rep. Ed Pastor, and Rep. J.D. Hayworth have been particularly active in taking the lead for the project.

We would also commend the professionals in the Bureau of Mines and the Bureau of Reclamation, particularly Steve Swan, the project manager, for close cooperation with me and other non-federal managers and for striving always to serve the public interest.

Again, Mr. Chairman, our thanks to you, the members of the committee, and your professional staff for all of their time and interest.

PREPARED STATEMENT OF STEVE MIKLOS, MAYOR, CITY OF FOLSOM, CA

Mr. Chairman, and distinguished members of the committee, my name is Steve Miklos and I am Mayor of the City of Folsom, California. I appreciate the oppor-

tunity to speak today regarding the City of Folsom's Water Quality and Storm Drainage Improvement Project. This project is vitally important to our city and to water quality in our region, and it is my hope that the committee will view favorably our request. Specifically, we request that the Congress provide $500,000 under the Corps of Engineers, General Investigations, in fiscal year 1999 for technical assistance to the City of Folsom for water quality-related improvements to the City's storm drainage system. The authority for this action can be found in Section 503 of the Water Resources Development Act of 1996.

The City of Folsom has committed over $2 million in local funds to storm drainage improvements throughout the community. While this work has greatly improved storm drainage in certain areas, additional work is still needed to provide further protection against flooding, property damage and the degradation of water quality in the Sacramento River watershed. Recent hydrology studies suggest that the existing storm drainage systems should be upgraded to handle heavier and sustained water runoff. Left unresolved, these storm drainage problems will continue to pose a threat to water quality in the American River and the Sacramento River watershed.

While our drainage infrastructure in many parts of Folsom has remained relatively unchanged for many years, our city has changed dramatically in the last decade. Folsom was once a small town at the edge of the Sierra Nevada foothills. Our population has approximately tripled and our city is one of the fastest growing in the state in terms of both population and corporate and industry presence. Our city's infrastructure has not kept pace with needs, creating a potentially hazardous situation with respect to the American River which runs through the heart of Folsom. As the committee is well aware, the American River is a critical part of the Sacramento River watershed, with water flowing through the Delta and ultimately into the San Francisco Bay. The importance of maintaining and improving American River water quality cannot be underestimated, and we believe this project is an important part of overall efforts to ensure the protection of the watershed.

The City of Folsom has identified $1 million in design and inspection work that needs to be accomplished during fiscal year 1999 in four separate areas of the City. Work will be carried out in the City's historic district, which dates back to the gold rush days of the mid-1800's, and several other areas immediately adjacent to the American River.

Mr. Chairman, on behalf of the City of Folsom, I thank you for the opportunity to testify regarding the City of Folsom's Water Quality and Storm Drainage Improvement Project. We sincerely hope you and your committee will provide funding as I previously outlined, and we thank you for your assistance.

PREPARED STATEMENT OF DENNIS M. DIEMER, GENERAL MANAGER, EAST BAY MUNICIPAL UTILITY DISTRICT, OAKLAND, CA

Mr. Chairman, on behalf of the East Bay Municipal Utility District (EBMUD), I request that this statement be included as part of the Subcommittee on Energy and Water Development's fiscal year 1999 appropriations hearing record on the U.S. Corps of Engineers budget.

EBMUD is requesting that the Subcommittee approve an appropriation of $4 million to permit the U.S. Corps of Engineers to continue participating in a 50-percent cost-shared cleanup and environmental restoration of the abandoned Penn Mine site in Calaveras County, California. This is supported by the State of California, the California Water Commission, and other stakeholders who consider this project an important step in the effort to correct environmental threats created over several decades for which no responsible party exists. The request is made pursuant to Section 206 of the Water Resources Development Act of 1996, which authorizes the Corps of Engineers to provide up to a 65-percent cost share to conduct aquatic ecosystem restoration projects.

This project will serve as a national model to respond to other similar sites that are scattered throughout the country and which are concentrated throughout the West. Polluted runoff from abandoned hardrock mines poses serious ecological threats to water quality, aquatic habitat, and other environmental resources. The history of the Penn Mine site vividly illustrates the importance of developing a model that will allow a cost-effective solution to be implemented at the numerous abandoned mine sites that threaten our aquatic ecosystems.

Under Section 206, federal funding is authorized only for those projects that will improve the quality of the environment, are in the public interest, and are cost effective. Last year, Congress approved funding for the abandoned Penn Mine site based on the anticipated benefits to the aquatic ecosystem and the ability to imple-

ment the restoration plan of action in a timely manner. To date, we have begun the process of implementing a cleanup and environmental restoration plan. Working with the Corps of Engineers, EBMUD and the State of California have completed the Proposed Remediation Plan and have already initiated preliminary cleanup plan implementation. The key activities we have initiated include: preliminary cleanup and restoration design; obtaining the necessary federal and state permits; development of water quality monitoring plans; development of mitigation plans; and completion of temporary road access construction.

Funding for fiscal year 1999 is vital to the success and timely completion of this project. The request for $4 million in federal assistance represents the final phase of federal assistance. This assistance will ensure that the site cleanup can be completed within our projected deadline of December 1999. Among the planned activities for fiscal year 1999 are: removal of approximately 408,000 cubic yards of waste material; construction of a landfill in which to dispose the excavated waste material; soil application over areas disturbed by waste excavation; and revegetation of the site with native grasses.

EBMUD and the State of California have taken the necessary steps that are required under Section 206 by entering into binding agreements to meet the obligations to provide the non-federal share of the project's construction costs as well as site rehabilitation and runoff monitoring costs associated with the project.

EBMUD is a public agency responsible for providing water supply and wastewater treatment services to more than 1.2 million people of the East Bay in California, including residents of Oakland and Berkeley, stretching south to Castro Valley and north to Crockett. EBMUD's principal source of water is supplied by the Mokelumne River, which is located in Calaveras County, California. As part of its watershed buffer zone to protect this water supply, EBMUD property includes an area that is contiguous to an abandoned hard rock mine known as Penn Mine. This abandoned copper and zinc mine sits along the upper reaches of EBMUD's Camanche Reservoir.

The mine was opened in 1861, and its periods of major activity occurred between 1899 and 1919 at the direction of the federal government. It was also operated during World War II to support the nation's demand for strategic metals. When the mine ceased operations after World War II, it was left in a state of disrepair and abandoned as uneconomic. Based on known records, beginning in the 1930's heavy metals, such as copper and zinc, were discharged from the mine site into the river, killing all aquatic life for 40 miles downstream. Despite the end of active mining in the late 1940's, environmental damage continued because of more than 250,000 cubic yards of mine waste consisting of unprocessed ore and mill tailings, covering 15 acres.

Although EBMUD was never involved in the mining activities, nor has it benefitted in any way from the mining activities, EBMUD's Good Samaritan efforts have created an untenable and inequitable situation whereby EBMUD and the State of California are being asked to pay for the site's cleanup. Specifically, with the history of the site and federal involvement, as well as the importance of having a proven cleanup plan that could be used elsewhere, it is only reasonable that a cost sharing arrangement be made available to ensure that EBMUD is not asked to shoulder the entire cleanup burden for something for which it had no responsibility.

Responding to the State of California's request, EBMUD began a cooperative program in 1978 to minimize the adverse effects of the mine site. Several reconstructed channels and holding ponds were created on the Penn Mine site. EBMUD, acting as a Good Samaritan, constructed Mine Run Dam Reservoir on its property that was experiencing acid mine drainage runoff which was then entering the Mokelumne River. Mine Run Dam Reservoir effectively served as a final defensive line to ensure that mine drainage would be controlled and treated to avoid uncontrolled fish kills and other ecosystem degradation. These actions contained about 90 percent of the drainage and, most importantly, prevented acidic runoff from entering the river between 1987 and 1992. There were no reported fish kills with the operation of the EBMUD facility.

In 1993, EBMUD took several steps to meet water quality concerns of federal regulators, including developing a plan to divert and treat potential overflows from the site. In addition, EBMUD installed a batch treatment system to neutralize the toxic mine drainage and implemented a pumping operation to ensure that mine drainage would not overflow and react with mine wastes, thereby creating serious environmental threats. As a result of these actions, more than 15 million gallons of polluted runoff have been treated, resulting in greater than 98 percent removal of metals from water released from the site. Based on monitoring data, this temporary action has reduced Penn Mine metals loading to background levels.

EBMUD, in cooperation with federal, state, environmental and other stakeholders, has developed a plan of action to remediate the site and return it to its original landscape condition. After much study and review, a cost-effective cleanup plan embodying environmental restoration and protection components was accepted. The U.S. EPA, the Committee to Save the Mokelumne River, the California Sportfishing Protection Alliance, the State Water Resources Control Board, the Central Valley Regional Water Quality Control Board, and EBMUD signed an agreement to accept the preferred alternative cleanup plan. The Environmental Impact Report identifying the final cleanup plan was certified by the State of California and EBMUD in February 1997.

The fiscal year 1998 appropriations for the Corps of Engineers included $1 million toward the Penn Mine site cleanup and environmental restoration effort. EBMUD, the Central Valley Regional Water Quality Control Board, and the Corps of Engineers have all agreed that Corps of Engineers' experience would greatly support the restoration work for the project. To this end, an aggressive action plan has been developed identifying specific tasks for the Corps of Engineers' involvement in the project in fiscal year 1998: environmental documentation; preliminary restoration plan design; implementation of a demonstration restoration project; and purchase and storage of soil amendments. All parties involved in the cleanup and restoration activities are anticipating the Corps of Engineers' work elements to be underway by April 1998.

Because the site was created to support national objectives, and in some instances activities were directly related to federal contracts, it is only reasonable that federal assistance be provided to support cleanup plan implementation. It is important to reiterate that despite the fact that EBMUD never created the situation or benefitted from the mining activities, it has expended a considerable amount of time and resources. The continued cleanup and environmental restoration activities will support ongoing efforts to develop a model that will demonstrate successful abandoned mine cleanups can be undertaken through consensus-based, cooperative processes in a cost-effective and environmentally sensitive manner.

We therefore strongly request that the Subcommittee provide $4 million for the U.S. Army Corps of Engineers fiscal year 1999 budget that will represent the final federal share of this 50 percent cost-shared cleanup program at the abandoned Penn Mine.

PREPARED STATEMENT OF MELISSA PAULSON, MAYOR, TOWN OF CORTE MADERA, CA

The Town of Corte Madera, California requests that the Subcommittee support the current budget request in fiscal year 1999 to complete the Feasibility Report for the San Clemente Creek Tidal Storm Damage Reduction Study. The project is listed under Marin County Shoreline—San Clemente Creek

The Town of Corte Madera is located on San Francisco Bay just north of the Golden Gate Bridge. The Town's location on San Francisco Bay has placed it at the mercy of serious flooding from high tides. This flooding occurs in the area adjacent to San Clemente Creek and is caused by a combination of ground subsidence, high tides and storm water runoff. Tidal flooding can even occur in dry weather and is predicted to increase with the passage of time because the area is settling, as the bay mud which lies underground continues to consolidate. Recently, the flooding has been especially bad, even closing U.S. Highway 101, due to "El Niño" storms.

The Town of Corte Madera is committed to maintaining the community's safety and quality of life. To that end, the Town and the U.S. Army Corps of Engineers negotiated a Cost Sharing Agreement to conduct a Feasibility Study to define the flooding problem and to develop a plan for Congressional action.

The Town Council has approved the Cost Sharing Agreement and has paid its full share of all local costs.

With the assistance of the Subcommittee in the past, the Town has secured funding to initiate the Feasibility Study. This year, $50,000 is included in the President's fiscal year 1999 Budget to complete the Feasibility Report.

I respectfully request that you support a fiscal year 1999 budget allocation that is included in the current budget request for the Marin County Shoreline—San Clemente Creek Study.

Thank you very much for your continuing support for this important project.

PREPARED STATEMENT OF BARBARA J. FERRARO, MAYOR, CITY OF RANCHO PALOS VERDES, CA

As your distinguished Subcommittee writes the fiscal year 1999 Energy and Water Resources Appropriations bill, I would like to bring a very important environmental restoration project to your attention.

The Corps of Engineers and the City of Rancho Palos Verdes have been working on a cost-sharing feasibility study to investigate Federal improvements to restore pristine environmental areas along the Pacific coastline since 1995. The President's fiscal year 1999 Budget Request does not contain any money to continue the feasibility study. Funding is necessary so that the feasibility study can be completed next year. If this item remains unfunded, the Federal monies and local matching funds that have been spent to date would be wasted, since the project could not be completed without this support.

I would like to take this opportunity to request that your distinguished Subcommittee include $300,000 in the fiscal year 1999 Budget Request for the completion of the feasibility study. The City of Rancho Palos Verdes is prepared to commit their portion of the cost-share to complete the study next year.

The area along the Rancho Palos Verdes coastline that is being studied has been severely degraded as a result of landslide movement of material and coastal erosion causing sediment and continuous turbidity that has buried sensitive habitat. The study involves investigations to define landslide and erosion relationships, impacts on the environment and potential restoration benefits. This project should be considered as essential mitigation for large local port projects.

Thank you for the opportunity to submit this request.

PREPARED STATEMENT OF MERV GEORGE, JR., CHAIRMAN, HOOPA VALLEY TRIBE

On behalf of the Hoopa Valley Tribe of California, I express our appreciation for the opportunity to submit testimony regarding the fiscal year 1999 Bureau of Reclamation (BOR) budget. A summary of our fiscal year 1999 funding request follows:

—Support Administration's position that existing laws provide authority to support Trinity River Division fish and wildlife management and restoration activities.

—Request that $13,000,000 be provided for Trinity River fishery management requirements within the Trinity River Division of the Central Valley Project for continuing fish and wildlife management programs of tribal, state, Federal, and local entities and for the Comprehensive Co-Management Agreement between Hoopa Valley Tribe and BOR.

—Support proposed funding increase for the Klamath Project and request an additional $900,000 for the Karuk and Klamath Tribes.

—Request $175,000 from the General Activities Planning budget for a feasibility study for upgrading the Lewiston generator, and for Trinity River green sturgeon and Pacific Lamprey population studies.

—Support the Native American Affairs proposed budget and request an increase of $1,000,000 for additional assistance to Indian tribes.

BACKGROUND

The Trinity River in northern California is the largest tributary to the Klamath River, the second largest river system in California. Since time immemorial, the Klamath Basin provided sustenance to Native Americans of the region. The Klamath River Basin is the aboriginal territory of Hoopa Valley, Karuk, Klamath, and Yurok Tribes. Further, the Klamath River was fundamental to the economic health of northern California providing viable recreational and commercial salmon fisheries.

In 1963, BOR completed construction of the Trinity River Division of the Central Valley Project (CVP). The Trinity River Division provides an estimated fourteen percent of the total water yielded by the CVP.

Shortly after completion of the Trinity Dam, and subsequent diversion of up to 90 percent of the stream flows at the diversion point (near Lewiston, California) from the Trinity River, the fishery began to seriously decline. Through the 1980's, corresponding declines of up to 80 percent of the salmon and steelhead populations occurred. In response to dramatic declines in Trinity fish stocks, the Secretary of Interior approved development of a flow evaluation study in 1981 to determine stream flow needs for fish restoration. Further, Congress recognized the seriousness of the problem, and enacted the Trinity River Restoration Act (Public Law 98–541, 1984) which, with subsequent amendments, authorized approximately $70,000,000

in an attempt to reverse the decline of the fishery resources within the Trinity River Basin. Moreover, the downward trend in Trinity fish populations is best reflected by recent listing of coho salmon under the Endangered Species Act (ESA) and proposed listings of steelhead and chinook fish stocks of the Klamath/Trinity Rivers.

While much work has been accomplished to date, it is recognized that continual monitoring will be necessary to provide insight on status of resources, evaluation of restorative measures, and recommendations for further restoration. Primary among the scientific achievements to date has been the development of in-stream flow criteria which quantify the benefits to salmonids of retained flows in the Trinity Basin. These criteria, developed over the entire course of the Restoration Program, provide a basis for the Secretary's flow decision, due in fiscal year 1999. These criteria are not static, continual monitoring shall be necessary to evaluate the interrelationship between flow volume and timing and the influence on fishery habitat.

In spite of many years of research into Trinity River ecosystem processes, considerable uncertainty persists in regard to downstream impacts of water releases from Lewiston Dam. These uncertainties are to be addressed via an Adaptive Management Plan (AMP) under the direction of the Interior Secretary. Long-term monitoring and research are essential to the AMP, and would measure how well river ecosystem health objectives identified in the Trinity River Flow Evaluation Study are met.

NARRATIVE JUSTIFICATION AND FUNDING REQUESTS

1. The Tribe is in agreement with the Administration's legal conclusions contained in the fiscal year 1999 Budget Justification and Annual Performance Plan—Trinity River Division—that existing authorities provide ample justification for expenditures on fish and wildlife restoration within the Trinity River. The 1955 Act creating the Trinity River Division, Trinity River Fish and Wildlife Restoration Act as amended, and the Central Valley Project Improvement Act (CVPIA) mandate that the Department of the Interior restore and maintain fish and wildlife populations with CVP funds. Furthermore, Congress acknowledged the reserved fishing rights of the Hoopa Valley Tribe in the CVPIA.

Therefore, the Tribe supports the legal conclusions contained in the fiscal year 1999 Budget Justification and Annual Performance Plan for the Bureau of Reclamation.

2. Funding Request for Fish and Wildlife Management. While the fiscal year 1999 Bureau of Reclamation Budget Justification and Annual Performance Plan provides supportive language for the Trinity River Division, it proposes to reduce the fiscal year 1999 Trinity Division Fish and Wildlife Management and Development by 53 percent compared to fiscal year 1998 funding ($6.383 million), the largest reduction of any Division in the CVP. If implemented, the proposed budget will result in significant reduction or elimination of critical programs in which the Trinity River Restoration Program's $70,000,000 were invested over the past decade. Furthermore, the proposed budget would eliminate most of the benefits expected from the Secretary's upcoming Trinity River flow decision and implementation of the AMP.

In January 1998, agencies responsible for managing the Trinity River fishery resources determined that $13,000,000 was needed annually to fund a comprehensive management approach within the Trinity River Basin in order to restore the fishery resources to pre-dam levels. The Hoopa Tribe participated in the development of this effort and recommends that it be fully funded in fiscal year 1999.

Therefore, the Tribe requests that the Committee provide $13,000,000 for Fish and Wildlife Management and Development within the Trinity River Division budget.

Further, the Tribe requests that the Committee continue support for the Co-Management Agreement between the Tribe and BOR at a level of $2,500,000 for implementation in fiscal year 1997. The requested funding would enable Hoopa to continue its involvement in water project operations planning, environmental impact analysis, hatchery investigations, fisheries management, and facilitate inter-governmental forums to accelerate resource restoration through unified management actions.

In its sixth year, the Co-Management Agreement between Hoopa and BOR has contributed not only to the fulfillment of the Federal trust responsibility to Native Americans, but has also served to bring Federal, State, Tribal, and local management agencies together into a constructive and cooperative forum for managing fishery and water resources within the Trinity River Basin.

3. Support proposed funding increase for the Klamath Project and request an additional $900,000 for the Karuk and Klamath Tribes. Both Tribes are involved with

the restoration and protection of Trust resources in the Klamath River including active technical and policy involvement in water quality and quantity studies designed to improved the ecosystem health of the upper Klamath Basin. Endemic suckers are listed under the ESA in upper Klamath Lake as well as the depressed status of salmon and steelhead would benefit from increased Tribal involvement.

4. Request $175,000 from the General Activities Planning budget for a feasibility study for upgrading the Lewiston Hydro-power generator, green sturgeon and Pacific Lamprey studies. Of the flow recommendations for future management of the Trinity River Division, it is expected that the decision of the Secretary of the Interior will result in reduced diversions of Trinity River flows into the CVP. While being greatly beneficial for the Trinity River fishery resources and upholding the Federal trust obligations to Indian tribes, the decision will likely result in reducing the amount of electricity presently being generated by diversion of Trinity River flows. To compensate for this situation, the Tribe requests that $100,000 be provided from Reclamation's General Activities Planning budget for determining the feasibility of increasing the capacity of the Lewiston generators in anticipation of the increased flows in the Trinity River. Another expected benefit of increased generation of electricity from the Lewiston generator is the possibility of using its revenues to pay for future fish and wildlife restoration activities within the Trinity River Basin, thereby reducing the long-term costs to the Federal Government.

In addition, the Tribe requests that $75,000 be provided for conducting population and survival studies for Trinity River green sturgeon and Pacific Lamprey, both of which are important species to the Klamath and Trinity River Indian tribes and have been negatively impacted by the construction and management of the Trinity River Division.

5. Support the Native American Affairs proposed budget request and an increase of $1,000,000 for additional assistance to Indian tribes. The Reclamation Native American Affairs program has proven to be a very beneficial program for both the Federal Government and Indian tribes while trying to resolve tribal and Federal water and fishery management issues. Without a doubt, the Native American Affairs Program has been instrumental in reducing the possibility of costly litigation and disputes between Reclamation and Indian tribes.

The Tribe fully supports the continuation of the Native American Affairs Program and requests that the budget be increased by $1,000,000 in order to provide further assistance to Indian tribes and Reclamation offices.

RESULTS ANTICIPATED

Trinity Restoration Program.—Effective protection of fisheries, critical to the Hoopa Valley and Yurok tribes and the economic stability of the fishery dependent communities of northern California and southern Oregon, is promoted through collective forums and habitat improvement actions of the Trinity Restoration Program. Identification and implementation of specific remedies and monitoring of fishery trends are expected results of Restoration Program.

While many on-the-ground achievements have already been realized, many critical elements have yet to be completed. Among the expected outcomes of the Program for 1998 is the completion of the Environmental Impact Statement to assist the Secretary with implementation of in-river flows required for full restoration of salmonid populations in the Trinity River as mandated under Public Law 102–575. This decision, originally mandated for fiscal year 1998, was delayed due to incomplete environmental impact analysis. It is now anticipated that completed environmental documentation shall be available to support the Secretary's Decision expected in fiscal year 1999.

Tribal/Reclamation Co-Management Agreements and Native American Affairs Program.—The Co-Management Agreements will continue to assist in the coordination of Federal, State, Tribal and local activities (management and research) impacting salmon fisheries and salmon habitat of the Klamath and Trinity rivers. By illustration, accomplishments under this agreement in fiscal year 1997, included maintenance of data collection and analysis programs critical to the integrated management of the Klamath and Trinity fishery resources. Both Reclamation and the Tribe agree that a wise investment has been made to develop a comprehensive foundation for fishery restoration. This foundation includes on-the-ground restoration work, assembly of scientific data on fisheries and habitat, and the integration of multiple jurisdictions affecting salmon survival. It is now important to insure that this investment provides the desired results of a fully restored Trinity River Basin.

The General Activities Planning budget request will assist the Tribes, agencies and private interests to develop opportunities for compensating for the loss of electricity caused by increased Trinity River flows. The Green Sturgeon and Pacific

Lamprey population and survival studies will provide some of the first information for development long-term management programs for the species. While green sturgeon and Pacific Lamprey are important species to Indian tribes, and their maintenance is part of the Federal Government's trust obligations, limited funding has prevented the development of management programs for the stocks.

CONCLUSION

Although Hoopa's relationship with BOR has improved significantly in recent years, it is clear that the fishery management problems associated with the Central Valley Project and Klamath Project operations persist. Resolution of these issues may only be assured through the continued commitment by the Tribe and BOR to ongoing co-management of these important resources.

Again, I appreciate the opportunity to submit testimony regarding BOR's fiscal year 1998 budget. I am available to discuss these matters with you in more detail at your convenience.

Thank you.

PREPARED STATEMENT OF THE SACRAMENTO AREA FLOOD CONTROL AGENCY

We appreciate the opportunity to provide testimony to this Subcommittee, and extend our sincere appreciation for your past support of this community's efforts to protect the citizens and properties in the capital city of California. In our continuing efforts to protect the Sacramento metropolitan area, Sacramento Area Flood Control Agency (SAFCA), and its member agencies, supports the following Federal appropriations:

American River (Common Elements).—$26.0 million for funding of the American River Common Elements construction, following funding for last year's new start, to maintain an efficient construction schedule.

American River (Comprehensive Plan).—$4.0 million for continued Preconstruction, Engineering, and Design and $1.0 million Construction funds in anticipation of Congressional authorization in the 1998 WRDA for the next element in the comprehensive plan to reduce the significant flood risk on the American River.

American River (Natomas).—$10.6 million for Construction reimbursement to SAFCA for the Federal cost share of flood control improvements, constructed locally, protecting portions of Sacramento; and supporting the City of Sacramento's Construction funding request for the Corps to build the recreational components of the project in the Ueda Parkway, all consistent with the federally authorized project.

Sacramento River bank protection.—$10.1 million for Construction of bank protection sites along Sacramento and American Rivers throughout Northern California protecting the adjacent levees (includes $7.1 million for American River sites through Sacramento).

South Sacramento streams group.—$900,000 to continue Pre-construction, Engineering, and Design efforts on the project protecting over 100,000 residents in South Sacramento.

Magpie Creek.—Funding under Section 205 Continuing Authorities to initiate Construction of improvements along Magpie Creek Diversion Channel which convey flood flows from McClellan Air Force Base safely downstream through North Sacramento.

Strong Ranch and Chicken Ranch Sloughs.—$100,00 for a Reconnaissance study of the flood risk and alternatives along the lower reaches of these creeks which feed into the American River.

Sacramento sits at the confluence of two major rivers with over 400,000 residents, 150,000 homes, 5,000 businesses, the State Capitol, and 1,300 government facilities at risk in a major flood. The U.S. Army Corps of Engineers (Corps) has characterized Sacramento as the urban area with the worst flood risk in the nation and addressing this problem is our region's most critical infrastructure issue. A major flood on the American River which exceeds the capacity of the existing flood control system would cause a minimum of $7 billion in damages and could reach as high as $16 billion depending on the size of the flood. The five largest recorded floods of the century on this watershed have all occurred after 1950, including the two largest floods within the last eleven years (1986 and 1997). It is unclear if this signals a shift in our meteorologic climate, but it is clear the flood risk today is much greater than was thought 50 years ago when the original flood control system was built. In fact, our existing infrastructure (Folsom Dam and the downstream levees), which was designed to protect Sacramento from a 250–300 year flood, provides only 77-year flood protection. This means there is a 33 percent chance of having a $7 to

$16 billion disaster over the next 30 years which would be the worst flood disaster in this nation's history.

We as a community have not been sitting idly by since our near disaster in 1986. Over $75 million in local funds have gone into engineering studies and flood control improvements in our region. Accomplishments include strengthening levees along the Sacramento River; raising and constructing new levees in North Sacramento and Natomas; negotiating an agreement for more flood space at Folsom; and restoring bank erosion sites along the Lower American River before they impact the adjacent levees. These improvements played an important role in avoiding the devastating flood damages experienced by our neighbors to the north and south during the last two years. In addition, we have systematically re-evaluated the flood control system protecting this region and identified the projects necessary to avoid the catastrophic impact of a major flood. SAFCA hereby supports the following Federal appropriations for fiscal year 1999 to advance these critical flood control projects in the metropolitan Sacramento area:

American River Project

When Folsom Dam was completed along the American River in 1955, Sacramento was thought to have a very high level of flood protection (250 to 300 year) consistent with other urban areas in the nation. However, as described above, the five largest floods of this century on the American River have all occurred in the last 50 years which has led to a reduction in our credited flood protection provided by Folsom and the downstream levees to only a 77-year level; significantly less than the authorized project in the 1950's and substantially less than other similarly situated major urban areas around the nation including St. Louis, Kansas City, Dallas, Omaha, Minneapolis, and Pittsburgh.

Following exhaustive feasibility studies by the Corps looking at all the flood control alternatives, Sacramento unsuccessfully sought Congressional authorization of a comprehensive flood control project on the American River in 1992 and again in 1996. We will return to Congress this year requesting authorization for additional measures to improve our flood protection on the American River as part of the 1998 Water Resources Development Act. Therefore, we are requesting $4.0 million in Pre-Construction Engineering and Design so the Corps may expeditiously advance implementation of this element. In addition we are seeking $1.0 million in Construction funds to begin construction next year on appropriate elements of the project, based on anticipated Congressional authorization of the additional flood control measures. Any delays in design due to funding constraints will mean another year's delay in providing improved flood protection and exposure to a multi-billion dollar flood disaster.

Common elements.—As part of the 1996 WRDA, Congress did authorize additional levee improvements around Sacramento, including 26 miles of levee stabilization along the lower American River, raising and strengthening 12 miles of the east levee of the Sacramento River south from the Natomas Cross Canal, three new telemetered gauges and other early flood warning improvements along the American River. As the 1997 floods in Northern California have demonstrated, we must continue to stabilize and rehabilitate our existing system of levees to carry even their intended design flows. The levee modifications authorized under this project complement work done by the Corps in the early 1990's along the Sacramento River and will complete the job of stabilizing the existing levees protecting this community. Notwithstanding a $9.4 million budget and appropriation in fiscal year 1998, the Clinton Administration has included only $1.0 million in construction funds for fiscal year 1999 which is substantially less than the $26.0 million needed to allow completion of the project on an efficient construction schedule. We are requesting this Committee's support for the full $26.0 million to keep this critical project on schedule.

North area (Natomas) Levee improvements.—In 1992, when Congress opted not to authorize the full locally preferred comprehensive project for the American River, it did authorize the levee elements in and around the Natomas basin and North Sacramento. The authorizing language included Federal authorization for reimbursement for locally constructed levee improvements consistent with the Federal project. By borrowing heavily and assessing affected communities SAFCA proceeded with construction of the authorized improvements and has rapidly completed $60 million in flood control improvements which helped to prevent flooding in 1997 and again in February of 1998. This borrowing, coupled with additional future flood control obligations, has severely strained SAFCA's financing capability to the point we must now seek Federal reimbursement for this project as provided for under Federal legislation. The Assistant Secretary of the Army has directed the Corps to negotiate and execute a crediting/reimbursement agreement with SAFCA. This agreement,

which will be ready for execution later this year which will provide the basis for reimbursement of not less than $20 million agreed to by the Corps, and ultimately allow SAFCA to obtain up to approximately $39 million in Federal reimbursement. Congress included $10 million in fiscal year 1998 ($9.4 million net of savings and slippage) and we are seeking an additional $10.6 in fiscal year 1999 to complete the Federal share of the improvements described in the Chief's Report. These funds can be used to stabilize SAFCA's financing capability so that additional flood control improvements could be planned and constructed.

In addition, SAFCA supports the City of Sacramento's efforts to obtain $3.9 million in construction funds for implementation of the recreational improvements along the City's Ueda Parkway which were included as part of the federally authorized project described above. The recreational components are an integral part of making this floodway a comprehensive multi-use parkway for the citizens in North Sacramento and Natomas.

Sacramento bank protection project (American River Levees)

SAFCA, the State of California and the Corps have found that bank protection improvements are needed to stop erosion which threatens urban levees along the lower American River. Over the last three years, SAFCA has led a collaborative process through which flood control, environmental, and neighborhood interests have reached agreement on how to complete this work in a manner which protects the sensitive environmental and aesthetic values of the American River. As a result, a bank protection program for the next several years has been established which will address the serious erosion problem before it impacts the levee system. Construction on this project commenced in 1996. The President's proposed budget includes $7.1 million in construction funds which includes funding for the American River sites in fiscal year 1999. The State has identified additional bank protection sites outside the Sacramento area which increases the construction funds needed in fiscal year 1999 to $10.1 million. SAFCA supports this funding which provides for an efficient construction schedule on the lower American River sites.

South Sacramento streams project

In 1995, over 300 homes in the South Sacramento area were flooded as rain swollen creeks could not accommodate the local runoff from nearby subdivisions. The water in the adjacent creeks reached to within a foot, and in some areas less, of overtopping the levees and channels and flooding adjacent residential subdivisions. The recently completed Feasibility Study by the Corps shows much of the urban area of South Sacramento has less than 50-year flood protection from these urban streams. There are over 100,000 people and 41,000 structures in the floodplain of Morrison, Unionhouse, Florin and Elder Creeks which make up the study area. Because of the significant flood risk, SAFCA constructed a portion of the levee improvements using local funds in 1996 under the U.S. Army Corps of Engineers Section 104 crediting provisions. SAFCA, as the local sponsor, has selected a project which provides the entire area with a consistent 500-year level of flood protection. We are seeking authorization of this project as part of the 1998 WRDA and are urging your Committee's support for the President's budget request of $900,000 for continued Pre-construction, Engineering and Design in fiscal year 1999.

Magpie Creek (Section 205 Continuing Authorities Program)

The City of Sacramento and American River Flood Control District, both member agencies of SAFCA, have been the local sponsors of a Section 205 study on Magpie Creek in northeastern Sacramento. The Magpie Creek Diversion Project, constructed by the Corps in the 1950's as an extension of the Sacramento River Flood Control Project, is inadequate for even the 100-year flood event using new hydrologic data. The resulting floodplain impacts residential and commercial developments downstream as well as impacts Interstate 80, the major east-west transportation route through Sacramento. These improvements have a benefit to cost ratio of 2.5 to 1 and not only protect existing urban development but are essential to provide capacity for future on-base improvements to allow for orderly redevelopment activities as part of the base conversion process. Congress earmarked funds in last year's Energy and Water Appropriations bill to initiate work on this project, but construction has been delayed. SAFCA supports the Administration's proposed fiscal year 1999 budget for the Section 205 Program and requests the Corps be directed to initiate construction of the Magpie Creek Diversion Project within these available funds.

Lower Strong and Chicken Ranch Sloughs

SAFCA, in cooperation with Sacramento County, request this Committee's support for inclusion of $100,000 in the fiscal year 1999 Federal budget for a Reconnais-

sance Study of the Lower Strong and Chicken Ranch Sloughs. Floodwaters from these urban streams are collected at the base of the American River levees and pumped into the river. In 1986 and again in 1997, the limited channel and pumping capacity led to significant flood damages to a number of residential and commercial structures. Most of the flooding occurs when the American River is at a high stage due to releases from Folsom Dam. The original pump station was built by the Corps as part of the American River and Folsom project in the 1950's but has proven inadequate with the revised hydrologies. The County has done some limited studies; however, the scope of the potential solutions and the direct relation to the Federal project have led to the conclusion the Corps is the most appropriate agency to conduct the study.

PREPARED STATEMENT OF BEVERLY O'NEILL, MAYOR, CITY OF LONG BEACH, CA

Chairman Domenici, thank you for the opportunity to submit written testimony regarding the fiscal year 1999 Energy and Water Appropriation's requests for the City of Long Beach. Long Beach is a City of 440,000 people, the second largest City in Los Angeles County and home to the nation's busiest Port.

The City's number one priority is an appropriation of $60 million for the Los Angeles County Drainage Area (LACDA) flood control project. The LACDA flood control project, under which the United States Army Corps of Engineers is the Federal sponsor and the County of Los Angeles is the local sponsor, is the largest flood control project in the nation.

The LACDA project has been endorsed by the County of Los Angeles, the City of Long Beach and the Los Angeles County Drainage Area (LACDA) Alliance—an organization made up of the seven floodplain cities (Bellflower, Carson, Downey, Lakewood, Paramount, Pico Rivera, and South Gate). This project is the result of more than ten years of study, during which time more than 20 alternative plans were evaluated. The LACDA project will provide the necessary flood protection from a 133-year storm event. Without the level of flood protection that this cost-effective project will provide, our region remains vulnerable to as much as 82 square miles of flooding in the event of a 100-year storm—affecting more than half a million people in 11 cities. The damage could total more than $2.3 billion.

Unfortunately, the fiscal year 1996, 1997 and 1998 Budget recommendations greatly under-funded the LACDA project, with only $11 million recommended in fiscal year 1998. It was only after Congress added to the appropriations bill last year that the total Federal commitment for LACDA reached $21 million. Due to a consistently inadequate level of funding, the original four-year construction schedule has been extended to at least six years. The $60 million request for fiscal year 1999 will put the project back on a schedule that is closer to the original completion date. The Corps has assured City officials that they are capable of conducting $60 million of work in fiscal year 1999.

Recent action by another Federal agency has made it even more imperative that completion of the LACDA project remain on schedule. At the end of October, 1997, the Federal Emergency Management Agency (FEMA) promulgated new rules that will require property owners within the Los Angeles floodplain to purchase flood insurance and impose severe building restrictions slowing the region's economic recovery. Timely construction of the LACDA project will lessen the amount of economic dislocation caused by the FEMA-imposed rules and ultimately will eliminate the need for the insurance and building restrictions. As it exists now, property owners in the region will be required to pay up to $130 million annually for flood insurance, while there exists no Federal commitment to fully fund the project to a timely completion.

Mr. Chairman, the President's fiscal year 1999 Budget recommendations greatly under-funded the project at $11 million. On behalf of the citizens of Long Beach and the region, it is respectfully requested that you add $49 million for construction in the fiscal year 1999 Energy and Water Appropriations bill for a total of $60 million for this vital flood control project. This will help to minimize the economic hardship to our citizens and to prevent potential flooding.

The City of Long Beach also requests $6 million for the dredging of one million cubic yards of sediment from the channel of the Los Angeles River estuary. Due to the annual storm season and the El Niño condition, the channel has been impacted by an unusually high level of sediment accumulation at the Los Angeles River estuary. This accumulation is now threatening the navigation channel that provides water transportation for vital goods and services to Catalina Island.

The threatened situation of the Los Angeles River could not come at a worse time for the City of Long Beach. On June 20, 1998, the City will open the Queensway

Bay Project to the public. The Queensway Bay Project is a 300-acre oceanfront development that will include a major retail area, Rainbow Harbor, and the Long Beach Aquarium of the Pacific. This project is the focus of the City's economic recovery program as we seek to overcome the loss of over 500,000 jobs due to the Navy Station and Shipyard closure and the cutback in aerospace. The closure of the navigation channel and the loss of the Catalina Island ferry service would deal a serious blow to the City's tourism and convention business.

Another important component of the City's economic recovery plan is a request for $10.5 million for the completion of the Queens Gate Navigation Project at the Port of Long Beach. This project is of national economic significance and is critical to the Port and the Federal Civil Works mission. Construction will consist of deepening the channel to 76 feet to accommodate larger ships and allow them access to the already deepened channels inside the breakwater. By deepening the channel, significant economies will be achieved and thus, allow the Port of Long Beach to remain the largest customs revenue contributor to the U.S. Treasury of any other port in the nation. We respectfully urge your assistance in providing the $10.5 million needed to complete construction of the approach channel.

Mr. Chairman, that concludes my written testimony. The City of Long Beach greatly appreciates the subcommittee's attention to these three vital funding requests.

PREPARED STATEMENT OF GLORIA EXLINE, MAYOR, CITY OF VALLEJO, CA

On behalf of the citizens of Vallejo, please accept the enclosed written testimony for consideration in the establishment of the fiscal year 1999 Corps of Engineers Maintenance Dredging Budget. As indicated in the enclosed testimony, the funding of this project is critical to the continued recovery of the City of Vallejo and the surrounding communities of the San Francisco Bay Area from the effects of the 1993 Base Closure and Realignment Process.

Thank you for your consideration of this project and I look forward to your approval in the near future.

FEDERAL MAINTENANCE DREDGING PROJECT

As you are aware, under the 1993 BRAC the Mare Island Naval Shipyard was closed in April 1996. This closure resulted in the loss of over 7,000 jobs and had a detrimental economical impact on our community with the ensuing loss of numerous businesses. The economic impact to Vallejo and neighboring communities was nearly one-half a billion dollars annually. In anticipation of the closure of Mare Island Naval Shipyard, the City initiated an aggressive program plan for the reuse of this facility. The City has been a leader in the development of a conversion plan with the Final Reuse Plan approved by the Vallejo City Council on July 6, 1996, and its environmental certification to be scheduled to be completed by the U.S. Navy by July 1998.

In response to the need to provide for the reuse of Federal military bases that were closed, Congress approved the Water Resources Development Act of 1996. Section 509 of this Act specifically designates Mare Island as one of eleven waterways that the Corps of Engineers assumed dredging responsibilities. The Corps included the dredging of the main channel of Mare Island Strait in their yearly dredging maintenance program. This dredging project, however, does not include the dredging of critical public and private facilities on the eastern shore of Mare Island Strait. The City of Vallejo is seeking support for the inclusion of $100,000 in the fiscal year 1999 Corps of Engineers budget for the preparation of a Reconnaissance Study that will provide the economic justification for the dredging of five critical areas on the eastern shore of Mare Island Strait as part of the Federal Maintenance Dredging Project for the Strait.

The proposed expansion for the Mare Island Federal Maintenance Dredging Project would expand the existing project to include dredging access from the existing Federal Channel to the City Marina, City Ferry Dock, adjacent commercial areas, small boat launch area, and two important private commercial industrial properties along the waterway. The dredging of these areas is critical to the commercial development of both shorelines of the Mare Island Strait and will generate jobs throughout the San Francisco Bay Area. As indicated in the 1997 California Marine Affairs and Navigation Conference Study, for each dollar of investment in California's ports and harbors, $812 is added to the Gross Domestic Product of the nation. Additionally, for each $4,056 spent on dredging, one permanent job is developed.

The benefits of this proposed project to Vallejo's waterfront and downtown area cannot be overstated. Some specific benefits are:

—Provide for continued vessel access to public facilities and commercial/industrial properties along the Strait.

—Ensure the continued and safe operation of the City's ferry system which provides a critical transportation link for the citizens of Vallejo and surrounding cities throughout the San Francisco Bay Area.

—Promote the economic development of commercial and industrial properties along the eastern side of the Mare Island Strait.

—Mitigate any potential adverse impact of the existing Federal Maintenance Dredging Project will have on the eastern portion of the Mare Island Strait.

—Help preserve water quality in San Francisco Bay by providing access to sewer pump facilities at the Vallejo Marina and Ferry Terminal.

—Enhance the conversion of Mare Island from military to civilian use, as well as the Vallejo waterfront and adjacent downtown area by generating new jobs that would replace those lost by the closure of the Mare Island Naval Shipyard in April 1996.

In closing I would like to thank Chairman Domenici and members of the Subcommittee on Energy and Development for their support and the opportunity to provide the above information for consideration. If you have questions or require additional information, please do not hesitate to contact the Alvaro P. da Silva, Director of Community Development, City of Vallejo, at (707) 648–4579.

PREPARED STATEMENT OF DONALD BRANSFORD, PRESIDENT, GLENN-COLUSA IRRIGATION DISTRICT

Mr. Chairman, Members of the Subcommittee, my name is Don Bransford. I am a rice farmer from Colusa County, California, and I am President of the Board of Directors of the Glenn-Colusa Irrigation District (GCID).

I appreciate the opportunity to testify before you this morning regarding the federal funding priorities for GCID. I also appreciate the Subcommittee's past efforts to address our concerns.

GCID is the largest and one of the oldest diverters of water from the Sacramento River with water rights that date back to 1883. The District delivers water to more than 1,200 families who have about 141,000 acres of valuable, productive agricultural land in Glenn and Colusa Counties. More than $270,000,000 in agricultural commodities are produced annually on GCID farms, helping to sustain an estimated 12,000 jobs in the region.

The District also wheels surface water to three wildlife refuges—the Sacramento, Delevan and Colusa National Wildlife Refuges—that cover some 20,000 acres in the heart of the Sacramento Valley. Winter water supplied by the District to thousands of acres of rice land also provides a rich oasis for migrating waterfowl.

The District is firmly committed to obtaining lasting protection of the winter-run salmon and other fishery resources at the Hamilton City Pumping Plant. Over the last several years, the District has invested over $3,500,000 in the construction of an interim flat-plate fish screen and other improvements to provide immediate protection to the endangered winter-run chinook salmon and other fish species. Since the installation of the flat-plate fish screen, there have been no fish taken into the GCID pumping plant. We are operating under a zero take limit for the winter-run chinook salmon, and constant monitoring has revealed no evidence of take having occurred at the plant.

While the new flat-plate screen, installed in late 1993, has been very effective, it is only an interim solution. Permanent protection is needed. Without a new permanent fish screen, the District will continue to face pumping restrictions that will hold water deliveries by the District to just 65 percent of the District's full water entitlement.

On behalf of GCID, the fishery and all of those whose economic fate is tied to the recovery of the winter-run salmon, I respectfully request that you provide $10,000,000 for the Bureau of Reclamation in fiscal year 1999 to advance work on a permanent new fish screen at the Hamilton City Pumping Plant. This is $2.1 million above the budget request of $7.9 million, and it is critical to the timely completion of this essential fish protection project.

Without such a commitment of funds, construction will be delayed. That will mean less water for the farmers, a less speedy recovery of the fishery and less revenue for the federal Treasury, all because of reduced water deliveries. Failure to provide the funds necessary to advance the project represents a lose-lose-lose proposition. It is bad for the taxpayers, it is bad for the farmers and it is bad for the

fishery resource. Again, I urge you to provide an allocation of $10,000,000 to keep the project moving forward on an optimum schedule.

For the U.S. Army Corps of Engineers, GCID requests the Committee's support of an appropriation of $2,000,000, under Corps of Engineers, Construction, for the Sacramento River, Glenn-Colusa Irrigation District, gradient restoration project. This request, which is $1.3 million above the amount provided in the budget request, is needed to keep this important component of the GCID fish protection program on schedule. In addition, the gradient facility is critical to ensuring the long-term viability of the new fish screen structure under changing river conditions.

Finally, Mr. Chairman, GCID requests that the Subcommittee provide $8,000,000, under the Bureau of Reclamation, CVP, Miscellaneous Project Programs, Refuge Water Supply, an increase of $3,500,000 above the budget request, to expedite work on the facilities needed to convey a continuous, year-round water supply to three National Wildlife Refuges in the Sacramento Valley (the Sacramento, Delevan and Colusa National Wildlife Refuges). These funds will enable year-round deliveries of water to the refuges to start in calendar year 1999, and, at the same time, allow water to be made available for the creation of additional waterfowl habitat. The project will also have fishery benefits. And, it will allow local groups to work with the federal agencies to pursue the creation of fish spawning habitat in Stoney Creek. This project is the most efficient and least costly way to provide expanded water service to the Sacramento Refuge complex, as required by the Central Valley Project Improvement Act.

Mr. Chairman, Members of the Subcommittee, on behalf of GCID, I would like to express my appreciation for your past support of our efforts to address the GCID-related fish and wildlife protection projects, and I respectfully request your support once again in the fiscal year 1999 Energy and Water Development Appropriations Act.

Thank you for your consideration.

PREPARED STATEMENT OF MICHAEL D. ARMSTRONG, GENERAL MANAGER, MONTEREY COUNTY WATER RESOURCES AGENCY

Mr. Chairman, thank you for the opportunity to provide testimony for inclusion in the hearing record of the fiscal year 1999 Energy and Water Development Appropriations bill. The people of the Salinas Valley in California's 17th Congressional District appreciate your willingness to accept our statements in support of the Castroville Seawater Intrusion Project. I would further like to express our deep appreciation for this Subcommittees' efforts on past Energy and Water Development Appropriations bills. I am pleased to report that the project is complete and operational.

As with the past four years the Monterey County Water Resources Agency has worked diligently to present the Subcommittee with a fiscal year 1999 funding request that is supported by the Administration as well as all the other Small Reclamation Loan Program participants. Through close consultation with the Bureau of Reclamation and other Program participants, we have developed the funding plans that were included in the President's fiscal year 1999 budget for the Public Law 84–984 Small Reclamation Loan Program. I, therefore, respectively request that the Subcommittee provide the full Administration request for the project of $2.6 million.

This is the fifth year of an eight year fiscal strategy designed to meet the requirements of all the projects in the Program while recognizing the fiscal constraints facing all levels of government. Originally, the Program was to provide all appropriations ($16,500,000) over a three year period. During the past four years this Subcommittee provided $6.664 million for our project. The current appropriation amount of $2.6 million, when combined with other federal funding which is available from the U.S. Treasury in the amount of $2.94 million pursuant to the Federal Credit Reform Act of 1990, should yield a total loan amount of $5.54 million for fiscal year 1999 that will allow the project to proceed on schedule.

The Monterey County Water Resources Agency (MCWRA) is a local government entity formed under the Monterey County Water Resources Agency Act. It is an agency with limited jurisdiction involving matters related primarily to flood control and water resources conservation, management, and development. The Salinas Valley is a productive agricultural area that depends primarily on ground water as a water supply. The combination of the Valley's rich soils, mild climate, and high quality ground water makes this Valley unique among California's most fertile agricultural lands and has earned the Valley the distinction as the "Nation's Salad Bowl". As agricultural activity and urban development have increased in the past

forty years, ground water levels have dropped allowing seawater to intrude the coastal ground water aquifers. Seawater intrusion is extensive adjacent to the coast near the town of Castroville. The Castroville Seawater Intrusion Project will provide 19,500 acre-feet of recycled water annually for agricultural irrigation to over 12,000 acres and help solve the seawater intrusion problem by greatly reducing groundwater pumping in the project area. The Castroville Seawater Intrusion Project is an essential component in the MCWRA's plan to deal with basin-wide ground water overdraft and seawater intrusion.

The amount requested in fiscal year 1999, when combined with the additional Treasury portion, is intended to fulfill the Bureau's fifth year loan commitment for assistance to construct the project. As stated above, the funding request that we anticipate is the result of a lengthy and complex financial agreement worked out with the other Loan Program participants and the Bureau. The agreement recognized the tight federal budgetary constraints and represents the absolute minimal annual amount necessary to proceed with the project. The MCWRA has been extremely accommodating of the Bureau's budgetary constraints and has agreed to expend considerable local funds to bridge the federal government's budgetary shortfall. Any additional cuts in federal funding will jeopardize the complex financing plan for the project.

In August 1992, the original loan request was submitted to the Bureau. Subsequent approval was received from the Secretary of the Interior in May 1994. Through extensive discussion and negotiations between the MCWRA and the Bureau, a project financing plan was created. The Bureau made it quite clear that the original provisions in the loan application of full disbursement during the three years of construction could not be met due to federal budget shortfalls. As defined in the repayment contract, the Bureau will disburse funds to the MCWRA over an eight-year period. This means that the MCWRA will receive these funds for five years after the project is operational. The fiscal year 1998 funding provided monies for the first year after completion of the project. The MCWRA had to acquire "bridge financing" to meet the needs of the Castroville Seawater Intrusion Project construction costs. Even though the additional private debt service has increased the project costs, the critical problem of seawater intrusion demanded that the project proceed. The Bureau loan is a crucial link in project funding, and it is imperative that the annual appropriations, even at the planned reduced rate over eight years, continue. Federal appropriations have been received in fiscal years 1995, 1996, 1997, and 1998 as shown in the table below and must continue in subsequent years in accordance with the negotiated agreement in order for the projects to be successful. The federal funds requested under the Public Law 84–984 program will be repaid by landowners in the Salinas Valley with assessments that are currently in place. The MCWRA has spent approximately $36.0 million of its own funds getting to this point.

FEDERAL APPROPRIATIONS [1]

[In millions of dollars]

	Received				Requested	
	1995	1996	1997	1998	1999	Total
CSIP	1.064	1.5	2.0	2.1	2.6	9.264

[1] Does not include Treasury portion.

Mr. Chairman, we urge you and the members of the Subcommittee to give your continued support to the Small Reclamation Program and we urge the inclusion of funds for the Castroville Seawater Intrusion Project. Without your continued support, we will not be able to realize the benefit of the work completed over the past several years and the Salinas ground water basin will continue to deteriorate, creating a significant threat to the local and state economies as well as to the health and welfare of our citizens.

Again, thank you for your support and continued assistance.

PREPARED STATEMENT OF KEITH ISRAEL, GENERAL MANAGER, MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Mr. Chairman, thank you for the opportunity today to provide this testimony for inclusion in the hearing record on the fiscal year 1999 Energy and Water Develop-

ment appropriations bill. But most importantly, let me express my sincere appreciation for your continued support for the Small Reclamation Projects Loan Program, and specifically, the funding for the Salinas Valley Reclamation Project. During the past four years, this subcommittee provided $4.8 million for our project. I am pleased to report that the funds appropriated thus far have been well spent on our project, which began construction in August 1995. The new facility was dedicated in October 1997 with full operation planned for April 1998.

The project will ultimately provide 19,500 acre-feet of recycled water to land south and west of Castroville where abandonment of wells threatens agricultural production and the loss of a portion of rural America. It will also reduce discharge of secondary treated wastewater to the recently-created Monterey Bay National Marine Sanctuary. In addition, the California State Water Resources Control Board specifically indicated its strong support for the Salinas Valley Reclamation Project in a prior letter to the U.S. Bureau of Reclamation.

The Monterey Regional Water Pollution Control Agency (MRWPCA), a joint-powers entity formed under the laws of the State of California, was created in 1971 to implement a plan that called for consolidation of the Monterey Peninsula and northern Salinas Valley wastewater flows through a regional treatment plant and an outfall to central Monterey Bay. The plan also required studies to determine the technical feasibility of using recycled water for irrigation of fresh vegetable food crops (artichokes, celery, broccoli, lettuce, and cauliflower) in the Castroville area. These studies were initiated in 1976 and included a five-year full-scale demonstration of using recycled wastewater for food crop irrigation. California and Monterey County health departments concluded in 1988 that the water was safe for food crops that would be consumed without cooking. Subsequently, the Salinas Valley Seawater Intrusion Committee voted to include recycled water in their plan to slow seawater intrusion in the Castroville area.

In addition, a supplemental water testing program (October 1997 through March 1998) was initiated to confirm the new plant's removal of what are termed "emerging pathogens." These organisms, which include Cryptosporidium, Giardia, Cyclospora, and E. Coli, were not evaluated in the original study. The preliminary results of the follow-up testing program again verify that the water is safe for irrigation of food crops.

As in the past, we have been in close consultation with the Bureau of Reclamation and the other Small Reclamation Projects Loan Program participants in an attempt to provide the Committee with a consensus budget request that has the support of the Administration and the Loan Program participants. Based on these discussions, the Administration requested, with our support and endorsement, sufficient funding for the Salinas Valley Reclamation Project as part of the Bureau of Reclamation's Public Law 84–984 Small Reclamation Projects Loan Program for continuation of loan obligations. This appropriation amount, $1.7 million, when combined with other federal funding which is available from the U.S. Treasury pursuant to the Federal Credit Reform Act of 1990, will yield a total loan amount that we believe will meet the federal government's commitment for fiscal year 1999. The amount requested, when combined with the additional Treasury portion, is intended to fulfill the Bureau's fifth-year loan commitment for assistance to construct the project.

As I indicated, the funding request is the result of a lengthy and complex financial agreement worked out with the other Loan Program participants and the Bureau. The agreement represents the absolute minimum annual amount necessary to continue with the project. The MRWPCA worked under the premise of accommodating the Bureau of Reclamation's budgetary constraints and is expending considerable local funds to bridge the federal government's budgetary shortfall. Any additional cuts in federal funding will jeopardize the complex financing plan for the project.

The MRWPCA has received Federal Grant and Loan Funds in Federal fiscal year 1995, fiscal year 1996, fiscal year 1997, and fiscal year 1998 through February 23, 1998, as follows:

	Fiscal year				
	1995	1996	1997	1998	1999
SVRP	$900,000	$1,000,000	$1,500,000	$1,300,000	[1] $1,700,000
SVRP Treasury	570,000	880,000	1,561,000	1,300,000	.....
FEMA	.....	16,805	1,492	35,554	.....
EPA	.....	30,144	.....	.....	.....

[1] Requested.

Even though the additional private debt service and bridge financing will increase the project costs, the critical problem of seawater intrusion demands that the project be continued. The Bureau of Reclamation loan is a crucial link in project funding, and it is imperative that annual appropriations, even at the planned reduced rate over eight years, continue. The federal funds requested under the Public Law 84–984 program will be repaid by landowners in the Salinas Valley with assessments that are currently in place. Local funds totaling $24.2 million have already been spent getting to this point.

Mr. Chairman, we urge you and the members of the subcommittee to give your continued support to the Small Reclamation Projects Loan Program, and specifically, funding for the Salinas Valley Reclamation Project. Your support and continued assistance for this critical project is greatly appreciated.

PREPARED STATEMENT OF JOE SERNA, JR., MAYOR, CITY OF SACRAMENTO, CA

On behalf of the City of Sacramento, I would like to thank you for the opportunity to provide testimony to the Senate Appropriations Subcommittee on Energy and Water Development in support of fiscal year 1999 funding for vital flood control protection projects in Sacramento. First, I would like to express my appreciation to the Subcommittee for all of your efforts in past years to fund flood protection measures for the City. As you know, the City is located in the most dangerous flood plain in the United States. Despite the efforts of Federal, State, and local flood control agencies to counter this threat, the floods of 1995 and 1997, and this year's heavy El Niño rains have continued the concern about the efficacy of present flood control measures.

Congress in 1996 recognized the potential for immense flood losses and damages in Sacramento by including authorization in the Water Resources Development Act of 1996 (WRDA 96) for the "Common Elements Project." This project includes 24 miles of levee improvements to the American River and an additional 12 miles of improvements along the Sacramento River levees which protect the City of Sacramento, flood gauges upstream of Folsom Dam and Reservoir, and improvements to the Flood Warning System along the lower American River. Finally, the legislation mandated that Folsom Dam should continue to be operated in a manner that increases flood protection for the City, and established a federal-local cost share arrangement for replacing any lost power and/or water resources.

Final plans for many of the authorized common elements are proceeding on schedule and construction on the major elements (i.e., levee strengthening) will begin this summer.

The U.S. Army Corps of Engineers proposed budget for fiscal year 1999 recently submitted to Congress provides only $1 million for continuation of construction of the Common Elements Project. This level of funding is clearly inadequate to keep the project moving forward. In fact, the Corps of Engineers' budget accompanying the Project Completion Agreement shows that $26 million in Federal funds are needed in 1999 to keep this project on schedule. The Common Elements Project is a vital first step in our flood control efforts and full funding to keep this project on track is essential. Therefore, the City strongly recommends and supports approval of $26 million for the Common Elements Project so that this vital construction can continue without delay.

The City of Sacramento has been working in cooperation with the Sacramento Area Flood Control Agency (SAFCA) on the construction of bank protection improvements which are vital to correct harmful erosion along the banks of the American River which threatens the integrity of our existing levees. Additional improvements will be needed over the next several years to prevent erosion at three other American River sites. This work is already authorized under the Sacramento River Bank Protection Project which is used to fund erosion control projects throughout the Sacramento River System. The President's budget proposes $7.08 million for the Sacramento River Bank Protection Project, which we fully support and urge the Subcommittee to support.

Due to the significant flood risk along creeks in the South Sacramento area, the U.S. Army Corps of Engineers, SAFCA, and the City have been studying ways to reduce potential flooding in this highly urbanized area. Reconnaissance and feasibility studies have been completed and the President has proposed $900,000 to initiate preconstruction engineering and design for the South Sacramento Streams project. We urge the Subcommittee to include these funds in the fiscal year 1999 Corps of Engineers' budget.

Under the Corps' Section 205 program, a feasibility study and environmental documentation have been completed for a project that would provide a high degree of

flood protection on Magpie Creek. Congress funded this project at $1.44 million last year. This year the President has requested $26.5 million for all Section 205 flood control projects. We urge the Subcommittee to support Section 205 funding in the fiscal year 1999 budget and recommend that the Corps of Engineers be directed to provide sufficient funds for completion of the Magpie Creek project in its distribution of Section 205 funds.

For the American River Watershed (Natomas) improvements which were authorized by Congress in 1992, we are seeking continued construction appropriations for reimbursement to SAFCA for the Federal share of the flood control improvements, as well as construction appropriations to complete the recreation elements of the project. The Federal share for this project which was completed using local funds, is considerably higher than the $10 million included in the fiscal year 1998 budget. Therefore, we urge the Subcommittee to fund an additional $10.6 million in fiscal year 1999 for reimbursement to SAFCA for the flood control improvements which have been constructed and $3.9 million for completing the recreational improvements which are part of the Ueda Parkway.

The President's Budget for fiscal year 1999 provides for $50,000 in Preconstruction, Engineering and Design (PED) funds for the American River Watershed comprehensive plan. The City, SAFCA, and the Reclamation Board will seek Congressional authorization of additional improvements on the American River system as part of the 1998 Water Resources Development Act. Once authorized, the Corps of Engineers will need significantly more funds to proceed with any meaningful design in 1999 and not lose a year in the schedule to implement these improvements. Therefore, we urge the Subcommittee to support $5 million in PED funds for the American River Watershed comprehensive plan.

In summary, the specific request from the City of Sacramento for fiscal year 1999 appropriations for the U.S. Army Corps of Engineers' flood control programs are as follows:

American River Common Elements Project	$26,000,000
Sacramento River Bank Protection Project	7,080,000
South Sacramento Streams Group PED	900,000
Magpie Creek Project	([1])
North Area Reimbursement (Natomas)	10,600,000
North Area Project (Ueda Parkway)	3,900,000
American River Watershed Investigation (PED)	5,000,000

[1] Continued necessary funding.

Thank you for the opportunity to submit this statement and for your consideration of the funding that the City of Sacramento needs to protect its citizens. Adequate flood protection is essential in this most flood-prone of American cities. We thank you again for your commitment in previous years to providing this vital protection, and we ask for your renewed support in assuring its continuation.

CALIFORNIA NAVIGATION PROJECTS

PREPARED STATEMENT OF ALEXANDER KRYGSMAN, DIRECTOR, PORT OF STOCKTON, CA

Mr. Chairman: I am Alexander Krygsman, Port Director of the Port of Stockton in Stockton, California.

The San Francisco Bay to Stockton Ship Channels Project is an authorized project.

The Port of Stockton is primarily a bulk port that serves industry and agriculture in the San Joaquin Valley in California, and the bulk imports and exports of the Western States, including the coal areas of these States.

The Port of Stockton recognized as far back as 1952 that deeper channels would be needed for the movements of bulk cargoes and requested the Corps of Engineers to deepen the channel in 1952. Coal, grain, fertilizers and many other bulk materials require deeper channels to serve the larger bulk carriers.

The Nation needs ports that can handle larger, more economical and more fuel-efficient vessels close to the production areas, both agricultural and industrial.

The Port of Stockton is such a port.

The dredging of the Stockton Channel portion of the project to 35 feet was completed in 1987. A copy of the Port of Stockton's most recent annual report is attached. Cargo volume has increased since the dredging of the Stockton Channel was completed; and the project is certainly paying off.

Therefore, we requested the Corps of Engineers for a new navigation study (reconnaissance study) to deepen the Channel further, to 40 feet or more, if economically feasible. The funding for this study was appropriated in fiscal year 1998.

For the 1999 fiscal year, we are requesting $300,000 for the feasibility study. Because this study has to be coordinated for proper timing with the U.S. Navy's project to deepen the Channels to the Concord Weapons Station, this study needs to be done now. The feasibility study is 50 percent cost shared.

The President's proposed budget only contains $30,000 to complete the reconnaissance study, but the feasibility study and the eventual construction, needs to be closely tied to the deepening of the Channel through San Pablo Bay, and this project needs to be timed appropriately with that construction. Deferring $300,000 now could cost millions in extra cost later.

We urge you to appropriate $300,000 for the Stockton Deep Water Channel Feasibility Study. We also strongly urge that $3,004,000 be appropriated to maintain the Channels so that the present benefits also may continue to accrue.

STOCKTON DEEPWATER SHIP CHANNEL INFORMATION

Channel Depth

35 feet—At mean lower, low water
37 feet—At average low tide
40 feet—At average high tide

Channel Capacity

Up to Panamax-size vessels fully loaded sailing at high tide.

The waterway has no width restriction, and will handle 45,000 to 55,000 ton class ships fully loaded. Up to 80,000 ton class vessels can transit the channel partially loaded.

Navigation Aids

Usual channel markers and lights.

Pilotage

$827.00 each way, subject to 14 percent surcharge on vessels over 600 feet but less than 625 feet in length. Thereafter an additional 4 percent is charged for each increment of 25 feet.

Tugs

Three: One—1,350 H.P., One—1,000 H.P., and One—650 H.P.

Bridges

There is a fixed span high level toll bridge across Carquinez Strait, with a minimum clearance of 134 feet above mean high water. The Southern Pacific Railroad lift span bridge crosses Suisun Bay 6.5 miles upstream from the Carquinez Bridge, with a minimum clearance above mean high water of 70 feet when closed and 135 feet when open. The horizontal clearance on the lift span is 291 feet. A third bridge, 22 miles above the Southern Pacific bridge, is near Antioch. It is a fixed span bridge with a minimum clearance above mean high water of 135 feet.

Located on the Stockton Deepwater Ship Channel, 75 nautical miles due east of the Golden Gate Bridge, the Port of Stockton, California, owns and operates a diversified and major transportation center that encompasses a 600-acre operating area.

The Port has berthing space for 10 vessels, 500,000 square feet of dockside transit sheds and shipside rail trackage, 2.7 million square feet of warehousing for both dry bulk and general cargoes, including steel. Each warehouse is also served by rail.

Stockton's deepwater channel has an average depth of 37 feet at average low tide (35 feet MLLW), and an average depth at high tide of 40 feet—PANAMAX.

Vessels in the 45,000 to 55,000 ton class, and maximum 60,000 ton class (for certain wide-beam vessels) can use the channel fully loaded. Up to 80,000 ton class vessels can transit the channel partially loaded. There is no width restriction of vessels, and ships up to 900 feet in length can navigate the Stockton Ship Channel.

The Port is one mile from Interstate 5, and all interconnecting major highway systems. Rail service is provided by three transcontinental railroads, Union Pacific/Missouri Pacific, Southern Pacific and the Santa Fe.

The Port of Stockton maintains flexibility in planning, construction and modification of its facilities and equipment. Continuously seeking better and more productive ways to handle a diversified aggregation of cargoes, the Port has installed three traveling, multi-purpose, 30-ton Bridge Cranes—one on Dock No. 3/4 and two on Dock No. 10/11. All three cranes handle dry bulk cargoes as well as containers and steel products and are equipped with 15-cubic yard grabs and container frames.

Both facilities can handle cargo from vessels direct to truck, rail (one of two loop railroad tracks serves Dock 10/11), dockside storage and by conveyor.

As a fully operating Port, a fleet of 30,000 to 60,000 lb. fork lift trucks, slings, spreader bars, coil rams, front-end loaders, hoppers and conveyor belts and other equipment are maintained for handling and storing steel products, other general cargoes and bulk materials. The Port also offers stevedoring services to customers.

The Port is well-suited and situated to handle heavy steel and project cargo with its excellent overland transportation connections. Five acres of paved surface on Dock No. 10/11 allows easy assembly and pre-staging of this type of cargo. In addition to the three bridge-type cranes and two gantry cranes, floating cranes and mobile truck cranes are available to handle these cargoes. The bridge and gantry cranes can also unload any kind of import bulk material, and two bulk loading towers are used to load all types of export bulk material such as coal, petroleum coke, ores, clay and sulfur.

Recounting the Port of Stockton's assets, it has first class warehouse storage and handling facilities for both dry and liquid bulk materials, facilities and equipment to handle break-bulk and containerized cargoes by land or by sea. Immediate access to three transcontinental railroads is complemented by two loop railroads, one on-dock, for accommodating unit trains for export of coal, petroleum coke, and ores, plus consolidation of rail shipments of inbound and outbound steel coils. All of these components place the Port in an ideal position for domestic as well as national and international distribution.

Relative to industrial development, the Port is especially attractive to, and interested in, attracting projects that require waterborne transportation for delivery of raw or finished goods.

All of the Port's services are directed by experienced people through one administrative complex. This provides a unique advantage for flexibility as well as efficiency. The Port of Stockton publishes tariffs, stevedores cargoes, assigns berths, supervises cargo activity, provides shipping documentation, accounting and rate quotations. It is a broad hands-on effort that includes marketing, traffic, property management, warehousing, distribution, data processing and police protection services to its customers.

Director Alexander Krygsman and his staff welcome your interest and invite your inquiries concerning the Port's services and facilities.

PREPARED STATEMENT OF DAVID L. MALCOLM, CHAIRMAN, BOARD OF PORT COMMISSIONERS, PORT OF SAN DIEGO, CA

The following testimony is provided by the San Diego Unified Port District, which represents the California cities of Chula Vista, Coronado, Imperial Beach, National City and San Diego, to obtain support from the Senate Energy and Water Development Subcommittee to include in the fiscal year 1998–99 Water and Energy Development Appropriations Bill $260,000 for the Corps of Engineers to continue the Feasibility Study of Deepening the San Diego Harbor, and $300,000 for the Corps of Engineers to initiate a Feasibility Study for San Diego Harbor, National City.

The Port District has previously entered into a 50/50 Cost Sharing Agreement with the Corps for the San Diego Harbor Deepening project and is willing and able to enter into a similar Cost Sharing Agreement for the San Diego Harbor, National City project.

The San Diego Unified Port District operates and maintains two marine terminals and engages in other maritime related business and economic activities. These economic activities result in regionally significant fiscal impacts including: economic output, high value employment and associated payroll taxes, and federal revenue in the form of income taxes, as well as various duties and trust fund contributions.

A timely and unique opportunity has presented itself to the Port District. The U.S. Navy has initiated a major channel deepening project to accommodate its nuclear aircraft carriers. The Navy's dredging project deepens the existing channel to about −50 feet all the way from the ocean to the carrier turning basin, approximately seven miles. It is only an additional two miles to the Port District's 10th Avenue Marine Terminal and an additional six miles to the National City Marine Terminal. The Port District perceives this as a "partnering" opportunity between the Navy, Corps of Engineers, Port District and private sector interests to lower maritime shipping costs at the Port of San Diego.

The Port District is committed to working with the Corps of Engineers and the maritime industry to maintain and enhance our ability to contribute to the region's economic stability by providing the physical infrastructure needed to provide competitively priced maritime shipping opportunities. To that end, the Port District has

commenced several strategic initiatives including: $16,000,000 to repair berths at the 10th Avenue Marine Terminal (completed in 1997); $30,000,000 land-side and railroad improvements at the National City Marine Terminal in partnership with the BNSF Railroad (completed in 1997); $27,000,000 to extend and expand the wharf at the National City Marine Terminal (preliminary design completed in 1998); and the commitment to cost share with the Corps of Engineers the cost of deepening the federal navigation channel to the 10th Avenue and National City Marine Terminals.

San Diego is geographically positioned to competitively serve new and existing maritime shipping needs between the Pacific Rim and the southwestern United States. However, current channel depth limitations preclude many ships from entering the federal shipping channel fully loaded. In order to provide cost efficient shipping rates to the San Diego market, a deeper federal channel is needed.

In conclusion, the San Diego Unified Port District requests your support and appropriation of $260,000 to continue the Feasibility Study for the San Diego Harbor Deepening, and $300,000 for the initiation of a Feasibility Study for the San Diego Harbor, National City. The Port District and its maritime partners have made, and will continue to make, significant financial investments in the land-side infrastructure. We request only that the Corps of Engineers be provided the financial resources to modify the federal navigation channel so that potential shipping cost reductions can be realized. With almost half the distance of the federal channel being deepened by the Navy, it only makes economic sense to extend the deepening to the marine terminals so that nonmilitary benefits can also be realized.

PREPARED STATEMENT OF RICHARD W. PARSONS, DREDGING PROGRAM MANAGER, VENTURA PORT DISTRICT

The Ventura Port District respectfully requests that the Congress:

1. Include $2,705,000 in the fiscal year 1999 Energy and Water Development Appropriations Bill as requested by the Administration for the U.S. Army Corps of Engineers maintenance dredging of the Ventura Harbor Federal channel and sand traps.
2. Include $250,000 in the fiscal year 1999 Energy and Water Development Appropriations Bill as requested by the Administration to initiate a cost shared Feasibility Study to determine the advisability of modifying the existing Federal navigation project at Ventura Harbor to include a sand bypass system.
3. Include $2,500,000 in the Supplemental Fiscal Year 1998 Appropriations Bill for the U.S. Army Corps of Engineer's repair of extensive El Niño related storm damage to the north head of the Federal breakwater and to the South Beach Groin.

BACKGROUND

Ventura Harbor, homeport to 1,500 vessels, is located along the Southern California coastline in the City of San Buenaventura, approximately 60 miles northwest of the City of Los Angeles. The harbor opened in 1963. Annual dredging of the harbor entrance area is usually necessary in order to assure a navigationally adequate channel. In 1968, the 90th Congress made the harbor a Federal project and committed the U.S. Army Corps of Engineers to provide for the maintenance of the entrance structures and the dredging of the entrance channel and sand traps.

The harbor presently generates more than $40 million in gross receipts annually. That, of course, translates into thousands of both direct and indirect jobs. A significant portion of those jobs are associated with the commercial fishing industry (over 30 million pounds of fish products were landed in 1996), and with vessels serving the offshore oil industry. Additionally, the headquarters for the Channel Islands National Park is located within the harbor, and the only commercial vessels transporting the nearly 100,000 visitors per year to and from the Park islands offshore, operate out of the harbor. All of the operations of the harbor, particularly those related to commercial fishing, the support boats for the oil industry, and the visitor transport vessels for the Channel Islands National Park are highly dependent upon a navigationally adequate entrance to the harbor.

OPERATIONS AND MAINTENANCE NEEDS

Dredging

The Corps of Engineers has determined that $2,705,000 will be required to perform routine maintenance dredging of the harbor's entrance channel and sand traps during fiscal year 1999. This dredging work is absolutely essential to the continued

operation of the harbor given the large volume of material that was deposited in the harbor's entrance area by the severe El Niño storms of 1998.

Rock Structure Repairs

It is estimated that $2,500,000 will be required in the Supplemental Fiscal Year 1998 Appropriations Bill for the Corps of Engineers to repair extensive El Niño related storm damage to the north head of the Federal breakwater and to the South Beach Groin. These structures are important components of the harbor's entrance system and their repair must be accomplished expeditiously in order to assure the maintenance of a navigationally adequate entrance channel. Additionally, it should be noted that the failure to repair these structures will result in increased maintenance dredging costs in subsequent years.

STUDY NEEDS

The Corps of Engineers has determined that $250,000 will be required during fiscal year 1999 to initiate a cost shared Feasibility Study to determine the advisability of modifying the existing Federal navigation project at Ventura Harbor to include a sand bypass system. Given the continuing need for maintenance dreading, it is appropriate to determine if a sand bypass system or other measures can accomplish the maintenance of the harbor in a manner that is more efficient and cost effective than the current contract dredging approach.

PREPARED STATEMENT OF LELAND WONG, COMMISSION PRESIDENT, LOS ANGELES BOARD OF HARBOR COMMISSIONERS FOR THE PORT OF LOS ANGELES

Chairman Domenici and Members of the Subcommittee: I am Leland Wong, President of the City of Los Angeles Board of Harbor Commissioners which oversees the activities of the Port of Los Angeles. My testimony, for the City of Los Angeles and its Board of Harbor Commissioners, speaks in support of continuation of the federal role in the implementation of the major navigation improvements underway at the San Pedro Bay, California. Specifically, I am speaking of the Pier 400 Dredging and Landfill Navigation Project and our request for an appropriation of $69 million for fiscal year 1999.

PIER 400 IMPLEMENTATION UNDER THE 2020 DEVELOPMENT PLAN

The San Pedro Bay ports of Los Angeles and Long Beach, and the U.S. Army Corps of Engineers, years ago acknowledged the dramatic increase in Pacific Rim trade volumes forecast to take place over the next decades. To meet the resulting international trade needs of the region and the Nation, the Port of Los Angeles engaged in a long-term, cooperative planning effort known as the 2020 Development Plan. The 2020 Plan accurately predicted the phenomenal growth of trade through the San Pedro Bay ports and is a blueprint for the ports' infrastructure development that would accommodate the projected growth well into the 21st century. Divided into phases, Stage II of the 2020 Plan is a federal deep-draft navigation project—known as the Pier 400 Dredging and Landfill Navigation Project—which is currently under construction. The Commissioners, management and staff of the Port of Los Angeles have been working since 1985 with the Corps of Engineers toward the implementation of the 2020 Plan which was authorized in the Water Resources Development Act (WRDA) of 1986 (Public Law 99–662), and was further sanctioned in WRDA 1988 (Public Law 100–371) and WRDA 1990 (Public Law 101–640).

The contracts for Stage II construction were completed by the Port of Los Angeles in 1997. Stage I includes advance constructing the dredging of new federal navigation channels that abut existing land at Pier 300 and the reclamation of 265 acres of new land at Pier 400. Stage II includes the dredging of new and deeper channels to Pier 300 and Pier 400, and the creation of an additional 315 acres of new land at Pier 400.

STAGE II CONSTRUCTION

I am pleased to inform the Subcommittee that on July 14, 1997 the Corps of Engineers issued the Notice to Proceed for construction of Stage II. Construction is on schedule with completion expected in January 2000.

We are also pleased to inform you that the Port of Los Angeles completed restoration of the Bataquitos Lagoon Wetlands and the Bolsa Chica Wetlands. These environmental restoration projects were completed by the Port of Los Angeles at a cost of nearly $100 million and gave the Port sufficient environmental mitigation credits to construct Stage II.

Mr. Chairman, the Port of Los Angeles appreciates the appropriation of $26.1 million by Congress for fiscal year 1998, which was $10 million over the budget request. However, there remains a shortfall of approximately $50 million in construction funds which threatens to delay Stage II construction for as long as two years. According to Corps of Engineers' estimates such a delay could cost as much as $30 million. The additional cost would be borne by the Port of Los Angeles and would provide no value to the project. You should know, Mr. Chairman, that the contractor has been working apace and has fully utilized the amount appropriated for fiscal year 1998, including a small amount which the Corps recently reprogrammed. Therefore, to keep the project on schedule and to avoid the additional costs of delays, the Port has advanced most of the shortfall amount. However, this advance has significantly affected the Port's finances and may jeopardize its ability to make further advances that may be required to maintain schedule.

Consequently, Mr. Chairman, the Port of Los Angeles requests your Subcommittee to appropriate $69 million for the Pier 400 Project for fiscal year 1999. This appropriation would make it possible for the Corps of Engineers' Los Angeles District to maintain schedule on Stage II construction next year and ensure completion of the Pier 400 Project no later than fiscal year 2000. Just as importantly, our request is based on a construction schedule that is directly linked to proposed agreements with prospective new tenants for the early use of Pier 400 facilities early in the year 2000.

The Port of Los Angeles' funding request for Stage II construction is consistent with the Project Cooperation Agreement (PCA) executed between the Port of Los Angeles and the Corps of Engineers on March 19, 1997. The PCA establishes the federal government's financial interest in the Pier 400 Project pursuant to WRDA 1986 and existing Corps policy, and confirms the federal share to be $116 million out of an estimated total project cost of $625 million. The federal share of Stage I construction was $63.8 million. Construction was completed last year and the Port advance-funded the full federal share of Stage I through debt financing. The federal share of Stage II construction was established by the PCA as the first $97 million so that the Port could receive credit toward Stage II from the funds previously advanced the federal government during construction of Stage I. The Port's request for an appropriation of $69 million for fiscal year 1999, therefore, is consistent with the provisions of the Project Cooperation Agreement and would make the federal government current on its financial obligations to the Pier 400 Project.

ECONOMIC IMPACT OF THE PIER 400 PROJECT

As the Port of Los Angeles has testified in previous years, cargo throughput for the San Pedro Bay is expected to more than triple in the decades between 1990 and the year 2020. Actual growth rates in cargo handling, from 1990 through 1997, have already exceeded the forecast growth. The ability of the Port to meet the demands of this phenomenal growth is dependent upon deep water channels (such as those being constructed under the Pier 400 Project) that can accommodate the largest state-of-the-art deep-draft vessels now on line in the world fleet. These new vessels provide greater efficiency in cargo transportation and offer consumers lower prices on imported goods and more competitive exports. In fact, approximately 15 percent of all consumer goods enter the United States through the Port of Los Angeles before being transported into the stream of American commerce by rail and by truck.

The Pier 400 Project is clearly a project of national significance, conferring economic benefits in many ways:

—Over $74 billion annually in trade that supports meaningful permanent employment for over one million Americans across the country;
—The generation of $84.8 billion in industry sales;
—$24.3 billion in wages and salaries;
—$12 billion in annual tax revenues;
—The generation of $1.8 billion annually in U.S. Customs revenues.

The return on the federal investment is real and quantifiable, and is expected to exceed the cost-benefit ration as determined by the Corps of Engineers in the project feasibility study. The federal investment in the Pier 400 Project will ensure that one of the Nation's most important ports remains competitive into the 21st century.

ONGOING MAINTENANCE OF EXISTING FEDERAL CHANNELS AND HARBOR BREAKWATER

Related to the efficient operation of the completed Pier 400 Project is the required ongoing maintenance of the existing federal navigation channels at the Port of Los Angeles. The Port requests your Subcommittee to include an appropriation of $350,000 to enable the Corps to conduct a condition survey of the federal channels, evaluate the Port's rehabilitation of the breakwater, and perform engineering design

for maintenance dredging of the West Basin. This work is necessary to determine the future maintenance needs of the channels and any rehabilitation that may be required for the breakwater. Ongoing maintenance will ensure that the channels remain at depths at which fully loaded container and tanker ships could safely navigate, and guarantee the stability of the breakwater during severe storms. I might add, Mr. Chairman, that a very small amount of Operation and Maintenance dollars are required each year at the Port of Los Angeles, in contrast to the $70 million in Harbor Maintenance Tax revenues collected annually at the Port.

VICKSBURG MODEL FUNDING

The Port of Los Angeles further requests your Subcommittee to provide an appropriation of $165,000 for ongoing maintenance of the Port's harbor model at the Corps of Engineers' Waterways Experiment Station (WES) at Vicksburg, Mississippi. In addition, $335,000 is required for continued wave data collection. This information is necessary to validate the numerical and physical models used for project design. During the state-of-the-art design phase for the Pier 300 channel and the Pier 400 land reclamation, eight separate, but related models, were used by the engineers and maintained by the scientists and engineers of WES and were, likewise, used by the engineers at the Port of Los Angeles and the Los Angeles District Corps. Maintenance of the hydraulic and physical models at Vicksburg, and their prototype data acquisition facilities remain an essential resource for the Corps' Los Angeles District and for the Port of Los Angeles.

IN SUMMARY

Mr. Chairman, the Port of Los Angeles respectfully urges your Subcommittee to include in the Corps of Engineers' fiscal year 1999 appropriation:

—$69 million for the Pier 400 Dredging and Landfill Navigation Project;
—$350,000 to conduct surveys of the federal channels and the rehabilitation of the breakwater in the San Pedro Bay;
—$165,000 for ongoing maintenance of the Vicksburg Harbor Models; and
—$335,000 for continued wave data collection.

The Port of Los Angeles has long valued your Subcommittee's demonstrated understanding the importance of the port industry to the economic vitality of the United States. This understanding has been evidenced by the appropriation of scarce federal dollars for harbor and navigation projects such as the Pier 400 Project.

Thank you, Mr. Chairman, for the opportunity to submit this testimony in support of continued funding for the federal navigation activities at the Port of Los Angeles.

PREPARED STATEMENT OF CATHY NOVAK, MAYOR, CITY OF MORRO BAY, CA

Morro Bay Harbor is the only all-weather harbor of refuge between Santa Barbara and Monterey on the West Coast. Our Harbor directly supports almost 250 homeported fishing vessels and marine dependent businesses. We provide irreplaceable maritime facilities for both recreational and commercial interests. Businesses that depend on the harbor generate $53,500,000 and employ over 700 people. The United States Coast Guard (USCG) maintains a 15 person search and rescue station at Morro Bay Harbor to provide the Coast Guard services for the entire Central California Coast.

During World War II the Army Corps of Engineers (ACOE) designed and constructed a new harbor entrance at Morro Bay with two rock breakwaters. Since the initial construction the Federal government has maintained the harbor entrance, breakwaters and navigational channels, and in fiscal year 1995 the ACOE completed the Morro Bay Harbor entrance improvement project to improve safety for commercial fishing and navigation. The City of Morro Bay was the local sponsor and contributed over $900,000 in cash and in-kind services.

Morro Bay is a small city of 10,000 with very limited resources but has made this project one of its highest priorities for almost 10 years because of the regional importance of the harbor. Without continued Federal maintenance, all of the past local and federal investment will be lost.

Last year, the President's budget failed to recommend funding to maintain our harbor. We deeply appreciate the funding your distinguished Subcommittee added for this purpose. Maintenance dredging funded in fiscal year 1998 began in January and will be completed this spring.

Exposure to the open ocean and its brute force over the years has caused the rocks on the south breakwater to dislodge and slough into the water. This situation

has probably been exacerbated by the fact that the breakwater has not been repaired in over 30 years. It is an essential component of a safe harbor and $2,000,000 is needed in fiscal year 1999 to conduct badly needed repairs. The President's budget did not recommend funding for this purpose. We have enclosed a photograph from this winter's storms showing the USCG personnel transiting the harbor entrance during breaking wave conditions.

Finally, in 1995 part of Morro Bay was designated a national estuary by EPA. Reduced tidal circulation due to sedimentation of the bay threatens not only the harbor but many sensitive habitat areas in this very unique environment. In fiscal year 1998 Congress also added $100,000 for an ACOE reconnaissance study of potential projects that could reduce navigational channel dredging costs and restore sensitive habitat through improving tidal circulation. Our thanks again for your actions.

This habitat restoration reconnaissance study is underway and we are encouraged. This project may benefit both our marine dependent economy and the environment. Therefore, I support the fiscal year 1999 Presidential request of $100,000 to continue the study.

I am grateful for the opportunity to present these requests to your Subcommittee on behalf of the citizens of the City of Morro Bay.

PREPARED STATEMENT OF JOHN BRIDLEY, WATERFRONT DIRECTOR, CITY OF SANTA BARBARA, CA

As your distinguished Subcommittee writes the fiscal year 1999 Energy and Water Resources Appropriations bill, I would like to bring a very important Corps of Engineers project to your attention.

About 400,000 cubic yards of sand piles up every winter at Santa Barbara Harbor, and in years of severe storms, the accumulated sand can close the channel bringing local fishing and other businesses in the Harbor to a standstill.

There is an important Federal interest in maintaining dredging at the Harbor. It provides slips and moorings for over 1,000 commercial, emergency and recreational boats. It is also an important part of Coast Guard operations on California's central coast.

The President's fiscal year 1999 budget request includes $1,541,000 for operations and maintenance for Santa Barbara Harbor. I respectfully request that the U.S. Senate, through your Subcommittee, maintain that level of funding.

Thank you for the opportunity to submit this statement.

PREPARED STATEMENT OF DICK LYON, MAYOR, CITY OF OCEANSIDE, CA

The City of Oceanside and the Oceanside Harbor District request your support of $839,000 as an addition to the fiscal year 1999 budget for the Oceanside Harbor Maintenance and Operation Dredging Program. The Administration's budget includes $622,000 for dredging Oceanside Harbor. Due to a miscalculation in the dredge quantity performed by the Corps of Engineers, the Administration's level of funding falls well short of the required $1,461,000 to correctly perform the necessary dredging.

In 1960, Congress authorized full federal funding for maintenance of the Oceanside Harbor entrance (House Document 456, 86th Congress, 2nd Session, Public law 85–500) in recognition of the fact that the Harbor entrance was constructed as an emergency wartime measure in 1942. To this day, the Oceanside Harbor entrance continues to serve the vital military installation of Camp Pendleton Harbor. In 1992, the Harbor District partnered with the federal government in a local cost share agreement to modify the harbor entrance and the authorized channel depth to reduce storm damage, provide surge protection to the harbor's infrastructure and provide significant reduction of navigational hazards that have produced 11 deaths, 49 serious injuries, 134 boating accidents and $1,500,000 in damage to vessels in the harbor entrance.

It is imperative that the federal government uphold the long-standing legislative commitment that it made. It was because of this commitment that the Harbor District agreed to fund the local cost share ($1,600,000) of the harbor modification project.

Historically, the Harbor experiences sand infilling after the winter season. This infilling problem will be drastically compounded by the "El Niño" condition currently present on the existing shoaling problem.

Oceanside Harbor will experience severe negative impacts should the dredging project not be appropriately funded. Such action would restrict access to the Pacific

Ocean to the United States Navy and Marine Corps as joint users of the entrance channel, as well as the U.S. Coast Guard Cutter Point Hobart, which is also based in Oceanside. The economic impact upon the local fishing fleet, the commercial sportfishing fleet and the 1,000 recreational vessels berthed here, as well as the businesses supported by the harbor, would be significant.

The maintenance program is essential for the safe navigation into Oceanside Harbor and the U.S. Marine Corps Base Camp Pendleton Harbor. The program also provides the associated commerce and recreational benefits to our community.

Thank you for the opportunity to provide this testimony and for your consideration of the request.

PREPARED STATEMENT OF ROBERTA GOULART, CONTRA COSTA COUNTY BOARD OF SUPERVISORS, CONTRA COSTA COUNTY, CA

SAN FRANCISCO TO STOCKTON (BALDWIN) SHIP CHANNEL PHASE III

Background

As the primary navigation channel for most of the oil tanker traffic in San Francisco Bay, JFB provides a vital part of the economic infrastructure in the San Francisco Bay Area. The channel extends from the West Richmond channel through San Pablo Bay and Carquinez Strait and into Suisun Bay. At a current depth of −35 feet, the channel provides only minimum navigable depth for a world tanker fleet which boasts drafts up to 70 feet in its largest ships. With the San Francisco Bar Channel, the entrance to San Francisco Bay, at a depth of −55 feet, tanker traffic entering the Bay is already limited to a maximum of −50 feet because of underkeel clearance requirements. The tankers entering the Bay are anchored south of the Bay Bridge and partially off-loaded (lightered) into smaller ships until favorable tides or reduced draft allow them to proceed to the shallower channel and upstream berths. This in-bay transfer process is costly and is an increased environmental risk when compared to entering the Bay and proceeding directly to a berth for off loading as in the proposed project.

There are three alternatives being considered to reduce environmental risk and increase economic benefit to the process of moving petroleum in the Bay. The first alternative is deepening the existing −35 foot channel to −45 feet from the central bay up into Suisun Bay. The second (and preferred), RMPLS alternative involves deepening of a short channel section to −45 feet and the construction of a pipeline terminal near Point Molate north of the Richmond/San Rafael bridge. The pipeline terminal connects to an existing common carrier utility pipeline that is linked to the refineries. The third alternative is a combination of the first two, involving construction of the pipeline terminal and dredging the deep draft channel to a depth of −40 feet.

There is no request for funding at this time

The Local Sponsor, Contra Costa County, thanks you for years of support for this project. We expect to commence construction of the second alternative (the RMPLS described above), this fiscal year with existing funding. We respectfully request your continuing support (non-monetary at this time) in our continuing efforts to construct and maintain the channel associated with this alternative. If, however, the second (RMPLS) alternative cannot be implemented, and another alternative is chosen, there may be a need for future project funding.

SAN FRANCISCO BAY BAR CHANNEL AND SOUTHAMPTON SHOAL CHANNEL AND EXTENSION FEASIBILITY STUDY

The San Francisco Bay Bar Channel and the Southampton Shoal Channel form the entrance into the San Francisco Bay and Delta, providing foreign and domestic deep draft merchant, military, commercial fishing and other vessel access to ports within the region. Changing deep draft vessel operations and design requires deepening the −55 foot Bar Channel and −45 foot Southampton Shoal channel. Deepening the Bar and Southampton Shoal Channel will provide safer and more efficient navigation of oil tankers entering the bay by allowing vessels to be loaded more fully, which will require fewer vessel trips to deliver the same amount of cargo. In addition, deepening of the Southampton Shoal Channel and Extension to −50 feet will allow heavily laden vessels to proceed directly to off loading facilities, rather than lightering (off loading) onto smaller ships at open water anchorages in south San Francisco Bay. The priority is for deepening of the Southampton Shoal Channel and Extension first, as the greatest benefit occurs as a result of this deepening. Language incorporating the Southampton Shoal and Extension with the San Francisco

Bar study area was introduced into the 1997 House Report by Congressman Fazio and subsequently approved with the concurrence of Chairman Myers.

Funding request

Funding of $460,000 is currently contained in the President's fiscal year 1999 budget. Contra Costa County, the Project's Local Sponsor, has recently been working with contractors on bids for portions of the feasibility study, and has found recent estimates are higher than those contained in the Project Study Plan completed for the project last year. Therefore, the County, as Local Sponsor is requesting a fiscal year 1999 budget allocation of $600,000 to complete the feasibility study.

Purpose of fiscal year 1999 funding

The purpose of fiscal year 1999 funding would be to continue the Feasibility Study. Feasibility Study activities include sediment environmental testing, navigation simulation, cultural resources analysis, study and project management, environmental and economic studies, geotechnical analysis of the channel, real estate, plan formulation activities, surveying and mapping, and design and cost estimates. In fiscal year 1998, a $600,000 allocation was made to initiate the Feasibility Study. We are requesting a fiscal year 1999 allocation of $600,000 due to study activities necessary to comply with new environmental and regulatory requirements.

PREPARED STATEMENT OF E.D. ALLEN, CHIEF HARBOR ENGINEER, PORT OF LONG BEACH, CA

I am E.D. Allen, Chief Harbor Engineer for the Port of Long Beach, California. I have been authorized by the Board of Harbor Commissioners of the City of Long Beach to represent the Port of Long Beach in regard to appropriations for the Los Angeles and Long Beach Harbors Model Study; Planning, Engineering, and Design for our on-going 2020 Plan; Los Angeles River maintenance dredging; and Reconnaissance and Feasibility Studies for beach erosion.

In addition to the following specific project appropriation requests, I am recommending the committee recognize the need for standby Corps dredging capability to supplement private contractors in the event of emergencies coinciding with available environmental windows for normal dredging. I specifically recommend a standby/training capability be funded without a minimum dredge quantity per year quota. This will allow (1) private contractors to benefit from receiving previous corps annual dredging quantities and (2) Corps of Engineers equipment to be able to be used without a project funding appropriation. As a result, minor maintenance dredging could be undertaken at the Corps' discretion for training purposes which would provide a tremendous benefit to the smaller ports and harbors. Many of the needs of the smaller ports have not been met due to the lack of a program such as this.

My more specific requests follows for listed projects.

Harbors Model Maintenance (Civil Works Budget Category—O&M)

The Water Resources Development Act of 1976, Section 123, authorized the Chief of Engineers to operate and maintain the Los Angeles-Long Beach Harbor Hydraulic Model at the U.S. Army Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi as part of the Los Angeles and Long Beach Harbors Model Study. This model encompasses both port complexes in San Pedro Bay, which, as you are aware, are ports of national significance. The hydraulic model, along with several numeric models, provide state-of-the-art methodology that can be used on the San Pedro Bay ports and on many other harbor complexes. In addition, the Port, as the local agency, is assisting in the Corps effort to provide continuous wave-gauge data by providing necessary support personnel and equipment for the maintenance of portions of the systems located at the Port.

In fiscal year 1998, $165,000 was appropriated for maintenance of the physical model of San Pedro Bay. During this time, the Port also used the model to analyze necessary navigation-related modifications to the recently completed portion of our expansion plan, as well as our upcoming expansion within the Navy Basin. This effort is being funded by the Port and is currently on-going. It is necessary that the model remain ready for service such as this. Funding in fiscal year 1999, in the amount of $165,000, would continue annual maintenance on the model. Additionally, we are requesting $400,000 of continued funding for the wave gage (prototype) data acquisition and analysis program. This program began in 1987 to develop data for the design of the 2020 Plan port expansion and navigation improvements. This program has now evolved to construction monitoring and model verification which needs to continue in order to confirm expected levels of impacts of the expansion

plans. Therefore, Congress is respectfully requested to appropriate $565,000 for fiscal year 1999 to perform this work.

Port of Long Beach Deepening, Queens Gate (Civil Works Budget Category—Construction)

The Port of Long Beach developed a long-range master plan, referred to as the 2020 Plan, which demonstrates the need for new navigation channels (Queens Gate Deepening) and additional landfill development through the year 2020.

Section 201(b) of the Water Resources Development Act of 1986 authorized construction of the 2020 Plan upon recommendations of a feasibility report and completion of a favorable Chief of Engineers Report. The Chief's Report was issued July 26, 1996 and the Office of Management of Budget has approved the Report. The first phase of the Plan was begun with the construction of the Pier J expansion project, which includes dredging the Long Beach Main Channel to at least a depth of 76 feet. This project is known as the Port of Long Beach Deepening. Together with the approach channel deepening outside the Federal breakwater, the dredging was evaluated for Federal interest in the feasibility study because it permits deeper draft crude petroleum vessels to call at the Port of Long Beach.

This project provides environmental benefits in addition to the economic benefit of transportation savings. Environmental benefits of the deepening project include a projected improvement in air quality. A deeper channel will mean that crude oil can be transported in larger, and therefore fewer, vessels. Fewer vessels, in turn, mean an estimated 25 percent reduction in air emissions compared to no project, which is a net environmental benefit. A portion of the Federal share funds were appropriated in fiscal year 1998, however an additional amount is required to complete the project. We have proceeded with our work and now are requesting the remaining Federal share to be appropriated.

Completion of Pre-construction, Engineering, and Design (PED) and construction of the first dredging increment (to a depth of 69 feet) is scheduled for fiscal year 1998 with total appropriation of $5,635,000. It is urged that the Committee approve an appropriation of $10,500,000 to fund the final increment of the Long Beach Deepening Project, which will make good on the Federal cost share and complete this project. This will allow continuous construction and dredging to the full project depth. This is the Port's highest priority project.

The landfill development of the 2020 Plan as a whole provides other environmental benefits as well. Restoration of the Bolsa Chica wetlands in nearby Orange County is a prime example. As mitigation for the creation of future port landfills, the Port of Long Beach provided over $40 million to the Federal and state agencies that are restoring the wetlands. Nearly 1,000 acres of degraded lowlands currently in oil production will be cleaned up and reintroduced to tidal influence. The restored wetlands will be one of the largest in southern California, providing valuable fish and migratory bird habitat in the midst of the heavily urbanized greater Los Angeles area.

Los Angeles River Maintenance Dredging (Civil Works Budget Category—O&M)

The Port of Long Beach also concurs with and supports the recommendation of C–MANC and the City of Long Beach with respect to Federal funding for remedial maintenance dredging to remove accumulated flood-deposited silt in the mouth of the Los Angeles River. During the storms of 1995, flood-deposited silt closed the mouth of the Los Angeles River to navigation. This restricted regularly scheduled water route transportation between the cities of Long Beach and Avalon, creating an economic emergency. Reacting to this, the U.S. Army Corps of Engineers removed 300,000 cubic yards from the channel which allowed for minimal resumption of navigation.

However, substantial quantities of silt remain in the channel, especially since the recent storms we have experienced. These silt deposits create the likelihood of future serious restrictions and safety hazards to commercial and recreational boating activity in, and adjacent to, the Long Beach Harbor District and the associated businesses in Long Beach. Such restrictions and hazards have resulted in accidents and litigation.

The Port supports the City in recommending that these silt deposits be removed on an annual basis as a scheduled work item. In the draft of "Project Plan for Los Angeles River Estuary Maintenance Dredging, Long Beach, CA, October 1994" (Draft Project Plan-1994), the Corps of Engineers estimated an average annual deposit of silt in the estuary of 485,000 cubic yards. The rate of such deposits is influenced by operational decisions at the Corps of Engineers' dams located at the headwaters of the river. It is imperative for our current operations, that a long range

remedy be found for the Los Angeles River mouth, if navigational utility and effective flood control capability is to be maintained.

It is estimated by the Corps of Engineers, that maintenance dredging of the channel to a minimum usable width requires removal of approximately 185,000 cubic yards at an annual cost of over $2,000,000. Clearing a minimum usable width does not, however, remove all shoaling that hinders navigation. An expenditure of $6,000,000 is necessary to clear silt deposits and prevent an immediate re-accumulation of material to a critical level. Congress is requested, therefore, to appropriate $6,000,000 for accomplishment of this vital removal of sediment. This work is included in the line item known as Los Angeles Long Beach Harbors in the Civil Works Budget. Please note, if there was a standby/training budget for Corps dredges that I earlier proposed, it is possible that this type of work could be more easily scheduled at Corps' discretion rather than via emergency provisions.

Reconnaissance/Feasibility Study Beach Erosion (Civil Works Budget Category—Surveys)

The Port of Long Beach also supports C–MANC and the City of Long Beach on their request for Federal funding to complete a Corps of Engineers reconnaissance study on beach erosion. In southeastern Long Beach, east of the Port's land and channels, and directly opposite the Federal breakwater, a beach and seawall protects approximately $200,000,000 worth of homes. Steady erosion had reduced the beach from an optimum of 175 feet to 30 feet prior to City's efforts in late 1994 to rebuild the beach. Winter storms continue to reduce the beach width.

The City has also experienced erosion in the west beach area. Although homes are not endangered, public improvements, including lifeguard stations, public restrooms, a bicycle and pedestrian trail, and a parking lot, are at risk. The cause of the new problem is unclear, indicating the need for a thorough study of the beach erosion problem inside the Federal breakwater.

The primary method of protecting the homes has been annual rebuilding, with the building of sand berms during high tides or expected storms. The City has invested over $5,300,000 in capital improvement projects, annual beach rebuilding, and storm protection to control the beach erosion over the past 16 years. Despite this effort, in 1989 and 1993, storm waves eroded the beach and breached the protective seawall, causing damage to homes. The City is also defending itself against a lawsuit by one of the homeowners who is claiming that the City failed to halt erosion that narrowed the beaches in front of his home to less than the desired width adopted in the 1980 Local Coastal Plan.

In fiscal year 1997, $252,000 was appropriated to complete the reconnaissance study of the beach erosion problem within the City of Long Beach. It is now requested that Congress appropriate $500,000 in fiscal year 1999 to initiate the feasibility study.

This beach erosion problem is directly related to the focusing affect the Federal breakwater has on our large commercial harbor complex and surrounding beaches.

Attached hereto is a Resolution to be adopted by the Board of Harbor Commissioners of the City of Long Beach on March 23, 1998, which contains data relating to the background of the Los Angeles and Long Beach Harbors Model Study, the 2020 Plan implementation, the Los Angeles River dredging, the beach erosion problem in Long Beach, and other related navigation and economic matters. The resolution stresses the need for Federal assistance in developing economic, technical and environmental background information essential to the design and permitting of Port facilities vital to regional and national interests. The Port of Long Beach is the largest container port in the United States and is the economic engine bringing $3.7 billion in customs receipts from both Los Angeles and Long Beach ports and jobs for 500,000 people. We are truly a port and harbor of national significance.

We kindly ask that Congress continue its support of these projects in fiscal year 1999 by appropriating the requested funds.

Thank you for permitting me the privilege of this presentation.

PREPARED STATEMENT OF DON KNABE, SUPERVISOR FOURTH DISTRICT, BOARD OF SUPERVISORS, COUNTY OF LOS ANGELES

FISCAL YEAR 1999 FUNDING FOR MARINA DEL REY DREDGING AND NAVIGATION STUDY

Los Angeles County respectfully requests that the Congress of the United States include funds in the fiscal year 1999 Energy and Water appropriations bill for the following projects, which are urgently required to preserve public safety in Marina del Rey.

Marina del Rey Entrance Channel Dredging ($6,000,000)

The U.S. Army Corps of Engineers is responsible for maintenance dredging of the Marina del Rey's entrances and main channel, pursuant to a perpetual right of way and easement agreement with the County. The last design-depth dredging of Marina del Rey occurred in 1981, with 217,000 cubic yards of material removed. Since then, contaminants in some of the Marina's sediments have prevented thorough dredging. Emergency dredging projects were conducted in 1987, 1994, and 1996, removing just enough sediment to make the entrances navigable.

This winter's severe storms have caused another emergency situation, with the south entrance being 85 percent closed and the north entrance being 75 percent closed. To reopen the north entrance, the Corps plans to remove 143,000 cubic yards of clean sediments in March and April, 1998. If the most recent shoaling in the south entrance is found suitable for open ocean disposal, that entrance may be reopened to 50 percent of its width.

The Corps is currently engaged in a feasibility study (see below) that will establish short and long-term solutions to the Marina's dredging problem. An integral part of that study is a dredged material management plan which involves removing approximately 600,000 cubic yards of sediment in 1999, returning the Marina's entrances and main channel to their design depth. The contaminated sediments will be used in a demonstration project intended to establish an environmentally safe and economically feasible solution to the Los Angeles region's contaminated sediment problem. The clean sediments will be used for beach renourishment.

The President's fiscal year 1999 budget does not include any funds to perform maintenance dredging at Marina del Rey. We are, therefore, requesting your support for an appropriation of $6.0 million to remove the 600,000 cubic yards of sediment. Without a thorough dredging in 1999, the Marina's entrances will continue to close, which could threaten the ability of the U.S. Coast Guard, the County Sheriff's Harbor Patrol, the County Lifeguards and the City and County Fire Departments to respond to emergencies. As these agencies are the critical core of the LAX Air-Sea Disaster Response Team, it is imperative that the Marina's entrances remain open and safely navigable.

Marina del Rey and Ballona Creek Feasibility Study ($520,000)

Some of the sediments creating navigational hazards in Marina del Rey's entrances contain contaminants that make dredging and disposal difficult and costly. The U.S. Army Corps of Engineers completed a reconnaissance study in 1996, which established that there is a Federal interest in solving this problem. The feasibility phase of the study is now underway with the County providing 50 percent of the necessary funding.

The study is focused on an economical and environmentally safe disposal option for the contaminated sediments, as well as on actions that can be taken in the Ballona Creek watershed that will eliminate or reduce the flow of contaminated sediments into Marina del Rey's entrance. Dedicated staff from the County, the Corps, the City of Los Angeles, the Santa Monica Bay Restoration Project, Heal the Bay, and other environmental and regulatory agencies have worked to limit the scope, time, and cost of this study. Based on the approved plan, the study will require three years to complete, at a cost of $2.7 million. As the Los Angeles County Board of Supervisors has agreed to pay 50 percent of the study's costs, we are pleased that there are funds in the President's fiscal year 1999 budget for this study. We, therefore, ask your support of the President's budget request of $520,000, for the Federal share of the cost in fiscal year 1999.

Regional Contaminated Sediment Task Force ($100,000)

A task force has been established to solve the Los Angeles region's contaminated sediment problem. To "authorize" the Corps' essential participation in the task force, a reconnaissance study, or other line item, must be approved in the fiscal year 1999 budget. Following current policy, the reconnaissance study should be funded for $100,000. As the work of this task force is critical to Marina del Rey, Los Angeles County requests your support for this item.

PREPARED STATEMENT OF BRIAN E. FOSS, PORT DIRECTOR, SANTA CRUZ PORT

In 1986, the United States Congress and the Santa Cruz Port District signed a Memorandum of Agreement "M.O.A." (joint-venture L.C.A.) on the acquisition of a sand bypass system for Santa Cruz Small Craft Harbor. This $2.7 million agreement, authorized under the Water Resources Development Act of 1984, provided

that, once in place, the system would be operated and maintained by the Port District.

The bypass project has been extraordinarily successful. The harbor, once the scene of long closures and countless accidents because of shoals and breaking surf, is now 100 percent open to navigation all year round. The federal government no longer has to appropriate yearly O&M funds as it did from 1964 to 1986. The savings over the past ten years is estimated at $9+ million. The savings over the life of the project (2014) is estimated to be well in excess of $28 million in 1986 dollars.

The Port District is quite satisfied with the operational project and will carry out its responsibilities through 2014. However, an inequity exists in the original cost-share formula, which the Port District asks Congress to give redress.

The original legislative act of 1958, H.D. 357, provided for a 64.9 percent federal share and a 35.1 percent local share of the Santa Cruz Harbor jetty and basin construction, as well as a sand bypass system to be built subsequently. It also provided for a yearly contribution by the federal government of $35,000 for operation of the bypass system.

The 1986 M.O.A. was formulated using the present value of the $35,000 yearly operating contribution through 2014. That amount was given to the Port District in a lump sum ($389,000). That amount is the subject of our request. It should have been adjusted for inflation over the period from 1958–2014.

The 1997 Congressional Energy and Water Appropriation Bill (O&M General) directed the Corps of Engineers to study this issue and report back to Congress. The Corps' San Francisco District completed that study and determined that no adjustment could be made within existing enabling language. This finding was made without prejudice, as the equities involved may indeed validate the Port District's request. Procedurally, the Port District seeks correcting language in the anticipated 1998 Water Resources Development Act.

The estimated value of the Port District's request is $1,071,000. This value excludes credit for operating funds already received ($389,000).

In exchange for correcting this financial inequity the Port District would agree to extend its operational responsibility to year 2024. The estimated O&M savings to the federal government over the period from 1986 to 2024 is estimated to exceed $38 million in 1986 dollars.

The Port District requests that $1,071,000 be appropriated contingent upon appropriate, enabling language in the 1998 Water Resources Development Act.

PREPARED STATEMENT OF THE CRESCENT CITY HARBOR DISTRICT

Chairman Domenici and Members of the Subcommittee: The Crescent City Harbor District would like to take this opportunity to thank our local Congressman, the Honorable Frank Riggs, and you, Mr. Chairman, as well as other members of the subcommittee and staff for their continued efforts to maintain funding for our much needed project.

For those unfamiliar with the our area, Crescent City Harbor is the most northerly port in California and one of California's strongest fishing harbors. Crescent City was ranked nationally as 31st in tonnage of fish landed and 43rd in the value of its catch last year by the national marine fisheries service. We were ranked higher than either Eureka/Humboldt Bay, to our south, or Brookings, Oregon, to our north.

The commercial fishermen of our area have been experiencing tidal delays in leaving the harbor because of the shallow areas in the channel between the existing federal inner harbor channel and the small boat basin where they moor. These delays also make safely accommodating larger vessels and efficient use of the harbor difficult. A reconnaissance study to determine federal interest in this project was completed in March of 1995 and has been certified by the Corps of Engineers. The general re-evaluation report has been drafted and should be submitted to South Pacific Division for approval on April 21, 1998. It calls for a 14 ft. MLLW depth. Construction is now scheduled to begin in October of 1998 as long as funding is available.

Del Norte County's economy has been seriously impacted by the decline in the timber industry and the recent federal cuts to fishing. Our unemployment rate is already at 11.9 percent. We need this funding to maintain our place among the nation's fishing ports and support our declining economy.

The Board of Commissioners of the Crescent City Harbor District asks that your subcommittee add $370,000 to the U.S. Army Corps of Engineers budget for completion of the project at Crescent City.

Thank you Mr. Chairman and members of the subcommittee for this opportunity to submit testimony.

ATTACHMENT NO. 1

[From the Times Standard, Aug. 6, 1997]

CRESCENT CITY, EUREKA RANKED

(By David Anderson)

Two North Coast fishing ports are among the top 60 in the nation, according to figures released this week by the National Marine Fisheries Service.

Crescent City ranked 31st in tonnage of fish landed and 43rd in the value of its catch. Eureka was 47th in tonnage and 54th in value.

No California port except Los Angeles' ranked in the top 10. Alaskan and Gulf Coast ports took most of the top spots.

Crescent City landed 26.3 million pounds of fish valued at $16.4 million in fish valued at $16.4 million in 1996, up from 21.8 million pounds worth $11.5 million in 1995—but down from the 28.4 million pounds and $18.4 million it reported in 1994.

Eureka landed 18 million pounds valued at $12.3 million in 1996. In 1995 it landed 15.1 million pounds worth $10.3 million, and in 1994 it landed 18.4 million pounds valued at $13 million.

Fort Bragg and Trinidad did not make the top 60 list, but Brookings, OR, just barely did, ranking 56th in weight and 60th in value with 13 million pounds of fish worth $11 million.

Since the decline of the salmon fishery, most of the North Coast lands have been groundfish such as Dover sole, sablefish, ling cod and rockfish. Crescent City also has a shrimp fishery.

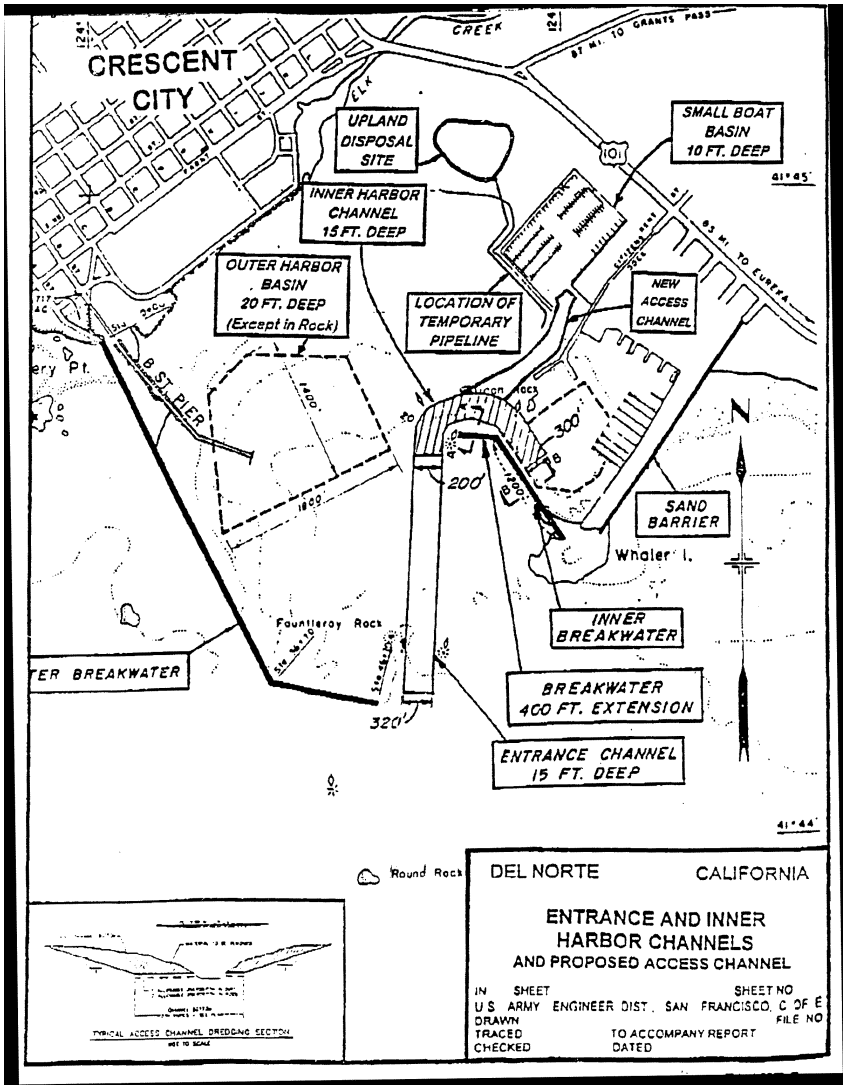
The tiny, isolated Aleutian island port of Dutch harbor, was tops in the nation, as it has for many years. With a permanent population of less than 2,000, Dutch Harbor registered landings of 699.6 million pounds in 1996, valued at $224 million.

Runner-up was almost equally small Empire, LA, which registered 431.7 million pounds—but worth only $60 million.

Gordon Helm, spokesman for the fisheries service, said Dutch Harbor landings are high because it is the port of registry for all Bering Sea and Aleution islands fishing boats. Pollock is the major fish landed, he said, and most of it is processed by factory ships, but in the small community.

The large Gulf Coast fishery is mostly shrimp and Menhaden, Helm said.

In descending order, the top fishing ports are Dutch Harbor; Empire; Cameron, LA; Seattle; Kodiak, AK; Intercoastal City, LA; Berwick, LA; Los Angeles; Pascagoula, MS; and Ketchikan, AK.



PACIFIC NORTHWEST WATER RESOURCE PROJECTS

PREPARED STATEMENT OF THE NORTHWEST POWER PLANNING COUNCIL, PORTLAND, OR

Mr. Chairman and members of the subcommittee, my name is John Etchart, and I am chairman of the Northwest Power Planning Council. I appreciate the opportunity to submit written testimony in support of the Clinton Administration's fiscal year 1999 budget request for several programs under the jurisdiction of the Energy and Water Development Subcommittee. The Council was established by Congress in 1980, and created as an interstate compact by the states of Idaho, Montana, Oregon and Washington. Its purpose is to develop a 20-year regional electric power plan to ensure for the Pacific Northwest an adequate supply of power at the lowest possible cost. The plan is designed to ensure that the region only acquires resources it needs

and that it acquires the lowest-cost resources first. The Council also was directed to develop a major program to rebuild fish and wildlife resources that have been harmed by hydroelectric development in the Columbia River Basin. The Council carries out its responsibilities under the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act), Public Law 96–501.

In 1996, Congress amended the Northwest Power Act in section 512 of the fiscal year 1997 Energy and Water Development Appropriations Act. That new provision of law, section 4(h)(10)(D) of the Northwest Power Act, extended the Council's responsibilities by requiring that it make recommendations to the Bonneville Power Administration for annual fish and wildlife expenditures in the Columbia River Basin. The Council is directed to base its recommendations to Bonneville on the findings of an 11-member independent scientific review panel that was established pursuant to section 4(h)(10)(D). Currently the amount of funding available from Bonneville for these direct fish and wildlife expenditures averages about $127 million per year.

Congress recognized in the Northwest Power Act that the resources of the Columbia River Basin are important to the region and the nation. Both the Council's power plan and its fish and wildlife program were developed under the mandates of the Act, in which Congress provided direction and the framework for the Council as a policy and planning body. Three Federal agencies under the jurisdiction of the Subcommittee, the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration, all administer programs that are critical to the Columbia River Basin. The Council works closely with all three agencies in fulfilling its statutory responsibilities to develop its regional power plan and implement its Columbia River Basin Fish and Wildlife Program. The relationship among the Council and the agencies is unique and reflects Congress' desire to provide an effective management structure for the resources in the basin. Through this arrangement, the Federal agencies and the four Northwest states share funding, implementation and regulatory responsibilities in the management of the basin's power and fish and wildlife resources.

Because of these shared and sometimes overlapping responsibilities, the Council has a continuing interest in the budgets of the three Federal agencies. The Council's fish and wildlife program is funded by a combination of revenues from electricity sales and Federal appropriations. While a significant portion of the fish and wildlife program is funded by Bonneville, the other Federal agencies also are requesting to commit approximately $150 million in appropriated funds in the basin in fiscal year 1999. A large portion of these funds, especially those appropriated to the Corps and Bureau of Reclamation for construction, operations and maintenance, will be repaid by the region's electric ratepayers through Bonneville.

Columbia River Basin Fish and Wildlife Program

The Council's fish and wildlife program is designed to protect, mitigate and enhance fish and wildlife, and related spawning and rearing grounds of the Columbia River Basin that have been adversely affected by the construction and operation of hydropower facilities. Unlike the National Marine Fisheries Service, which has specific statutory authority to recover Endangered Species Act—listed salmon runs in the Snake River, the Council's focus is much broader. The Council's mandate under the Northwest Power Act is to protect, mitigate and enhance all populations of fish and wildlife that are affected by the operation of hydroelectric facilities in the Columbia River Basin.

The Council last amended the program in December 1994. As required by the Northwest Power Act, measures in our program are based on the best available scientific knowledge and were developed with broad public involvement.

Currently, the Council is considering amending its fish and wildlife program. One primary impetus for this is a draft scientific report on the program that was released in September of 1996. In March 1995, the Council asked the Independent Scientific Group (later reconfigured and renamed the Independent Scientific Advisory Board) to review the science underlying the Columbia River Basin Fish and Wildlife Program and to propose a conceptual foundation for that program. The scientists spent more than a year and analyzed more than 4,000 pieces of literature before drawing the conclusions contained in the prepublication report that was issued last September. The report describes an approach to fish recovery that would emphasize the ecosystem inhabited by the fish at every stage in their life cycles. This approach, deemed "the normative ecosystem," would shift recovery efforts toward restoring the kind of conditions that nurture salmon and steelhead and other fish and wildlife in less-developed habitat. At the same time, the report acknowledges that development has occurred and will continue, and fish and wildlife recovery measures will require policy calls on the trade-offs among ecological needs and the cultural and economic

needs of society. The report stresses the importance of a continuum of habitats from freshwater streams, through the estuary and out into the ocean. It also suggests that core populations of salmon in particularly healthy habitat, such as the Hanford Reach in Washington State, can be used to recolonize adjacent habitat areas where salmon are in decline. The report was released for public comment, and currently is being finalized by its authors. The final report is expected to be available sometime this summer.

At the present time, the Council is in the initial stages of developing a scientific foundation for future amendments to the Columbia River Basin Fish and Wildlife Program. The scientific foundation is a set of principles that helps translate goals into ecological objectives and strategies. The Council intends to develop a foundation that will underlie and help connect the goals, ecological objectives and strategies in an amended Program. Through the scientific foundation, goals shape ecological objectives, which shape strategies. Finalizing the Independent Scientific Advisory Board's report and developing a scientific foundation will help prepare the way for the formal amendment process, which may begin later in the year.

The Northwest Power Act imposed responsibilities on Federal river, land and power agencies to act in a manner consistent with the Council's power plan and fish and wildlife program or to consider the plan and program in their decision-making "to the fullest extent practicable." The ability of Federal agencies to meet their objectives under the Act is tied directly to their funding levels and budget priorities.

U.S. ARMY CORPS OF ENGINEERS

The Council continues to support the Corps' Columbia River Fish Mitigation Program. The primary focus of the program is to reduce the mortality of juvenile salmon and steelhead as they migrate down the Snake and Columbia rivers to the ocean from their spawning grounds. While significant sums of money have been appropriated for the program over the past decade, and many improvements have been made, much work still remains. The Corps' fiscal year 1999 budget proposal for the program is $117 million, and includes funding for several critical studies and activities that are crucial to recovering, rebuilding and maintaining the anadromous fish runs in the Columbia River Basin. The budget includes adequate funding for continued testing and installation of new or improved juvenile bypass and related transportation facilities at the mainstem dams: Lower Granite, Little Goose, Lower Monumental and Ice Harbor dams on the Snake River, and McNary, John Day, The Dalles and Bonneville dams on the Columbia. The Council supports the Corps' full budget request of $117 million.

Juvenile Fish Passage Improvements

In 1987, the Council helped develop a consensus among private and public utility interests, Indian tribes, fish and wildlife interests and the Bonneville Power Administration on the need for expedited completion of new and improved fish bypass facilities at all the mainstem dams. This regional consensus resulted in an original schedule for completing these facilities by 1994. Unfortunately, several unforeseen factors have made the original schedule impossible to keep. Escalating costs and unexpected, dramatic declines in the population of several of the basin's anadromous fish runs have contributed to a longer implementation schedule for the program. This has led to new demands on the Corps to develop, test and install facilities not envisioned initially, such as extended-length bypass screens, surface bypass facilities, structural improvements in the projects to reduce dissolved gas levels when water is spilled at the projects to assist the migrating fish, and installation of passive integrated transponder (PIT) tag detectors (electronic devices being installed at some hydroelectric projects that can identify tiny electronic transmitters implanted in the bodies of some of the passing salmon).

The Corps is requesting a total of $62.707 million in fiscal year 1999 for juvenile fish passage improvements. This includes $15 million for the construction and installation of extended length screens at John Day Dam, and $31.95 million for the construction of juvenile monitoring and outfall facilities at powerhouses 1 and 2 at Bonneville Dam. The request also includes $23.2 million relating to surface bypass facilities. Of that amount, $5 million is for continued evaluation of the prototype surface bypass at Lower Granite Dam, and $9.7 million would go for the design and construction of test facilities at Bonneville Dam. In addition, the Corps' request includes $11.77 million for dissolved gas abatement activities, $8.57 million for adult fish passage improvements, $4.028 million for Snake River drawdown feasibility studies, and $3.730 million for John Day drawdown studies. The Council believes that making the Federal projects safer for juvenile and adult migrating continues to be of the highest priority, and encourages the Subcommittee to continue funding

the program at the highest possible level to ensure the planned facilities are in place at the earliest possible date.

Surface Bypass Facilities

The Council supports continued testing, and if beneficial, the development and installation of surface bypass facilities at the mainstem hydroelectric dams. These new systems direct juvenile fish over spillways and may help salmon pass the dams more quickly and avoid the pressure changes that occur when the salmon go through conventional bypass systems. The Corps has included $23.2 million in the fiscal year 1999 budget to design, test and develop surface collection and bypass systems at Lower Granite, John Day, The Dalles and Bonneville dams. The Council supports moving forward at these projects, as proposed by the Corps, and believes that surface collection facilities may offer a more efficient solution to passage difficulties at the dams.

John Day, McNary and Lower Snake River Drawdown Studies

For fiscal year 1999, the Corps is requesting $4.028 million and $3.73 million, respectively, for reservoir drawdown studies on the Lower Snake River and at John Day Dam. The funds requested for the Lower Snake River will be used to gather additional biological information and to continue detailed engineering and economic studies on drawdown alternatives, with a final decision by the Federal government expected in late 1999 or early 2000.

The activities associated with the John Day study are identified in the Corps' "John Day Drawdown Phase I Scope of Study" document that was released last December. Actual Phase I studies, if funded by Congress, will include biological, social and economic studies, as well as cost estimates of the two proposed alternatives, spillway crest and natural river, and will identify the potential physical impacts of drawdown. Provided Congress approves funding during fiscal year 1998, the Corps hopes to commence its Phase I study this spring, and expects to have it completed by the spring of 1999. The total cost of the Phase I study is expected to be $3.3 million. Phase II, the feasibility study phase, would be conducted following Phase I. The Council is aware of a considerable amount of controversy surrounding these proposed activities. The Council believes, however, that it is in the public's best interest to proceed with the studies so that valuable scientific and economic information regarding the regional effects on fish and wildlife, agriculture, local commerce, community stability, navigation, and system reliability can be compiled. This will provide a sounder basis for future decisions on whether to proceed with reservoir drawdowns.

The Council also recommends that a portion of the money requested by the Corps for John Day drawdown studies be used to investigate the feasibility of modestly lowering the reservoir behind McNary Dam. Insufficient information exists to determine whether the benefits for salmon from a minimal pool lowering at McNary Dam, which could increase spawning habitat upriver in the Hanford Reach, would be more or less than from a deeper drawdown at John Day. Accordingly, the Council believes that both should be examined by the Corps.

Council Review of the Corps' Capital Program

In the Subcommittee's fiscal year 1998 Conference Report, a provision in the joint explanatory statement was included directing the Council to conduct a review of the Corps' major fish mitigation capital construction activities proposed for implementation at the Federal dams in the Columbia River Basin. The language directed the Council to seek the assistance of the Independent Scientific Review Board in its effort, and to complete a report for Congress by June 30, 1998. We are pleased to report that we have initiated the review and are working with the Independent Scientific Advisory Board. The scientists have informed the Council, however, that they will be unable to complete their portion of the review by June 30. Due to their current heavy workload, they will complete their work in three separate installments between now and next January. The scientists are scheduled to provide the Council the first installment on May 20, 1998, and their report will include their views on the role of mainstem bypass measures in an ecosystem approach, the installation of extended length screens at John Day Dam and a review of the juvenile outfall placement and bypass system at Bonneville Dam. The second installment is scheduled for August 1998 and will include a review of surface bypass systems, especially the prototype at Lower Granite Dam, and a report on dissolved gas abatement projects. The scientists' final report is scheduled to be submitted in January 1999, and will include discussions of adult fish passage improvement projects and an integration of the major fish mitigation capital construction strategies in the context of the overall Corps program.

Although this schedule does not comply with Congress' original direction, it should still be helpful to the Subcommittee as you prepare your fiscal year 1999 bill. The two most controversial projects under review are the extended length screens at John Day Dam and the juvenile outfall project at Bonneville Dam. The Independent Scientific Advisory Board expects to complete a review of both of these projects by May 20th, and we intend to provide a report to you on these elements of the program soon thereafter. If this schedule and arrangement is not workable for the Subcommittee, please inform us of this at the earliest possible date.

Willamette River Temperature Control, Oregon

The Willamette River Basin is located in northwestern Oregon. During the last 40 years, 13 Corps of Engineers reservoirs have been constructed in the Basin to control floods, generate electricity and provide water for navigation, irrigation, improved water quality, recreation, and fish and wildlife. State and Federal agencies, including the Council, have been seeking modification of water temperatures downstream from Blue River and Cougar Lakes reservoirs to achieve more beneficial temperatures for wild spring chinook salmon, bull trout and rainbow trout. The Corps' feasibility study for the project was completed in 1995. The current estimated cost to install multi-level intake towers at the two projects is $45.2 million, which is 100 percent federally funded.

The Corps' current focus is on the Cougar Lake reservoir intake tower. The estimated cost of preconstruction, engineering and design for Cougar Lake is $4.433 million. Approximately $3 million of that has been appropriated already. Unfortunately, the Corps is requesting only $29,000 for preconstruction work in fiscal year 1999, which is far below its actual performance capability. The Council understands that the Corps has the capability to use as much as $1.7 million in fiscal year 1999. Of that amount, about $1.2 million would be used for preconstruction activities and about $500,000 to initiate construction. If the project is not allocated more than $29,000 in the next fiscal year, the Council fears that it may become sidetracked permanently. Accordingly, the Council supports a funding level of $1.7 million for this critical project during fiscal year 1999.

BUREAU OF RECLAMATION

The Bureau is proposing to spend $8.98 million in fiscal year 1999 on the Yakima River Basin Water Enhancement Project. The Council also supports this project, which will employ structural and non-structural water conservation measures to increase the reliability of the irrigation supply and enhance streamflows in the Yakima River. In addition, tribal water supply facilities will be improved and tribal economic development, fish and wildlife, and cultural programs will be enhanced.

The Council also supports the Columbia and Snake River Salmon Recovery Project, which the Bureau is proposing to fund at $13.116 million for fiscal year 1999. The majority of the funds will be used for water conservation and water acquisition (in accordance with state water law) projects in the Snake River Basin.

BONNEVILLE POWER ADMINISTRATION

The Bonneville Power Administration provides electric power (about half of the power consumed in the Pacific Northwest), transmission (about 80 percent of the region's high voltage capacity), and energy services throughout the Pacific Northwest, a 300,000 square mile service area. Bonneville markets the power produced at 30 Federal hydroelectric dams in the region, which are operated by the Army Corps of Engineers and the Bureau of Reclamation, and acquires non-Federal power and electric energy conservation resources to meet the needs of its customer utilities. Bonneville receives no annual appropriations from Congress, funding the expense portions of its budget and repaying the Federal investment in the Federal Columbia River Power System with revenues from electricity sales. During fiscal year 1999, Bonneville plans to pay the Treasury its total annual scheduled payment, which is estimated to be $614 million.

Bonneville is the primary implementor of the Council's fish and wildlife program. The budget proposed by Bonneville for fiscal year 1999, which includes operating and capital expenses, totals $2.313 billion. This is consistent with Bonneville's revised estimate of its fiscal year 1998 budget, and is consistent with its 1996 Final Rate Proposal.

Fish and Wildlife

In the fall of 1995, the Administration and Congress agreed on a fixed budget for Bonneville's fish and wildlife recovery efforts in the Columbia River Basin. Under the terms of that agreement, which was further defined and formalized last September in a memorandum of agreement signed by the secretaries of the Army, the Inte-

rior, Commerce and Energy, Bonneville will incur costs, on average, of $435 million per year for five years on fish and wildlife activities. These funds fall under a number of different categories, including direct expenditures on fish and wildlife projects, power purchases, reimbursements of appropriated funds to the Corps of Engineers and the Bureau of Reclamation, capital repayment and foregone revenues. For fiscal year 1999, Bonneville estimates that its total fish and wildlife budget will be $408.9 million.

Under the agreement, the portion of the budget related to direct expenditures, reimbursements and repayments is set at $252 million per year. The hydropower portion, however, will vary from year to year depending on winter precipitation. Based on historic water records, the value of lost hydropower in an average year was calculated at the time of the agreement to be about $183 million, bringing the total to $435 million. For fiscal years 1997 and 1998, Bonneville has estimated its total fish and wildlife program costs to be $300.8 million and $401.3 million, respectively, a significant reduction from the expected average of $435 million. This is largely due to the fact that costs attributed to lost hydropower (foregone revenues and power purchases) were much lower than expected due to a higher than average snowpack in the basin.

As mentioned earlier, in the Energy and Water Development Appropriations Act for fiscal year 1997, the Committee added a new section, (4)(h)(10)(D), to the Northwest Power Act, which requires the Council to appoint an 11-member Independent Scientific Review Panel to review fish and wildlife projects proposed to be funded through Bonneville's direct program. For fiscal year 1999, Bonneville expects to spend $110 million on this part of its program.

Relying on recommendations from the National Research Council, the Power Planning Council appointed 11 scientists to its Independent Scientific Review Panel last year. Also in accordance with the Act, the Council is in the process of establishing scientific peer review groups that will assist the Panel in its review process. The peer review groups and the scientific panel will review proposed projects and make recommendations to the Council no later than June 15 of each year. Recommendations are to be based on a determination that projects are based on sound scientific principles, benefit fish and wildlife, and have clearly defined objectives and outcomes with provisions for monitoring and evaluation of results. The Council must make the scientific panel's recommendations available to the public for review and comment, and also must consider the impact of ocean conditions and determine whether the projects employ cost-effective measures, before making its final recommendations to Bonneville for project funding. The Council is aiming to adopt its final recommendations for Bonneville in late August.

The Council takes seriously the Committee's concern that fish and wildlife funds be spent judiciously. Consequently, we are continuing to work with Bonneville and the region's fish and wildlife managers to implement the requirements of section (4)(h)(10)(D), which will help ensure that Bonneville's ratepayers' funds are spent on projects that have the greatest value in recovering and providing mitigation for the Columbia River Basin's fish and wildlife populations.

Mr. Chairman, thank you for this opportunity to share our views with you. We sincerely appreciate the thorough consideration that this subcommittee has given to the needs of the Pacific Northwest over the years.

PREPARED STATEMENT OF MIKE THORNE, EXECUTIVE DIRECTOR, PORT OF PORTLAND, OR

Mr. Chairman and Members of the Subcommittee: Thank you for the opportunity to comment on the fiscal year 1999 Energy and Water Development Appropriation. On behalf of the Port of Portland, I want to thank subcommittee members for their recognition of water resource needs.

COLUMBIA RIVER CHANNEL IMPROVEMENT PROJECT

First, I want to underscore the strong support from our region for two budget requests for the Columbia River deep-draft channel project. Included in the budget under consideration by your subcommittee are two items: $335,000 for the feasibility study in fiscal year 1999 and $300,000 for Preconstruction Engineering and Design (PED). The Port of Portland encourages the subcommittee to include full funding for both amounts. As you know, the local sponsor ports provide an equal amount for a 50–50 match for the feasibility study.

To give you a measure of the importance of the Columbia/Snake River system, here are some statistics:

—Largest wheat export gateway in the U.S.

—Second largest grain export system in the world
—Handles containers from manufacturers in more than 40 states
—Unique inland container-on-barge system that makes Lewiston, Idaho a port critical in increasing the quantities of agriculture products reaching overseas markets.

If all the wheat, barley and corn exported from the Pacific Northwest in a typical year were delivered to our docks in Portland by rail, it would require a train consisting of nearly 300,000 hopper car units stretching from Portland, Oregon to Portland, Maine. Because our region relies on a balanced rail and waterway system, I am glad to report that we have the capacity to handle these volumes easily.

But a key is an extensive waterway system, featuring deep-draft ports and an inland system reaching all the way to Idaho, to move these volumes. In fact, 41 percent of this grain tonnage moves by barge. We must have both rail and waterway to get the job done efficiently and cost-effectively.

The stakes in improving and maintaining the deep-draft outlet for this waterway system are high. All of our shipping customers will require substantial waterway expansion and efficiency improvements in order to keep pace with growing demand and increasing competition from foreign producers. This is nowhere more apparent than in the bulk and gain shipping business, where low margins mean price differentials can move the market from our domestic producers to foreign competitors.

NATIONAL AGRICULTURE PICTURE

The importance of our nation's inland and deep-draft waterways clearly is not just an issue in the Pacific Northwest. There are plenty of examples, but I will concentrate on agriculture for this statement.

As you know, the 1996 Farm Bill is phasing out the nation's agriculture program by 2002. The result is that exports, already a key to farmers, will now be even more critical for agricultural vitality in the future. Today, one-third of all farm production goes into the export market. That percentage is likely to climb.

Ports will move aggressively to meet demands of shippers. A recent study by the Department of Agriculture and the U.S. Feed Grain Council documents the transportation advantages of the waterway system in the Pacific Northwest, further underlining the national benefits of an improved Columbia River Channel. The review also makes the point that ports will need to make investments to handle the growth in grain movements in the future. Implicit in this analysis is the same point for the Corps of Engineers: Ports can do their part to invest, but those investments are wasted if the nation's basic system, as maintained by the Corps, falls into disrepair.

To remain competitive, our low-cost waterway transportation system is essential. Competition from Australia and Latin America is keen and likely to get sharper. As one example, Argentina is making large investments in its waterways to improve the competitive position of its agriculture community.

Today, we have the best commercial waterway system in the world. But we take that system for granted at our peril.

ADMINISTRATION BUDGET CUTS

Strong growth in U.S. foreign trade in recent years, coupled with innovations by the shipping lines, has produced an even more competitive environment in the maritime industry. U.S. ports operate in a complex legal framework that has placed considerable financial pressure on port expansion. That same restraint is not felt to the same degree by our overseas competitors. My point is not to argue that we undo the proliferation of environmental rules and regulations facing U.S. ports. Instead, I emphasize that Congress needs to pay even more attention to the Corps of Engineers O&M budget in the years ahead.

All of these competing pressures bring me to discuss the Corps of Engineers budget submitted by the White House. The numbers, to me, are appalling. To find a number like $700 million for new construction, you have to go back to a budget in the early 1970's. And that was in 1970 dollars.

Administration funding for all Civil Works programs will not allow the Corps to efficiently complete ongoing flood control, navigation construction, shoreline protection and mitigation programs around the country. Where the number is $3.2 billion for Civil Works, we should see an amount closer to $4.5 billion

By extending the time required to complete water resource projects, the Administration is simply expanding the eventual costs of all of these projects. Do we really think we can ultimately save money by neglecting capital assets and maintenance or by extending the time it takes to complete a project?

Before you conclude I am arguing the case for a deep-draft port alone, let me point out that my own reading of the budget this year does not create real problems

for Oregon's deep-draft system. The pain this year is felt elsewhere in locks and dams, flood control and shoreline protection. But you can be sure that the farther we get behind in these needs each year, the more pressure there will be in all elements of the water resource system in future years.

I worry that, as a nation, we are complacent about our economic well-being. A deteriorating waterway system will be a broadside hit to our livability in all regions. I hope we don't have to sustain that kind of pain to get the administration to wake up. The Corps of Engineers should be serving as the trustee of the navigation system. Unfortunately, the Corps has had too few budgetary tools to be an effective trustee of harbors and channels.

CORPS OF ENGINEERS HOPPER DREDGES

Another issue that has come before your subcommittee in the past is the operation of the Corps of Engineers Hopper dredge fleet. The Port of Portland continues to feel having the four Corps hopper dredges operating at full capacity is essential for navigation safety and the most efficient use of the nation's authorized channels. We will continue to work with the Corps and other interested parties, as well as your committee, to assure cost effective and timely dredging with the nation's hopper fleet.

Late last year, port personnel reviewed a draft report on hopper dredges by the Corps. As a general perspective, we were disappointed at what appears to be a lack of analysis in this preliminary study. For example, we saw little examination of private sector dredging capacity, overall hopper dredge use during the year or dredging capability during peak demand periods. Because of our concerns for quick response to dredging emergencies, this type of information is critical. We would hope to see this information in any follow-up Corps review.

To meet the needs of the nation's manufacturers, producers and shippers, assuring adequate channels for trade is the clear priority for the Corps dredging mission. If the Corps fleet is not maintained in an active, operations status, navigation safety and the effectiveness of our national transportation system will be at risk.

CONCLUSION

Thank you for your attention to the views of the Port of Portland. We appreciate the opportunity to discuss the importance of the Columbia River deep-draft channel, the Corps budget and the hopper dredge fleet.

PREPARED STATEMENT OF KEN O'HOLLAREN, EXECUTIVE DIRECTOR, PORT OF LONGVIEW, WA

Mr. Chairman and Members of the Subcommittee: From the earliest days of the nation, ports have had the primary responsibility for developing, operating and financing marine facilities and docks. Today, this marine infrastructure is central to our national and local economies and the linchpin for efficient transportation of goods.

Ports, whether large or small, are the economic engines that generate and support local economic development by providing transportation services, stimulating business activity and promoting investment and job creation. Ports also must generate revenue in order to be self-sufficient, a responsibility that has become increasingly challenging in recent years.

While local ports attend to the business of port terminal and industry development, we rely on the Corps of Engineers for maintenance of the navigation system and necessary expansion.

COLUMBIA RIVER CHANNEL DEEPENING PROJECT

We appreciate this committee's support to date for the Corps of Engineers study of improvements to the Columbia River deep-draft channel. This project is our region's highest marine priority and we are requesting full funding from the committee for the feasibility study in fiscal year 1999, the $335,000 requested in the President's budget. As you know, the local sponsor port provide an equal amount for a 50–50 match. In addition, we encourage the subcommittee to provide the $300,000 requested for the start-up of Preconstruction Engineering and Design (PED). This step is a key to keeping the construction schedule on time.

Greater effort to increase the capacity of this waterway is warranted in light of the preliminary economic analysis completed by the Corps to date. As another indicator of the economic and transportation vitality of our system, we have only to look at the size and volume of shipping traffic in the channel.

In fact, the marketplace demands that we act to increase the capacity of the Columbia River system. We are seeing the evidence in many ways:

Deeper Draft Vessels, Grain and Container—Increasing Vessel Size.—Since 1981, we have witnessed a 400 percent increase in the number of vessels requiring drafts deeper than the current 40 foot authorized channel. And more larger ships are being designed and built each year.

National export gateway.—The Columbia River system is the nation's largest wheat exporting gateway and the second largest grain port system in the world. We are also home to an innovative container-on-barge system that brings cargo downstream from Lewiston, Idaho. We handle bulk commodities from around the nation. On the container side, manufacturers from more than 40 states see their cargo depart from Columbia River terminals. Improving the Columbia River system means we can continue to provide these efficient trade outlets for these shippers.

Bulk import volumes and vessels grow.—Deep-draft vessels also carry import bulk commodities vital to the nation's manufacturing sectors. Channel improvement will also increase the import capacity of the Columbia River system.

Cost-effective, timely transportation.—Our customers and the marketplace demand a totally integrated, transportation logistics system. Today, ports in our region provide that competitive advantage to a number of U.S. export firms. Expansion of the Columbia River channel is a key to assuring that same level of service in the future.

Integrated system.—On the Columbia/Snake river system, we connect barge, rail and trucking with the deep-draft system. Connecting these modes creates a transportation network that works efficiently and effectively for manufacturers and producers throughout our region and around the country. Our balanced system provides essential capacity, giving shippers a valuable option when congestion is an issue at other trade gateways.

MINIMUM DREDGE FLEET

On a related issue, let me express our strong support for the operation of the Corps of Engineers hopper dredge fleet. The Minimum Dredge Fleet hopper dredges are of great importance to ports around the country and our customers include shippers, commercial and recreational fishermen. This interest is particularly keen in the Northwest, where we have a relatively small private hopper dredge sector.

The Corps' hopper dredges play a substantial role in support of those trade volumes by helping to assure safe navigation. These dredges provide responsiveness, flexible service and help assure competitive bidding to conserve federal dollars.

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to share the views of the Port of Longview on this critically important water resource project. Our nation needs a world-class transportation system and we pledge our assistance in moving ahead to keep it that way.

Thank you.

PREPARED STATEMENT OF GLENN VANSELOW, EXECUTIVE DIRECTOR, PACIFIC NORTHWEST WATERWAYS ASSOCIATION

Mr. Chairman and members of the Subcommittee: My name is Glenn Vanselow. I am Executive Director of the Pacific Northwest Waterways Association. We appreciate the opportunity to present our views on appropriations issues to the Committee. The PNWA membership includes nearly 130 organizations and individuals in Oregon, Washington, and Idaho. PNWA represents public port authorities on the Pacific Coast, Puget Sound, and Columbia/Snake River System; public utility districts, investor-owned utilities, electric cooperatives and direct service industries; irrigation districts, grain growers and upriver and export elevator companies; major manufacturers in the Pacific Northwest; forest products industry manufacturers and shippers; and tug and barge operators, steamship operators, consulting engineers, and others involved in economic development throughout the Pacific Northwest.

PNWA has a long history of working with the Committee and the U.S. Army Corps of Engineers (Corps) on projects of regional and national importance, sharing the challenge to maintain and develop our transportation infrastructure. Our members wish to thank the Committee for its support of Pacific Northwest transportation, hydropower and salmon enhancement programs and projects.

APPROPRIATIONS REQUEST

Fiscal year 1999 Civil Works Budget.—We strongly oppose the overall level of the President's fiscal year 1999 Budget request for civil works because it provides inadequate funding for other crucial Corps waterways programs nationwide. We believe

that a level of funding closer to $4.5 billion is needed to maintain the integrity of the civil works program.

Regional Navigation Operations and Maintenance.—We would like to thank the Committee for its previous support of navigation O&M (operations and maintenance) in the region's shallow, deep draft and inland navigation system. We support the Administration's funding requests for operations and maintenance (O&M) of the federally authorized navigation channels in the Columbia and Snake Rivers, Puget Sound and the Oregon and Washington Coasts. However, we encourage the Committee to increase funding for Yaquina Bay and Harbor at Newport, Oregon by $2.5 million over the $2.891 million requested.

Navigation is the least cost, most fuel efficient and least polluting mode of transportation. Navigation is the critical link that keeps the Northwest and the nation competitive in domestic and international trade and supports the commercial and recreational fishing industry. It provides significant numbers of jobs and other economic benefits both within the region and nationally. We support maintaining a strong federal role in planning, construction, operation, maintenance and funding of navigation on the inland waterways, deep draft ports and shallow draft ports. We ask the Committee for full funding for ongoing operations and maintenance (O&M) of the federally authorized navigation channels in the Columbia/Snake river system, the Oregon and Washington coastal ports and Puget Sound. Maximizing O&M is a cost-efficient means of fully utilizing the federal government's investment in channel operations.

We urge the Committee to resist those proposals that would drastically reduce Corps funding for basic services, including the maintenance of shallow and deep draft ports and inland waterways. Some 20 percent of the employment in the Northwest states is directly related to international trade. These navigation projects are among the few federal programs that are analyzed to ensure that economic benefits exceed the costs. Eliminating these programs would not be cost-effective.

Navigation Feasibility Studies and Construction.—We wish to thank the Committee for appropriating funds last year for feasibility studies on the Columbia River and in Puget Sound. We are opposed to the "full-project funding" proposal for new construction and the downward trend in funding included in the President's fiscal year 1999 Budget request for the Corps' civil works program.

The Columbia River deep draft channel is the lifeblood of the Columbia/Snake River System, which serves shippers from 40 states. To protect future growth and development of the River System, we ask the Committee to fund the requested $335,000 for the federal share of the feasibility study and $300,000 for preconstruction engineering and design for the lower Columbia River Navigation Channel Deepening. This funding would pay for the federal government's share of work necessary to investigate improving the existing 40-foot navigation channel by increasing the channel depth to 43 feet. We support a $3 million dollar increase in funding for preconstruction engineering and design and construction for the Blair Waterway Channel Deepening at Tacoma. We also support increased funding and statutory language directing the Corps to reimburse the project sponsor for eligible costs related to the East Waterway Channel Deepening at Seattle, which is proposed to be carried out during O&M dredging.

Minimum Dredge Fleet.—We encourage the Committee to maintain all four federal hopper dredges operated by the U.S. Army Corps of Engineers by rejecting plans to place the dredge WHEELER on stand-by status, and by eliminating the set-aside for private dredges. We oppose legislation that places artificial limits on the federal hopper dredges by directing increasing amounts of maintenance dredging to private dredges. Federal hopper dredge costs are artificially higher than necessary because of that set aside. We believe that Congress should reduce or eliminate the set aside to increase the efficiency of the Corps hopper dredges. We also encourage the Committee to find ways to make the Corps dredges less expensive to operate by examining recent increases in depreciation and plant increment payments.

We were disappointed in the "Draft Minimum Dredge Fleet Study" released by the Corps on October 8. We have been waiting for years for the Corps' study, expecting it to provide data and analysis that could be used to determine the requirements for the federal fleet. Our criteria for maintaining the federal fleet has been cost, capacity and responsiveness. Capacity and responsiveness were not analyzed in the study, and it appears that the Corps considers maintaining navigation channels and industry dredging companies to be of equal importance. The future of the dredge fleet is an important decision that will affect international trade and the economic well being of our region and the nation. It should be made with sound analysis. We encourage the Committee to direct the Corps to provide it with data and analysis to support the various options it described in the October 8 study.

We believe that the presence of the federal dredges keeps bids for dredging work competitive and lower in cost. We are concerned that the low number of private industry bids for work in our region could force dredging costs higher were it not for the availability of the federal dredges.

There are other ways to cut costs and increase the efficiency of the Corps' hopper dredges. Prior to fiscal year 1995, the Corps did not collect plant increment for its hopper dredges. The addition of this fee added over $4 million to the cost of performing O&M dredging of projects with the Corps' hopper dredges. Prior to fiscal year 1993, the Corps calculated depreciation of its hopper dredges over 40 years. In fiscal year 1994 the Corps changed the calculation to 50 years, reasoning that with lessened use, driven by directives to contract more work with private industry, the federal hopper dredges would last longer. However, beginning in 1995, the Corps changed its depreciation calculations again. Prior to 1995, federal hopper dredge charges to navigation projects were reduced, or "discounted," in the amount proportionate to the cost of the military features added during construction. In 1995 the Corps reduced this discount. Navigation projects are paying for depreciation on defense-related equipment, although their current defense role is not clear. This adds nearly $2 million annually to the cost of using the Corps' hopper dredges.

We believe that nearly $6 million could have been saved if the Corps had not imposed plant increment and increased depreciation charges on its hopper dredges.

Operations and Maintenance of the Region's Hydropower System and the John Day Drawdown study.—We are concerned that the President's fiscal year 1999 Budget request for construction on the Bonneville Dam powerhouse phase II and The Dalles powerhouse is insufficient. We encourage the Committee to increase funding to approximately $14 million. We also encourage the Committee to increase funding for The Dalles powerhouse construction to approximately $8 million. We support the President's requests for Operations and Maintenance at these and other regional projects. We encourage the Committee to direct the Corps to provide clear, compelling biological evidence supporting drawdown prior to release of funds for the study. We also encourage the Committee to direct the Corps to focus the John Day drawdown study on the economic, social and environmental impacts of drawdown.

We have testified in previous years that we do not believe there is biological justification for drawdowns. It is also clear that drawdown would have serious economic impacts on the region and the nation. Drawdown would eliminate important authorized purposes on the system, including navigation, hydropower production and irrigated agricultural production. The committee also should be aware that we believe that drawdown would reduce the Bonneville Power Administration's revenue generating capacity and jeopardize BPA's ability to repay its debt to the U.S. treasury after the next subscription process expires. The four lower Snake dams and John Day provide 20 to 25 percent of BPA's total energy production.

Salmon Recovery Decision Authority and Funding.—First, we support efforts to establish priorities for funding and implementation of fish and wildlife recovery projects in the Columbia River Basin Fish and Wildlife Program. Second, we support selected salmon recovery actions such as improved and enhanced smolt transportation, surface collection and other smolt by-pass facilities and habitat restoration and protection.

We support the Senator Slade Gorton's 1996 amendment to the Northwest Power Act, approved during consideration of the fiscal year 1997 Energy and Water Appropriations bill, which establishes a panel of scientists to establish priorities for funding and implementation of fish and wildlife recovery projects in the Columbia River Basin Fish and Wildlife Program. We hope that this, with the Independent Economic Analysis Board, will result in programs that will provide maximum biological benefits to listed salmon stocks and are more cost-effective.

Regional Governance.—The discussion about regional cooperation in developing salmon recovery objectives and programs has been expanded significantly. Some have proposed a three-sovereigns forum in which the federal, state and tribal governments would reach consensus on "issues of regional concern wherever they arise" within the Columbia Basin ecosystem. PNWA believes that improved coordination of federal, state and tribal fish programs may be beneficial. However, a recent draft Memorandum of Agreement (MOA) demonstrates that the three sovereigns are reaching far beyond fish to create a new layer of regional government. They intend to be the forum for decisions on land management planning, the management and use of water in the Basin, the implementation of water quality standards under the Clean Water Act, FERC hydro relicensing, and any other issues of regional concern they choose, be they fish related or not. They are creating the MOA without consulting affected stakeholders and they do not intend to include stakeholders in the consensus process. PNWA urges Congress to support collaboration within the existing authorities of the federal agencies, states and tribes, and, in the strongest terms

possible, we urge Congress to retain exclusive authority over the authorized purposes of the federal projects within the Columbia Basin.

Hanford Cleanup.—We ask the Committee to continue to adequately fund the Department of Energy cleanup of 45 years of accumulated defense waste currently stored at the Hanford site. We recognize that defense waste cleanup is a long-term project that will be most cost effective and most rigorously pursued if Hanford is a viable, operating site. Therefore, we strongly urge the Committee to support a complete, ongoing Hanford scientifically and technologically based research and operations program in order to ensure long-term funding for waste cleanup. PNWA also supports a complete and ongoing scientifically and technologically based research and operations program, including the restart of the Fast Flux Test Facility for the joint missions of national defense and medical research and isotope production to meet the demands for more effective cancer treatments.

Conclusion.—On behalf of nearly 130 members from throughout the Pacific Northwest, we thank the Committee for giving us this opportunity to review a number of issues important to the environmental and economic prosperity of our region.

PREPARED STATEMENT OF RON NELSON, CHAIRMAN, DESCHUTES BASIN WORKING GROUP OF CENTRAL OREGON

Mr. Chairman and Subcommittee Members: Thank you very much for the opportunity to submit testimony regarding the Bureau of Reclamation's Budget for fiscal year 1999. I am writing today to request that $1,000,000 be included in the Senate version of the fiscal year 1999 Energy and Water Appropriations Bill for the Deschutes Basin Working Group in Central Oregon. This amount has been included in the President's Budget request for fiscal year 1999, and we sincerely hope it will be included in your subcommittee's version of the Energy and Water Bill.

The Deschutes River is one of Oregon's most treasured resources. It drains Oregon's high desert along the eastern front of the Cascade Mountains, running from high mountain lakes into deep and dramatic canyons before joining the Columbia River. The Deschutes is one of Oregon's most important rivers. It is the state's most intensively used recreational river. It serves as the principal water sources for extensive irrigation projects in Central Oregon. And it supplies the municipal demand for one of Oregon's fastest growing cities, the City of Bend. In addition, the Deschutes embraces hundreds of thousands of acres of productive forest and range lands, serves the treaty fishing and water rights of the Confederated Tribes of Warm Springs, and harbors Oregon's largest non-Federal hydroelectric project.

Until now, the Deschutes River has shouldered all of these uses and still remained a clean and vibrant stream. If steps are not taken today, however, the entire Deschutes River Basin will almost certainly suffer beneath these increasing pressures. In fact, the signs of stress on the Deschutes River system are already showing. The National Marine Fisheries Service recently proposed listing the Deschutes River steelhead as a threatened species under the Endangered Species Act.

Fortunately, we have a forum and an outlet in Central Oregon that can contribute significantly toward the resolution of these problems and the sustainability of the basin's ecological health, the Deschutes Basin Working Group. The working group was originally formed as an ad-hoc group in 1993 by a wide cross-section of basin interests. The purpose of the group was to discuss looming threats to the basin's resources and ways of addressing them based on consensus, voluntary actions and market-based incentives.

The working group had some initial successes but lacked the power of a Congressional authorization to bring governmental and non-governmental interests to the table in the spirit of cooperation. Then in 1996, then-Senator Mark Hatfield took the ad-hoc group's concept and sponsored legislation to formally authorize it and its locally driven model as a five-year pilot project.

Legislation authorizing the Deschutes Basin Working Group was enacted in November of 1996 through provisions contained in the Omnibus Appropriations Act for fiscal year 1997 (Public Law 104–208, Division B, Title III) and the Omnibus Parks Act of 1996 (Public Law 104–333). The group was established as a five-year pilot project designed to build local consensus around on-the-ground projects that improve ecosystem health in the Deschutes River Basin in Central Oregon. The legislation authorized $1,000,000 per year for on-the-ground projects, which must be matched at least 50/50 with non-Federal funding sources. All projects must be concurred with by the Secretary of the Interior.

The President's Budget request for fiscal year 1999 includes $1,000,000 for this group through the Bureau of Reclamation, the group's lead Federal agency. The group, which includes irrigators, the Warm Springs Indian Tribe, environmentalists,

Portland General Electric Company, local businessmen, local elected officials and Federal and State agency representatives, has already developed project selection criteria and identified a number of water quality, water quantity, fish passage and habitat improvement projects that could be funded with the $1,000,000 appropriation.

Without this funding, however, the group's main purpose of securing on-the-ground ecological restoration projects will not become a reality. Therefore, we strongly and respectfully urge you to include $1,000,000 for the working group in the Senate Energy and Water Subcommittee mark for fiscal year 1999. With your support, the local, consensus-based approach being used in the Deschutes River Basin can achieve success and possibly serve as a model throughout the West for resolving contentious environmental issues before they reach the crisis stage.

Thank you again for the opportunity to testify before the subcommittee. Please don't hesitate to contact me if you have any further questions or concerns.

PREPARED STATEMENT OF JOE MOSES, CHAIRMAN, WARM SPRINGS TRIBAL COUNCIL

On the behalf of the Confederated Tribes of the Warm Springs Reservation of Oregon, I, Joe Moses, Chairman of the Warm Springs Tribal Council, hereby submit this testimony regarding the fiscal year 1999 U.S. Army Corps of Engineers Construction Budget Request to the Senate Appropriations Subcommittee for Energy and Water Development and request that it be made a part of the Subcommittee's formal fiscal year 1999 hearing record.

The address of the Confederated Tribes of Warm Springs is P.O. Box C, Warm Springs, Oregon, 97761. Our telephone number is 541–553–1161.

SUMMARY

The Confederated Tribes of Warm Springs request that fiscal year 1999 Corps of Engineers construction funding for Columbia River Treaty Fishing Access Sites in Oregon and Washington be increased by $4.6 million to provide the continued development of the fishing access sites. Without the increased funds, development of the sites will come to a halt during fiscal year 1999.

BACKGROUND

The construction of Bonneville Dam on the Columbia River in the 1930's caused the inundation of approximately forty traditional Indian fishing sites. The right of the Warm Springs Tribes to fish on the river is secured in our 1855 Treaty with the United States. In 1939, the U.S. Government pledged to the Warm Springs and other Columbia River treaty tribes to provide 400 acres of new sites on the Bonneville Pool in lieu of those inundated. However, only five "in-lieu" sites totalling forty acres were provided. In 1973, the U.S. again pledged to honor its in-lieu site promise with more and improved sites. But that pledge was also not kept, and by the 1980's, the five existing sites were even more inadequate, having become seriously overcrowded and run down. In 1988, to fulfill the U.S.'s long-standing promises and to address the conditions at the five existing sites, legislation was enacted (Public Law 100–581, Title IV) directing the U.S. Army Corps of Engineers to improve the five existing sites, to acquire and develop up to six new in-lieu sites on the Bonneville Pool, and to develop another twenty three new access sites up the river.

SITE DEVELOPMENT THROUGH FISCAL YEAR 1999

After lengthy planning and evaluation by the Corps, the number of appropriate new access sites was modified to twenty. Most of these sites are comparatively small, being perhaps two or four acres in size. In any event, Public Law 100–581 restricts the total acreage of all sites to no more than 400 acres.

The Corps finally received its initial construction appropriation and started on-the-ground work in fiscal year 1994. Since that time, three of the existing sites have been refurbished and one new site has been completed. Three new sites are expected to be completed in fiscal year 1998, and in fiscal year 1999 the two remaining existing sites and three Bonneville Pool new sites will be completed. Then, without additional funding, construction halts. With no funding requested to initiate development of additional sites, the project will essentially stop, once again without the U.S. fulfilling its obligation.

The development of these sites, from design to completion, usually spans several years, and it is our understanding that the $1.7 million requested by the Corps of Engineers for fiscal year 1999 only provides for completion of the two remaining ex-

isting sites and three Bonneville Pool sites. Beyond that, the $1.7 million does not provide for the initiation of any further site development.

REQUEST FOR AN ADDITIONAL $4.6 MILLION

We urge the Subcommittee to increase the fiscal year 1999 Corps construction budget for Columbia River treaty fishing access site development by $4.6 million, which we understand will enable the Corps to carry the project forward by initiating construction on five additional sites. With hundreds and hundreds of tribal fishermen regularly coming to the Columbia to exercise their treaty rights to engage in ceremonial, subsistence and commercial fishing, the sites rapidly fill up. Most fishermen and their families stay at least several days, and many effectively reside at the sites for extended periods, often spanning months. Space is needed for boats, cars, boat and house trailers, tents, drying nets and cleaning fish. Even with the five refurbished existing sites and the seven new sites expected to be completed by the end of fiscal year 1999, the space is sharply inadequate. In fact, the pressure for additional space is such that tribal fishermen often start using new sites before their development is complete.

Mr. Chairman, fishing on the Columbia River has been a mainstay of our culture since time immemorial. When the U.S. placed our people on reservations many miles removed from the Columbia, we expressly preserved the right in our treaties to fish on that river. The U.S. Courts have repeatedly affirmed that right, including a determination that the right to fish carries with it a right of access to the Columbia. Now that the U.S. has spent billions to erect a long series of great dams on the Columbia, and in the process moved entire towns to accommodate their lakes, we ask that the U.S. appropriate the funds to accommodate our far older need for fishing sites, living up to the laws and promises it has made to our people.

Thank you.

PREPARED STATEMENT OF DAVE WHITENER, CHAIRMAN, SQUAXIN ISLAND TRIBE

On behalf of the Squaxin Island Tribe of Washington State, I express our appreciation for the opportunity to submit testimony regarding the fiscal year 1999 Bureau of Reclamation (BOR) budget. Listed below is our

Summary of Request.—$4,000,000 for the Fish Barrier Removal and Stream Channel Restoration on Goldsborough Creek

Narrative Justification for the Request: Fish Barrier Removal and Stream Channel Restoration on Goldsborough Creek.—We seek support funding for Section 206 of the Water Resources Development Act of 1996. Section 206 authorizes funding for Aquatic Ecosystem Restoration Projects which are in the public interest and improve the quality of the environment. Based on our discussions with the Army Corps of Engineers at the National and District level, we believe the Goldsborough Dam removal and restoration project is eligible for this funding source.

This project entails the demolition of the Goldsborough Dam and restoration of natural river processes throughout the impacted reach. Goldsborough Creek drains a watershed of over 60 square miles (38,407 acres) and empties into southern Puget Sound at Shelton, located on Oakland Bay, in Mason County, Washington. The dam is located just above river mile 2 resulting in a partial or complete blockage of over 90 percent of the accessible stream miles. In addition to the approximate 14 foot height of the dam, the structure has resulted in the scouring and the degradation of the stream bed immediately below the dam of another 16 to 18 feet. This imposing physical barrier sits today where previously existed a rapids which was passable by anadromous fish.

The dam is in a state of disrepair, and requires extensive annual maintenance. It could require a complete reconstruction or removal in the next few years. Bedload has built up behind the dam, completely filling the pool. This could result in a catastrophic release of sediment if the dam failed, damaging fish life and imperiling human life and property downstream. Simpson Timber Company, the owner of the dam, has conducted an engineering feasibility study and determined that dam removal is possible and only marginally more expensive than the cost of stabilizing the existing dam and providing adequate fish passage.

The solution calls for a three step plan to include removal, repair and restoration. This would include complete emergency removal of the structurally weakened Goldsborough Dam, construction of a series of weirs to form steps in the river to reestablish a more gradual gradient in the stream bed, and riparian restoration to improve ecosystem functioning along with restoration of natural watershed processes and bedload transport.

The project has the potential to contribute to the recovery of endangered fish species by restoration of unimpeded migration access for anadromous fish to the entire watershed. In addition, Simpson Timber Company, the largest landowner in the watershed, is developing a Habitat Conservation Plan for salmon consistent with the Endangered Species Act. Thus, any 206 project would contribute to other Federal recovery efforts already under way.

The ACOE is proceeding with development of a Preliminary Restoration Plan (PRP), an initial evaluation of the project. On behalf of an extended network of project partners, including Mason County, the City of Shelton, Washington Department of Fish and Wildlife, Washington Department of Ecology, U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Trout Unlimited, the South Puget Sound Salmon Enhancement Group, Simpson Timber Company, and others, the Tribe is seeking to assure that funding will be available to complete this project. We request that language be added to Section 206 appropriations authorization which directs the ACOE to make every effort to give special consideration to this project.

In conclusion, the Squaxin Island Tribe appreciates the Committee's consideration of our request and we are hopeful that this cooperative effort will be funded to initiate such a worthwhile project.

Thank you.

OHIO RIVER NAVIGATION SYSTEM AND OTHER INLAND WATERWAY PROJECTS

PREPARED STATEMENT OF JOSEPH E. LEMA, VICE PRESIDENT, MANUFACTURERS AND SERVICES DIVISION, NATIONAL MINING ASSOCIATION

The National Mining Association represents companies which produce coal, metallic minerals, and other nonmetallic minerals, and which are engaged in manufacturing and supplying mining and minerals processing equipment, machinery, materials, and services.

ENVIRONMENTAL RESTORATION PROGRAM

The NMA is proud of its leadership in initiatives to restore ecosystems degraded by mines abandoned prior to the passage of the Surface Mining and Reclamation Act. With respect to hardrock mining, NMA recently signed a memorandum of understanding with the Western Governors Association for the Abandoned Mine Lands Initiative, which provides an effective framework for partnership for environmental restoration between the industry and the states. NMA is pleased that the Corps of Engineers is partnering with the Office of Surface Mining, other Federal agencies, state agencies, and universities to restore streams that have been impacted by acid drainage from abandoned mines. The Corps has responded enthusiastically to this mission with the broad authority for aquatic ecosystem restoration granted by Section 206 of the Water Resources Development Act of 1996 and other project specific authorities. Corps partnerships are already working in the Appalachian region and new partnerships are forming with state governments for restoration of streams in several western states. We urge your continued support of these Corps programs. In addition, we request funding for the Acid Drainage Technology Initiative (ADTI) in the amount of $2 million in fiscal year 1999 to develop the next generation of technologies to control acid mine drainage. We believe this research is vital to the Corps' work to restore valuable aquatic ecosystems throughout the Nation.

NAVIGATION PROGRAM

The NMA requests that fiscal year 1999 appropriations be approved for the construction of inland waterways projects, and the completion of an important, multiyear feasibility study of projects on the mainstem of the Ohio River identified below:

Ohio River:	
Olmsted Locks and Dam	Construction of locks and dam incorporating twin, 1,200-foot by 110-foot lock chambers to replace Locks and Dams 52 and 53.
McAlpine Locks and Dam	Construction of a 1,200-foot by 110-foot lock chamber in addition to a similar chamber now in place.

Ohio River Mainstem Study, Pittsburgh to Cairo, Illinois.	Completion of an ongoing multi-year feasibility study being performed by the U.S. Army Corps of Engineers.
Kanawha River:	
Marmet Locks and Dam	Construction of an 800-foot by 110-foot lock chamber matching a similar lock at Winfield downstream, which opened to navigation in 1997.
London Locks and Dam	Rehabilitation of obsolete structure.
Monongahela River: Locks and Dams 2, 3 and 4.	Construction of replacements for Locks and Dams 2 and 4 and removal of Lock and Dam 3.
Tennessee River: Kentucky Lock and Dam	Construction of an additional 1,200-foot by 110-foot lock chamber.

THE OHIO RIVER AND CONNECTING SEGMENTS OF THE KANAWHA, MONONGAHELA, AND TENNESSEE RIVERS ARE VITAL BARGE FREIGHT ROUTES FOR DISTRIBUTING COAL AND OTHER FREIGHT COMMODITIES

The Ohio River is a principal corridor for distributing coal and mineral commodities carried on intermodal truck-barge and rail-barge routes in eastern and midwestern states. It provides a corridor especially expansive by virtue of its connections with other commercial freight-carrying rivers in the Ohio River Basin, in particular the Monongahela, Kanawha, Big Sandy, Green, Cumberland, and Tennessee Rivers, together with its important linkage with the Mississippi River furnishing continuity of barge traffic to the southern states and the Gulf of Mexico. Table 1 below shows how barge freight has been growing on selected rivers in the Ohio River Basin from 1987 to 1996.

River	1987	Barge Freight Traffic [1] (million tons)		
		Coal	All Commodities	
		1996	1987	1996
Ohio River Mainstem [1]	115	134	197	237
Kanawha River	12	16	19	25
Monongahela River	29	33	33	37
Tennessee River	20	18	42	46

[1] Source: Estimated Waterborne Commerce Statistics for Calendar Year 1996, U.S. Army Corps of Engineers, October 1997.

[2] Includes traffic utilizing all, or part, of the Ohio River. Much Ohio River barge freight traffic originates or terminates on other rivers in the Ohio River Basin, including those shown.

It is likely that power generation will increase at an annual rate of 1.5 percent to 3.0 percent in the near term, and coal is the low cost fuel of choice for generating 56 percent of the electricity consumed in the U.S. Consolidated Rail Corporation (Conrail) will be divided among CSX Transportation and Norfolk Southern Corporation during 1998. Shippers in the service area formerly served by Conrail will likely place new emphasis on seeking intermodal rail-barge alternatives to all-rail movements as they search for competition in regard to transportation service.

FULL UTILIZATION OF THE INLAND WATERWAYS SYSTEM, IN PARTICULAR, THE OHIO RIVER AND ITS TRIBUTARIES AND CONNECTING RIVERS, SERVES THE NATION IN MANY WAYS

The inland waterways, in particular, the Ohio River and its Ohio River Basin tributaries and its waterways connections to points outside of the Basin, contribute to many key objectives. They:

—provide that "shippers and consumers realize over $2.2 billion annually in savings as a result of using the waterways of the Ohio River System over more costly modes of transportation" Commerce on the Ohio River and Its Tributaries, Ohio River Navigation System Report, 1996, U.S. Army Corps of Engineers;

—are responsive to energy and environmental goal, e.g., "as a consequence of being less energy intensive than other modes, on a ton-mile basis water transport also produces less air pollution—and is usually quieter." "The less energy used, the less air pollution produced." Environmental Advantages of Inland

Barge Transportation, August 1994, U.S. Department of Transportation, Maritime Administration; and,

—enhance our Nation's status in relation to international commerce, i.e., "our ability to compete in the global economy is contingent upon our ability to efficiently transport raw and finished products and commodities." "We have the best, most efficient waterways system in the world." Inland Waterways Users Board Eleventh Annual Report to the Secretary of the Army and the United States Congress, August 1997.

Those views underscore the high benefits of a sound inland waterways freight transportation network. It is critical for under-capacity, obsolete locks and dams, which are the control points for safe and efficient use of the waterways system to be upgraded or replaced in a timely manner to assure that the benefits of a sound waterways system are not lost, and importantly are possible under increasing demand for freight transportation service in the years ahead.

BARGE FREIGHT ON THE OHIO RIVER NEEDS HIGHER LOCK CAPACITY

Barge freight operations on the Ohio River from its mouth at the confluence of the Ohio and Mississippi Rivers at Cairo, Illinois to its headwaters at the confluence of the Allegheny and Monongahela Rivers at Pittsburgh have demonstrated a need for additional lock capacity. The river barge freight tonnage has increase substantially since the mid-1980's, resulting in costly delays at many of the 21 lock and dam projects, which now control navigation by commercial barge tows carrying commodities in six states—Illinois, Indiana, Kentucky, West Virginia, Pennsylvania, and Ohio—in which the river is located, and in the expansive Ohio River Basin where the Ohio River is joined by other commercial waterways establishing an extensive freight distribution network.

The replacement of Locks and Dams 52 and 53 with a single, new twin 1,200 foot by 110 foot lock and dam project located between the Ohio River junctions with the Mississippi River and the Tennessee River will reduce the number of controlling lock and dam projects to 20. This will furnish a significant improvement for barge traffic in the river segment just above the mouth of the Ohio River. The river represents a lengthy route serving heavy freight movements across eastern and midwestern states, and barge tows utilized for moving Ohio River commerce perform most efficiently when they consist of 15 barges lashed together with three-barge widths and five-barge lengths in tows pushed by towboats. Lock chambers 1,200 feet long by 110 feet wide are required in order to accommodate barge tows uniformly, enabling single passes by the barge tows through each of the projects controlling their movements, necessitating a systems approach to the development of warranted lock and dam improvements.

Table 2 shows trends in Ohio River barge freight tonnage from 1986 to 1996 on four segments of the river from its headwaters to its mouth. In 1996, the tonnage passing through eight lock and dam projects between Huntington, West Virginia and Paducah, Kentucky was extremely high and significantly higher than the tonnage in 1986. Of those eight projects, Smithland now has twin lock chambers which are 1,200 feet by 110 feet and McAlpine is scheduled for similar locks to be built under previous project authorization. It is now timely to schedule construction projects at the remaining six points in that stretch of the lower Ohio River, specifically at the present J.T. Myers, Newburgh, Cannelton, Markland, Meldahl, and Greenup projects, which each have 1,200-foot main chambers and 600-foot auxiliary chambers.

TABLE 2.—1986–1996 OHIO RIVER TRAFFIC AND LENGTH OF NAVIGATION LOCK CHAMBERS AT SELECTED SEGMENTS BETWEEN PITTSBURGH & CAIRO, IL

[M = Main and A = Auxiliary lock]

Lock and Dam Project on segments of the Ohio River	Locks [1] (Length of lock)	Total Freight in Ohio River barges (1,000 tons)	
		1986	1996
Confluence of Allegheny and Monongahela River into Ohio River at Pittsburgh			
Emsworth to Montgomery	600 ft. (M) 360 ft. (A)	17,649	23,424
New Cumberland	1,200 ft. (M) 600 ft. (A)	24,217	36,584

TABLE 2.—1986–1996 OHIO RIVER TRAFFIC AND LENGTH OF NAVIGATION LOCK CHAMBERS AT SELECTED SEGMENTS BETWEEN PITTSBURGH & CAIRO, IL—Continued

[M = Main and A = Auxiliary lock]

Lock and Dam Project on segments of the Ohio River	Locks [1] (Length of lock)	Total Freight in Ohio River barges (1,000 tons)	
		1986	1996
Junction of Kanawha and Ohio Rivers at Gallipolis			
Robert C. Byrd to Greenup	1,200 ft. (M) 600 ft. (A)	36,763	59,406
Junction of Big Sandy and Ohio Rivers at Huntington			
Greenup to J.T. Myers	1,200 ft. (M) 600 ft. (A)	44,471	67,262
Smithland	1,200 ft. (M) 1,200 ft. (A)	75,671	85,077
Junction of Tennessee and Ohio Rivers at Paducah			
Olmsted [1]	1,200 ft. (M) 1,200 ft. (A)	84,355	94,052
Confluence of the Mississippi and Ohio Rivers at Cairo, Illinois			

[1] All lock chambers are 110 feet wide except Emsworth, Dashields and Montgomery below Pittsburgh and above New Cumberland are 56 feet wide.

[2] Olmsted is under construction now and will replace Locks and Dams 52 and 53 with twin 1,200 foot by 110 foot lock chambers at the new site.

PREPARED STATEMENT OF R. BARRY PALMER, EXECUTIVE DIRECTOR, ASSOCIATION FOR THE DEVELOPMENT OF INLAND NAVIGATION IN AMERICA'S OHIO VALLEY

Mr. Chairman and Members of the Subcommittee: I am Barry Palmer, Executive Director of DINAMO, the Association for the Development of Inland Navigation in America's Ohio Valley. DINAMO is a multi-state, membership based association of business and industry, labor, and state government leaders from throughout the Ohio Valley, whose singular purpose is to expedite the modernization of the lock and dam infrastructure on the Ohio River Navigation System. Largely through the leadership of this subcommittee and the professional efforts of the U.S. Army Corps of Engineers, we in the Ohio Valley are beginning to see the results of 17 years of continuously hard work in improving our river infrastructure.

Lock and dam modernization at Robert C. Byrd Locks and Dam, Grays Landing Lock and Dam, Point Marion Locks, and Winfield Locks are largely complete. These projects were authorized for construction in the Water Resources Development Act of 1986. Last November we stood at the site of the Winfield Locks and Dam to dedicate a new, larger lock facility. These four projects are fully operational, although some final stages of construction are still underway. The Olmsted Locks and Dam project, Ohio River, IL/KY, is also fully under construction. Construction to build twin 110 foot by 1,200 foot locks is in full gear, thanks to the appropriations last year for fiscal year 1998.

Substantial problems remain, however, for adequate funding of improvements at Lower Monongahela River Locks and Dams 2, 3 and 4, PA; McAlpine Locks and Dam, Ohio River, IN/KY; Marmet Lock, Kanawha River, WV; and for the Kentucky Lock, Tennessee River, KY. The construction schedules for all of these projects have been severely constrained. Completion dates for the Lower Mon project have been delayed 6 years from 2004 to 2010. For McAlpine Lock the completion date has been delayed five years from 2002 to 2007. The current completion date for the Marmet Lock project is 2009, but this project with adequate funding could be completed two years ahead of current schedule and fully operational in 2006. For the Kentucky Lock addition, we have seen three different construction schedules. Two completion date schedules would complete this project in 2012 or in 2017. In fact, if the Kentucky Lock project were on an "efficient," or "optimum" schedule, the project could be completed by 2008.

All of these construction projects, in addition to the Olmsted Locks and Dam, could be completed by 2008 or earlier. Also, monies from the Inland Waterways Trust Fund could finance 50 percent of the costs of these projects while keeping the

Trust Fund in the black. The real challenge then is to complete these lock and dam construction projects by 2008 or earlier by putting them on an "efficient" construction schedule.

Delaying the construction of these vitally needed infrastructure investments is a terribly inefficient practice. Inefficient construction schedules cost people a lot of money. A recent study by the Institute for Water Resources concluded that $1.02 billion of cumulative benefits (transportation savings) for the aforementioned five lock and dam modernization projects on the Ohio River Navigation System and the Inner Harbor project in New Orleans harbor on the Lower Mississippi River have been lost forever. The benefits foregone represent the cumulative annual loss of transportation cost savings associated with postponing the completion of these projects from their "optimum," or "efficient" schedule. In addition, this study concludes that $682 million of future benefits that will be foregone based on fiscal year 1999 schedules could be recovered if funding is provided to accelerate design and construction activities in accordance with "efficient" schedules.

In addition the construction cost of these six projects has increased by $246 million when compared to the 1995 construction schedule. Of this amount, the Corps estimates that $157 million of the cost increase associated with three projects (Marmet, Kentucky, Inner Harbor) could be avoided if funding is provided to allow their design and construction activities to resume under an "efficient" schedule.

Attached to this statement are two charts relating to monies needed for construction of Ohio River Navigation System projects on an "efficient" schedule—Chart A and Chart B. Chart B points out two construction schedules provided by the U.S. Army Corps of Engineers for navigation projects on the Ohio River Navigation System. One schedule uses the fiscal year 1999 budget submission as the basis for future improvements. The other is an "Efficient" or "Optimum" schedule, whereby each lock and dam modernization project in the region could be constructed by 2008 or earlier with adequate funding.

We ask this distinguished subcommittee to fund lock and dam modernization objectives in the Ohio Valley in accordance with the "Efficient Construction Schedules" of the U.S. Army Corps of Engineers. For fiscal year 1999 DINAMO is requesting funding for each project as follows:

Recommendations for fiscal year 1999

1. For the Robert C. Byrd Locks and Dam modification project, formerly the Gallipolis Locks and Dam on the Ohio River, OH/WV, about $10,600,000 for continued construction.
2. For the Winfield Lock Replacement on the Kanawha River, WV, $4,500,000, for continued construction of the lock and relocations related to environmental mitigation.
3. For the Olmsted Locks and Dam, replacing Locks and Dams 52 and 53 on the Lower Ohio River, IL/KY, $59,000,000, for continued construction of the twin 110 foot by 1,200 foot locks and design of the new gated dam.
4. For improvements to Monongahela River Locks and Dams 2,3 and 4, PA, $30,00,000, for continued construction of the Dam 2 left abutment and river wall, leading to construction of new Dam 2.
5. For the McAlpine Lock Project on the Ohio River, IN/KY, $6,000,000 to continue design of the new 110 foot by 1,200 foot lock addition and for construction of wharf improvements.
6. For the Marmet Lock Replacement on the Kanawha River, WV, $9,000,000 for real estate acquisition and for continuing Plans and Specifications on the main construction contracts.
7. For the Kentucky Lock Addition on the Tennessee River, KY, $11,500,000 to continue design on the new highway and bridge work and for relocation and construction of the TVA tower.
8. For the Ohio River Mainstem Study, including studies related to modifications of John T. Myers, Newburgh, and Cannelton Locks and Dams, $10,150,000. This level of funding is needed to complete the feasibility studies leading to an authorization report enabling construction of additional capacity for the John T. Myers, Newburgh, and Cannelton Locks and Dams, Ohio River, IN/KY. Also the Corps of Engineers needs to initiate studies to determine where additional improvements may be needed in future years along the Ohio River Navigation System.

DINAMO has been a participant in presenting testimony annually to this subcommittee for more than fifteen years. We started with requests to construct new locks at the Gallipolis Locks and Dam on the Ohio River, OH/WV and to initiate funding of feasibility studies for other locks and dams on the Ohio River Navigation System. Since 1981 we have made considerable headway. Gallipolis is now complete and it has been renamed the Robert C. Byrd Locks and Dam because of our great

champion. Some projects have undergone major rehabilitation, others are complete, and still others need to be completed. We have participated fully in the process. But at no time has the U.S. Army Corps of Engineers been more in peril of losing its major responsibility of providing innovative engineering services on tough problems for this nation because of an unwillingness of an Administration to provide funds to deliver essential government services.

Expenditures for lock and dam modernization are an investment in the fundamental infrastructure of this nation. The Corps of Engineers construction budget for fiscal year 1999 is about $840 million less than the $1.47 billion Congress provided for fiscal year 1998. Mr. Chairman, we have great confidence in the Corps of Engineers and urge your support at a funding level more in line with the real water resources development needs of the nation. Last year Congress provided nearly $4.1 billion for the Corps of Engineers program and 50 new construction starts for water resources development projects that represent an additional investment of $2.7 billion. It is clear that funding for the Corps program should probably be increased to levels closer to $4.6 billion.

We thank you for the opportunity to present this request and our thoughts on these matters.

FISCAL YEAR 1999 FUNDING OF OHIO VALLEY LOCK AND DAM MODERNIZATION PROJECTS

	Fiscal year 1999 Energy and Water Development Appropriations Act	Administration fiscal year 1999 budget request	Funding at efficient level of construction
Construction:			
Robert C. Byrd locks and dam, Ohio River, OH/WV	$5,356,000	$7,000,000	$10,600,000
Grays Landing locks and dam, Monongahela River, PA	2,900,000	.....	.....
Winfield lock, Kanawha River, WV	8,500,000	4,500,000	4,500,000
Olmsted locks and dam, Ohio River, IL/KY	98,440,000	54,500,000	59,000,000
Locks and dams 2,3, and 4, Monongahela River, PA [2]	[1] 18,200,000	4,500,000	30,000,000
McAlpine lock, Ohio River, IN/KY [2]	6,720,000	1,000,000	6,000,000
Marmet lock, Kanawha River, WV [2]	1,830,000	1,500,000	9,000,000
Kentucky lock addition, Tennessee River, KY [2]	4,000,000	.....	11,468,000
London lock, Kanawha River, WV	1,000,000	1,700,000	1,700,000
Surveys: Ohio River Main Stem Study (John T. Myers/Newburgh/Cannelton)	8,800,000	10,150,000	10,150,000
Totals	155,746,000	84,850,000	142,418,000

[1] Includes carry over of funds of $5.5 million.
[2] Targeted priorities by DINAMO.

Appropriation
Fiscal Year 1997/98
Numbers shown in the $ Millions

Budget Submissions and Efficient Construction Scheduling
Inland Navigation Construction Projects
B=Budget Submissions E=Funding at Efficient Levels of Construction
Numbers shown in the $ Millions

CHART B

Project	Thru 1997	FY 1998		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	TOTALS FROM FY 1999-2008	COMPLETE
Locks and Dams 2, 3, & 4 Monongahela River, PA	$42.226	$18.2	B: $4.5	$18.700	$27.700	$55.600	$85.000	$82.1000	$92.900	$100.000	$112.000	$50.000	**$628.500**	2010
			E: $30.0	$76.000	$83.00	$80.000	$75.000	$76.000	$80.000	$70.000	$65.000	$16.000	**$651.000**	2008
McAlpine Lock Ohio River, IN/KY	$13.766	$6.72	B: $1.0	$8.310	$6.000	$14.960	$35.000	$65.000	$50.000	$42.000	$25.924	-0-	**$247.924**	2007
			E: $6.0	$35.500	$51.000	$65.000	$51.400	$28.000	$11.024	-0-	-0-	-0-	**$247.924**	2005
Kentucky Lock Tennessee River, KY	$9.226	$4.0	B: -0-:	NOT IN FISCAL YEAR 1999 BIDGET											
			E: $11.468	$14.934	$21.646	$37.664	$82.489	$76.619	$77.860	$88.926	$56.937	$2.320	**$470.863**	2008
Marmet Locks and Dam Kanawha River, WV	$9.850	$1.83	B: $1.5	$4.500	$7.300	$10.800	$32.500	$46.000	$52.000	$52.000	$46.000	$22.531	**$275.131**	2009
			E: $9.0	$12.800	$13.400	$27.200	$47 900	$58.400	$66.100	$32.000	$8.500	-0-	**$275.300**	2007
Olmsted Locks and Dam Ohio River, IL/KY	$242.020	$98.44	B: $54.5	$45.558	$41.894	$76.010	$104.100	$86.100	$94.500	$86.400	$47.000	$40.968	**$677.030**	2009
			E: $59.0:	$55.000	$41.000	$68.000	$87.000	$83.000	$87.000	$81.000	$62.000	$55.000	**$678.000**	2009
London Locks and Dam Kanawha River, WV	$0.215	$1.0	B: $1.7	$1.500	$8.000	$7.300	$0.486	-0-	-0-	-0-	-0-	-0-	**$18.986**	2003
			E: $1.7	$1.500	$8.000	$7.300	$0.486	-0-	-0-	-0-	-0-	-0-	**$18.986**	2003
Winfield Locks and Dam Kanawha River, WV	$204.366	$8.5	B: $4.5	$1.800	$1.600	$1.352	-0-	-0-	-0-	-0-	-0-	-0-	**$9.252**	2002
			E: $4.5	$1.800	$1.600	$1.352	-0-	-0-	-0-	-0-	-0-	-0-	**$9.252**	2002
Robert C. Byrd Locks and Dam Ohio River, OH/WV	$337.892	$5.356	B: $7.0	$8.700	$8.000	$4.500	$0.878	-0-	-0-	-0-	-0-	-0-	**$29.078**	2004
			E: $10.6	$9.700	$6.200	$2.578	-0-	-0-	-0-	-0-	-0-	-0-	**$29.078**	2002
Grays Landing Locks and Dam Monongahela River, PA	$174.094	$2.9	B: -0-											
			E: -0-											
Ohio River Main Stem Study	$14.994	$8.8	B: $10.15											
			E: $10.15											
TOTALS	**$1,048.649**	**$155.746**	**B:$84.85**	**$89.068**	**$100.494**	**$170.252**	**$257.964**	**$279.200**	**$289.400**	**$280.400**	**$230.924**	**$113.499**	**$1,885.901**	
			E:$142.418	**$207.234**	**$225.846**	**$289.094**	**$344.275**	**$322.275**	**$321.984**	**$271.926**	**$192.437**	**$73.320**	**$2,380.403**	

SOUTHWEST U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF BEN H. NELSON, PRESIDENT, COASTAL OYSTER LEASEHOLDERS ASSOCIATION

I am Ben H. Nelson, President of the Coastal Oyster Leaseholders Association, a group of oyster producers who own, lease and operate private oyster leases in the Galveston Bay Complex of Texas (Galveston, East Galveston and Trinity Bays). The Galveston Bay Complex is the only bay system in Texas where there are private oyster leases.

By operating a private oyster lease, we are able to provide fresh oysters in the shell to the market year round, and can, therefore, assure a steady supply of shellstock (oysters in the shell) to the consuming public throughout the nation.

Adequate navigation channels are most essential to our operations, as well as to the oyster harvester-gatherers who operate in the bays only during the permissible open seasons, as if we cannot get from out docks to the oyster leases or reefs and return with our catch, we won't be in business long.

The oyster processors located at Smith Point employ over 200 employees and harvest, process and ship about 25 percent of the total Texas oyster harvest. My wife and I employ 125 of these employees.

There are several navigation channel improvements that are of prime concern to us upon which I would like to offer my comments:

TRINITY RIVER CHANNEL TO LIBERTY-VICINITY SMITH POINT

This is an old, authorized channel that runs from the Houston Ship Channel, easterly to the east shore of Trinity Bay and along that shoreline to Anahuac, passing through the tip of Smith Point en route. The oyster luggers working out of the Pix Bayou Docks at Smith Point have to traverse a section of this channel on the way to their leases and the public oyster reefs. Just across from the Chambers County Robbins Park, this channel has shoaled up to the point where it is nigh on impossible to get a loaded oyster lugger through it, except at high tide, and then the channel is a meandering, weaving, snaky, small ditch that causes a lot of boat captains to run aground and when one boat gets stuck, then all boats behind them are prevented from going in the channel.

We are working closely with our Congressman, Nick Lampson, to find some emergency funding for the immediate clearance of the absolutely essential segment, depth and width of this channel, just to get us by for the near future. We hope and pray that we can find these funds in the very near future, otherwise our operations will be shut down.

On the longer term, we hope to see the maintenance dredging of this channel from out in the bay through Smith Point (the first in 25 years) be authorized and funded in the regular course of congressional process in time to "do this job right", get this important segment of this channel on a regular maintenance dredging routine.

At this point, we would deeply appreciate (a) any assistance you or the committee members could give to Cong. Nick Lampson in his search for emergency funding, and (b) early approval of the funds necessary for the regular maintenance dredging of the required segment of this channel.

WALLISVILLE SALT WATER BARRIER PROJECT

Although we have mixed emotions about the Wallisville Salt Water Barrier Project, we support congressional funding of it's completion. We do understand its importance to the raw water supply for the Houston metropolitan area, as well as to the agricultural, industrial and municipal consumers of our own area.

CEDAR BAYOU PROJECT(S)

At present, there is an authorized navigation channel from the Houston Ship Channel to Mile 3 or 4 of Cedar Bayou, where the Chambers-Liberty Counties Navigation District is the local sponsor. This channel is in pretty good shape, and we are supporters of that project. In addition, there is a new navigation district (Chambers County-Cedar Bayou Navigation District) has just been created to carry this channel from Mile 3 or 4 up to Mile 11 at the State Highway 146 bridge over Cedar Bayou.

This District is in the preliminary phases of investigation and planning, and probably will be coming before you during the next Session of Congress.

We support their efforts, as the improvements to Cedar Bayou will provide water transportation to a growing industrial base on its East bank (in Chambers County) and contribute mightily to our county's overall ad valorem tax base, employ hun-

dreds of Chambers Countians, and have a significant positive impact on our local economy.

SUMMARY

Immediate emergency funding of the severely impacted segment of the TRINITY RIVER CHANNEL TO LIBERTY is extremely vital to our economic existence in Smith Point and any help you and your Committee can give Congressman Lampson in his search for these elusive funds will be appreciated.

We are looking forward to funding for the maintenance dredging of the TRINITY RIVER CHANNEL TO LIBERTY in the regular course of business; but would be overjoyed with funding this year, as "our ox is in the ditch".

We support the completion of the WALLISVILLE SALT WATER BARRIER.

We support the, yet to be requested, authorization and funding of a navigation project for the upper stretch of CEDAR BAYOU.

We appreciate the opportunity to present our Statement to you.

PREPARED STATEMENT OF GEORGE WILLCOX, GENERAL MANAGER, CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT

Mr. Chairman and Members of the Committee: My name is George Willcox, and I am General Manager of the Chambers-Liberty Counties Navigation District.

Chambers-Liberty Counties Navigation District supports the level of capability expressed by the U.S. Army Corps of Engineers for projects located in the Trinity River Basin and the Trinity-Galveston Bay Complex.

WALLISVILLE SALTWATER BARRIER PROJECT

The purpose of the project is to prevent saltwater intrusion from the Trinity and Galveston Bay Complex into the freshwater supply from the Trinity River. It is vital to the protection of the freshwater supplies of the City of Houston as well as several rural canal systems including C.L.C.N.D. The C.L.C.N.D. system supplies water for agricultural irrigation, to the Anahuac National Wildlife Refuge for wildlife enhancement and to the City of Anahuac and the Trinity Bay Conservation District for treatment for municipal use.

The barrier is located on the Trinity River near the Trinity-Galveston Bay Complex. It is down stream of Lake Livingston, which is a joint project of the City of Houston and the Trinity River Authority. Currently, during periods of low flow in the river, releases of freshwater must be made from Lake Livingston in order to maintain freshwater for the intake of the C.L.C.N.D. canal system. This intake is located upstream of the barrier and it will be protected upon completion of the barrier project. During last year's drought, releases of 1,500 cubic feet per second were required from Lake Livingston in order to maintain freshwater at the C.L.C.N.D. intake point. This equates to approximately 970 million gallons per day during that period or an annualized rate of some 260 million gallons per day. Completion of the barrier will eliminate the necessity of these kinds of releases.

Although the project has been long and controversial, the major issues of concern from the environmental community have been addressed. The downsized project is no longer a storage reservoir, however, its importance for the protection of saltwater intrusion has not diminished. In addition, it will be providing recreational and tourism facilities that will be utilized by local families as well as state, national and foreign visitors.

Construction on this project is proceeding ahead of schedule and adequate funding is now essential for completion. We will greatly appreciate your consideration in appropriating the funds as requested by the Galveston District Corps of Engineers.

TRINITY RIVER CHANNEL TO LIBERTY

The Trinity River Channel is an authorized channel located in Chambers and Liberty Counties. It commences at the Houston Ship Channel in lower Chambers County, ending at the Port of Liberty in Liberty County. Maintenance is currently needed near the community of Smith Point in lower Chambers County in order to allow oyster tuggers and shrimp boats to safely navigate from Galveston Bay into their docking facilities at Smith Point. The shell fish industry located there is one of the top three employers in Chambers County.

The Channel to Liberty is also in need of maintenance in order to allow navigation of barges into the Port of Liberty. The fertilizer industry that is located there is currently barging materials to Cedar Bayou, then trucking them to Liberty as the

barges are unable to navigate to Liberty. The problems with the rail industry has increased the need for barge deliveries.

CEDAR BAYOU NAVIGATION DISTRICT

The Cedar Bayou Navigation District was recently formed by the Texas Legislature to promote dredging and navigation on Cedar Bayou in Chambers County. The industries located there are vital to the economy of Chambers County, providing employment for many Chambers and East Harris County residents. Funding is needed to make planning and feasibility studies for this project.

CONCLUSION

The Chambers-Liberty Counties Navigation District thanks this committee for the opportunity to provide this testimony. We also thank Congress for the funds that have been provided to the Galveston District as they have produced great benefits to the public, representing a sound investment of federal funds.

PREPARED STATEMENT OF WILLIAM HODGES, PRESIDENT, TRINITY RIVER AUTHORITY OF TEXAS

Mr. Chairman and members of the committee: My name is William Hodges, and I serve as President of the Trinity River Authority of Texas Board of Directors.

TRA supports the level of capability expressed by the U.S. Army Corps of Engineers for projects located in the Trinity River Basin.

WALLISVILLE SALTWATER BARRIER PROJECT

After 14 years of bitter litigation with environmental opponents to Wallisville, it was reshaped and reborn as an environmentally neutral project. Construction on this most important federal project was resumed in 1991. Progress on Wallisville has been acceptable since that time.

When completed, Wallisville and Lake Livingston, a 90,000 surface acre water supply project completed in 1970 with 100 percent local funds, will operate as a system extending the City of Houston's water supplies through the year 2035. By eliminating the need to wastefully release large amounts of fresh water to hydraulically flush saltwater from the intake structures of a series of rice irrigation systems and the coastal water authority during low river flow conditions, this system operation will make more water available for beneficial use in the greater Houston metropolitan area and in the lower Trinity River Valley. Until the Federal Government completes Wallisville as specified in the 1967 local sponsors' cost-sharing agreement and approved by Congress in 1983, the system benefits of these two projects cannot be realized.

The Galveston District of the Corps of Engineers has indicated that with adequate funding, the project will be ready to operate later this year.

UPPER TRINITY RIVER BASIN

Flooding and flood control have re-emerged as major issues in the Dallas/Fort Worth metropolitan area which dominates the upper Trinity River Basin. Through nine cities, two counties and two special purpose districts, the North Texas Council of Governments serves as local sponsor for this much needed flood study. TRA supports the $1 million budgeted project in addition to the $600,000 for Johnson Creek in Arlington, and the $490,000 for the Fort Worth Sumps 14 and 15.

DALLAS FLOODWAY EXTENSION

This federal project would extend the levees that protect Dallas southward to protect a section on the metropolitan area that has been historically challenged from an economic standpoint. TRA supports the $1.33 million contained in the President's budget to begin preconstruction and design.

OPERATIONS AND MAINTENANCE FUNDS

TRA supports appropriations for fiscal year 1999 operations and maintenance funds necessary to maintain operations for federal water projects for which the Authority serves as local sponsor within the Trinity River Basin. These projects include Bardwell Lake, Joe Pool Lake, Navarro Mills Lake and the Wallisville Saltwater Barrier Project.

CONCLUSION

The Trinity River Authority thanks this committee for the opportunity to testify. We also thank Congress for the many improvements that the Federal Government has funded in the Trinity River Basin over the years. They have produced great benefits for the public and represent a very sound investment of federal funds.

PREPARED STATEMENT OF GERALD R. ZIMMERMAN, EXECUTIVE DIRECTOR, COLORADO RIVER BOARD OF CALIFORNIA, GLENDALE, CA

Your support and leadership are needed in securing adequate fiscal year 1999 funding for the Department of the Interior with respect to the federal/state Colorado River Basin Salinity Control Program. This program is carried out through the Bureau of Reclamation pursuant to the Colorado River Basin Salinity Control Act and the Clean Water Act. California's Colorado River water users are presently suffering economic damages estimated at about $800 million per year due to the river's salinity, and those damages are expected to increase significantly by the turn of the century without salinity control.

The Colorado River Board of California, the state agency charged with protecting California's interests and rights in the water and power resources of the Colorado River System, supports the 1999 federal funding of $17,500,000 proposed by the Colorado River Basin Salinity Control Forum for the Department of the Interior's Colorado River Basin salinity control activities.

The seven Colorado River Basin states, which cost-share with the federal government up to 30 percent of the construction costs of Interior's salinity control measures, have carefully evaluated the federal funding needs of the program and have concluded that an adequate budget is needed for the plan of implementation to maintain the river salinity standards adopted by the seven Colorado River Basin states and approved by the Environmental Protection Agency, pursuant to the two federal authorizing Acts.

In addition, the Colorado River Basin Salinity Control Forum and the Colorado River Board of California recognize that the federal government has made significant commitments to the Republic of Mexico and to the seven Colorado River Basin states with regard to the delivery of quality water to Mexico. In order for those commitments to be honored, it is essential that in fiscal year 1999 and in future fiscal years, the Congress provide funds to the Bureau of Reclamation for the operation and maintenance of the Yuma Desalting Plant.

The Colorado River is, and will continue to be, a major and vital water resource for California. Preservation of its quality through an effective salinity control program will avoid the additional economic damages to river users in California that are expected by the turn of the century without such salinity control.

The Board greatly appreciates your support of the federal/state Colorado River Basin Salinity Control Program and again asks for your assistance and leadership in securing adequate funding for this program.

PREPARED STATEMENT OF JACK A. BARNETT, EXECUTIVE DIRECTOR, COLORADO RIVER BASIN SALINITY CONTROL FORUM, BOUNTIFUL, UT

This testimony is in support of funding for the Colorado River Basin salinity control program. Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. This role and the authorized program was refined and confirmed by the Congress when Public Law 104–20 was enacted into law. A total of $17,500,000 is requested this year to implement the needed and authorized program. Failure to appropriate these funds will result in significant economic damage and threaten compliance with adopted basin-wide water quality standards in the future. The Forum recognizes that the President's request of $12.3 million is an increase of $0.4 million above last year's request and the Forum appreciates and supports this increase. Nonetheless, studies have shown that implementation of the program has fallen behind the needed pace to prevent salinity concentration levels from exceeding numeric criteria adopted in connection with water quality standards for the River Basin while the Basin states continue to develop their Compact apportioned waters of the Colorado River. Concentrations of salts in the water above the criteria would cause hundreds of millions of dollars in damage in the United States and endangers the treaty obligation of the United States to Mexico. For every 30 mg/l increase in salinity concentrations, there is $100 million in additional damages in the

United States. The Forum, therefore, believes a rate of implementation beyond the President's request is necessary.

The program authorized by the Congress in 1995 has proven to be very successful and very cost effective. Proposals from the private sector to implement salinity control strategies have far exceeded the available funding. Hence, Reclamation has a backlog of proposals and is able to select the best and most cost-effective proposals. Funds are available for the Colorado River Basin states' cost sharing at the level requested by the Forum. Water quality improvements accomplished under Title II of the Colorado River Basin Salinity Control Act also benefits the quality of water delivered to Mexico. Although the United States has always met its treaty commitments to Mexico with respect to water quality, the State Department is currently addressing Mexican requests for better water quality. All of the above argues for a higher level of funding than requested by the President.

OVERVIEW

The Colorado River Basin salinity control program was authorized by Congress in 1974. Title I of the Colorado River Basin Salinity Control Act responded to commitments that the United States had made pursuant to Minute 242 of the treaty with Mexico with respect to the quality of water being delivered to Mexico below Imperial Dam. Title II of the Act established a program to respond to salinity control needs of Colorado River water users in the United States and to comply with the mandates of the then newly legislated Clean Water Act. Initially, the Secretary of the Interior and Reclamation were given the lead Federal role by the Congress. This testimony is in support of funding for the Title II program.

After a decade of investigative and implementation efforts, the Basin states concluded that the Salinity Control Act needed to be amended. Congress revised the Act in 1984. That revision, while keeping the Secretary of the Interior as lead coordinator for Colorado River Basin salinity control efforts, also gave salinity control responsibilities to the Department of Agriculture, and to a sister agency of Reclamation—the Bureau of Land Management. Congress has charged the Administration with implementing the most cost-effective program practicable (measured as dollars per ton of salt removed). The Basin states are strongly supportive of that concept, as the Basin states cost share 30 percent of federal expenditures for the salinity control program. In addition, under authorities provided in Public Law 105–27, the states are proceeding to implement their own salinity control efforts in the Colorado River system.

Since the initial Congressional salinity control mandates of nearly two decades ago, much has been learned about the impact of salts in the Colorado River system. Reclamation has recently completed studies on the economic impact of these salts. Reclamation recognizes that the damages to United States' water users alone may soon be approaching $1 billion per year.

The Colorado River Basin Salinity Control Forum (Forum) is composed of members appointed by the governors of the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Forum functions as a seven-state coordinating body for interfacing with federal agencies and Congress to support the implementation of a program necessary to control the salinity of the river system. In close cooperation with the Environmental Protection Agency (EPA) and under requirements of the Clean Water Act, the Forum prepares a formal report every three years analyzing the salinity of the Colorado River, anticipated future salinity, and the program necessary to keep the salinities at or below the levels measured in the river system in 1972 (which are the established water quality standards numeric criteria).

In setting water quality standards for the Colorado River system, the salinity levels measured at Imperial, and below Parker and Hoover Dams in 1972 have been adopted as the numeric criteria. The plan necessary for controlling salinity has been captioned the "plan of implementation." The 1996 Review of water quality standards includes an updated plan of implementation. The level of appropriation requested in this testimony is consistent with the agreed to program implementation rate determined necessary in the plan. If adequate funds are not appropriated, state and federal agencies involved are in agreement that the numeric criteria will be exceeded and damage from the high salt levels in the water will be widespread and very significant.

JUSTIFICATION

The $17,500,000 requested by the Forum on behalf of the seven Colorado River Basin states is the level of funding necessary to proceed with Reclamation's portion of the plan of implementation. This funding level is appropriate if salinity in the

Colorado River is to be controlled so as not to exceed the established numeric criteria and threaten the associated water quality standards. In July of 1995, Congress amended the Colorado River Basin Salinity Control Act. The amended Act gives Reclamation new latitude and flexibility in seeking the most cost-effective salinity control opportunities, and it provides for proposals and more involvement from the private sector. Early results are indicating that salt loading is being prevented at costs often less than half the cost under the previous program. Congress's recent review of the program and the amendments it authorized have made the program effective in removing salt from the Colorado River in a most cost-effective manner.

The Basin states have agreed to cost sharing annually, which adds 43 percent in monies to the federal appropriation. The Colorado River Basin Salinity Control Forum, working with EPA, has agreed upon a plan of implementation for salinity control, and that plan justifies the level of funding herein supported by the Forum to maintain the water quality standards for salinity adopted by the Basin states. The federally chartered Colorado River Basin Salinity Control Advisory Council, created by the Congress in the Salinity Control Act, has met and formally supports the requested level of funding. The Basin states urge the Subcommittee to support the funding as set forth in this testimony.

ADDITIONAL SUPPORT OF FUNDING

In addition to the dollars identified above for the implementation of the newly authorized program, the Salinity Control Forum urges the Congress to appropriate necessary funds, as identified in the President's budget, to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into deep aquifers through an injection well. The continued operation of the project and other completed projects will be funded through Operation and Maintenance funds.

In addition, the Forum supports necessary funding, as identified in the President's budget, to allow for continued general investigation of the salinity control program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various federal and state agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality standards for salinity so that the Basin states can continue to develop Compact apportioned waters of the Colorado River.

PREPARED STATEMENT OF THE SOUTHERN UTE INDIAN TRIBE, THE UTE MOUNTAIN UTE INDIAN TRIBE, THE SAN JUAN WATER COMMISSION, THE ANIMAS-LA PLATA WATER CONSERVANCY DISTRICT, AND THE SOUTHWESTERN WATER CONSERVATION DISTRICT

The Southern Ute Indian Tribe, the Ute Mountain Ute Indian Tribe, the San Juan Water Commission, the Animas-La Plata Water Conservancy District and the Southwestern Water Conservation District (referred to collectively as "the project beneficiaries") support the Administration's request for $3 million for the Animas-La Plata Project ("ALP") in southwest Colorado and northwest New Mexico. The project beneficiaries are concerned, however, that the Bureau of Reclamation will use the funding for additional studies that have as their purpose to delay the construction of the project rather than advance the implementation of the Colorado Ute Indian Water Rights Settlement Act of 1988, 102 Stat. 2973, which has as its foundation the construction of Phase I of the ALP to provide a new supply of water in southwest Colorado and northwest New Mexico. Indeed, the Bureau has balked at providing the project beneficiaries with any assistance with regard to the proposal to amend the 1988 Settlement Act to address the environmental and fiscal issues that have been raised about ALP. Instead, the Bureau has consistently and repeatedly hidden behind its fantasized need for yet more studies and yet more discussions. We do not want funds dedicated to ALP to be used for such misguided activities.

Over the last year, the project beneficiaries have addressed the issues that have been raised about the project and developed a proposal to modify the 1988 Settlement Act through legislation. The Bureau has refused to assist in these efforts. Under the proposal, the outstanding water rights on the Animas and La Plata Rivers of the Ute Mountain Ute and Southern Ute Indian Tribes would be resolved by the construction of the three facilities, the Durango Pumping Plant, the inlet conduit, and Ridges Basin Reservoir that were approved by the United States Fish and

Wildlife Service under the Endangered Species Act, 16 U.S. C. § 1531 et seq. The Tribes would receive 33,050 acre feet of the 57,100 acre feet of depletion approved by the FWS for use from the three facilities. It would also provide much needed water for dry year supplies for the New Mexico cities of Farmington, Aztec and Bloomfield. The proposal would eliminate the concern over water quality because the settlement would no longer require the construction of all of Phase I of the Project which includes the facilities to deliver water to the La Plata basin for irrigation purposes. It would also ensure that the settlement could be achieved consistent with the requirements of the Endangered Species Act. Finally, the required federal funding would be reduced to less than $260 million with approximately $29 million of local and state cost sharing. The proposal has been endorsed by the governors of Colorado and New Mexico.

The proposal was developed in discussions between project supporters and opponents initiated by the State of Colorado and Secretary Babbitt. Both groups were asked to develop an alternative that they believed met the purposes of the ALP. Last summer, both sides came forward with proposals. The two Ute tribes have formally rejected the project opponents' proposal to provide the tribes with funds (at least $115 million) to purchase land and water in the vicinity of their reservations. The State and local water users have also strongly opposed that concept. The tribal leadership rejected the concept of buying existing state water rights because of the uncertainty and inflexibility of the resulting water supply as well as the difficulties that would arise over the management and taxation of the purchased resources. It has always been the tribal objective to obtain a firm supply of water to meet their present and future needs without displacing the uses of their non-Indian neighbors. As Congress recognized in 1988, only a storage project can accomplish that goal.

Rather than assist the Tribes and the other parties in implementing the modifications to the settlement, the Bureau of Reclamation has spent the last four months ostensibly studying the two alternatives—despite the fact that the Tribes have rejected the opponents' proposal and despite the clear guidance from this Committee last year that the Department was to look at alternatives to the project that would provide a new supply of water and which was consistent with the original settlement.

In short, the Bureau has continued its reluctance to implement the 1988 Settlement Act and has refused to abide by the Committee's prior directive to construct the three facilities approved for construction by the FWS "without delay." Energy and Water Development Appropriations Act, 1996, Public Law No. 104–46, 109 Stat. 402 (Nov. 13, 1995). In these circumstances, we respectfully request the Committee to direct the Bureau of Reclamation to use the $3 million to assist in the implementation of the modifications to the project required by the proposed amendments to the 1988 Act and to avoid the needless study of so-called alternatives which have been rejected by the parties to the Colorado Ute Indian Water Rights Final Settlement Agreement (Dec. 10, 1986).

PREPARED STATEMENT OF RICHARD FULSTONE, CHAIRMAN, WALKER RIVER WATER USERS ASSOCIATION

Mr. Chairman, Members of the Subcommittee, my name is Richard Fulstone and I am the Chairman of the Walker River Water Users Association.

On behalf of the Walker River Water Users, I would like to request $400,000 for the Corps of Engineers, under the General Investigations Program, to continue the feasibility phase study on this important project. This request represents a $250,000 increase above the amount in the budget request for fiscal year 1999.

The Walker River Basin experienced serious flooding in January 1997. The town of Yerrington temporarily closed schools and businesses. Over 300 people were evacuated and damages were sustained to agricultural resources and urban and rural structures. Additionally, Walker Lake is becoming increasingly saline caused largely by lower levels of freshwater inflow from Walker River into the Lake. This study will focus on the overall basin to identify potential solutions to the flood risk and other water resources problems

Second, I request that the Subcommittee approve $300,000 for Walker River Basin, Nevada for the Bureau of Reclamation, to continue support of a water conservation demonstration program. This is the same level of funding approved by the Subcommittee in fiscal year 1998 for this important program. The program is being managed by the Walker River Water Users Association and is promoting a voluntary approach to water conservation. Federal support is needed to identify the universe of effective conservation practices in the Walker River Basin and better quantify the contribution that conservation can make to solving the water resource

problems in the Walker Lake and the basin as a whole. The demonstration program is being coordinated with the State of Nevada, the Mason and Smith Valley Soil Conservation Districts and the United States Department of Agriculture's Natural Resource Conservation Service.

Thank you, for the opportunity to testify before the Subcommittee.

PREPARED STATEMENT OF THE CITY OF PHOENIX, AZ

Dear Mr. Chairman and Members of the Subcommittee: On behalf of the City Council and the 1.2 million citizens of Phoenix and 2.5 million residents of our metropolitan area, I am pleased to present this testimony which urges funding for three federal/non-federal partnership projects in the Phoenix area. We recognize the need to balance the federal budget and what that means with respect to funding the many worthy water resources development projects across the nation. We understand that severe cuts were made in the President's fiscal year 1999 budget for water projects. We are prepared to absorb some of those cuts and have focused our request on only the most critical priorities in our region.

There are three initiatives in the President's budget which are of critical importance to the people of Arizona and which meet Congressional and Administrative objectives. As important as these matters are in our state, they have equal or even greater importance to the people of the nation because they each carry forward concepts of federal/non-federal government partnerships to gain leverage in achieving highly desirable mutually agreed upon public policy objectives. They also focus federal resources on the environment in the Sonoran desert where water is a scarce resource. The Southwest also represents the fastest growing part of the United States where riparian habitat is disappearing at an alarming rate.

RIO SALADO

One initiative involves the implementation of an ecosystem restoration project in the Salt River (Rio Salado) in the cities of Phoenix and Tempe. Federal dam projects since the turn of the century have literally dried up Rio Salado. The river once contained thriving wetland habitat and was a key ingredient in a diverse desert ecosystem. Since the starvation of the river from its source of water, that valuable habitat has been lost and dry river bed has become a blight which cuts through the cities of Phoenix and Tempe. These two cities have joined in partnership with the Army Corps of Engineers to plan and design habitat restoration for significant portions of the lost wetlands and to reintroduce at least some of the former free flowing portion of the river.

The Corps Feasibility Study is complete and a Chief of Engineers Report is expected to be available for transmittal to Congress in June 1998. We believe that the Rio Salado project is the single most necessary ingredient in our cities' goal of revitalizing the river corridor in an economically and environmentally beneficial way. The Corps has budgeted $938,000 for planning, engineering and design (PED) which will be matched by the two cities. This amount is significantly lower than the amount needed by the Corps to keep the project on schedule. We request $2.1 million in order to match the Corps capacity to implement the project and to keep the project on schedule.

TRES RIOS

The second initiative is the continuation of our Tres Rios River Management Project that we are developing with the cities of Glendale, Mesa, Tempe, and Scottsdale. This project is quite creative and has significant implications for how we as a nation handle our waste water treatment needs, especially in areas of very low natural water supply. As we learn more about the effects of wastewater treatment discharges on the environment, discharge criteria are necessarily becoming more stringent. There are huge costs involved in meeting these higher levels of treatment criteria and we must seek more economical and more environmentally beneficial ways to achieve treatment goals. The Bureau of Reclamation, the Army Corps of Engineers, the Environmental Protection Agency, and the Fish and Wildlife Service along with Glendale, Phoenix, Scottsdale, Tempe, and Mesa, Arizona are working together on developing the Tres Rios Project under authorities of the Bureau and the Corps of Engineers. It is truly rare that so many agencies and jurisdictions have come together with common purpose, a purpose which can increase the quality of treated water, restore valuable ecosystems, and reduce costs of doing both.

The Bureau has constructed a demonstration wetland at the regional wastewater treatment facility serving our communities which has far surpassed expectations of

wastewater treatment performance and ecosystem value. The demonstration project has created twelve acres of extremely vital wetlands that contain ecological communities and provide the necessary final degree of treatment needed for the wastewater.

The Corps has budgeted $610,000 to continue a Feasibility Study and the Bureau has budgeted $400,000 to continue the engineering and environmental analyses of the demonstration project. While the Corps capacity to continue with the project is $900,000, we are prepared to work within the existing budget. This illustrates our understanding of current budgetary shortfalls and emphasizes our commitment to ask Congress for an increase in the budget only where it is essential to keep critical projects on schedule as in the case of Rio Salado. Similarly, the Bureau of Reclamation funding for Tres Rios, is far below the amount needed to maintain the wetlands and to continue the research which is vital to restoration along the entire Salt River. The City requests a budget of $1.5 million to continue the Bureau's work at Tres Rios. Funding for fiscal year 1999 will be specifically programmed for re-vegetation and vector control study.

GILA RIVER, NORTH SCOTTSDALE

The third initiative is a unique proposal for study of flood control needs on currently undeveloped alluvial fan areas in the Phoenix metropolitan area. Alluvial fans are those broad, gently sloping areas at the base of mountain systems where storm water run-off forms many small, ever-changing rivulets. When these areas are developed to accommodate population and commercial growth, the water drainage patterns change, larger rivulets form, deeper channels occur, and eventually a flood threat develops. In this case, the Corps of Engineers and Phoenix is planning ahead, using Corps expertise, to ensure that development occurs in a manner that does not result in increasing flood threats in the future. The Corps and Phoenix are also working with the Environmental Protection Agency to incorporate modern concepts of watershed based resource management in developing the necessary flood control measures. This is the classic win-win situation for everyone. Development can be planned and proceed without creating a flood threat. When the environmental values so important to the ecosystem are fully protected, the federal government avoids the need to marshal disaster relief efforts in the future because of the flood plain management efforts being taken.

Last year, the Subcommittee on Water Resources and Environment heard from many witnesses who called for significant improvements in the way we look at national flood control needs. This project goes a long way in looking at innovative ways to improve on our historic approach of dealing with a flooding situation only after a disaster has occurred. The Corps has $272,000 to continue this study.

SUMMARY

All three projects have at their heart the most desirable combination of improving environmental quality, enhancing intergovernmental cooperation, and achieving governmental costs reduction objectives. In summary, the City is requesting that you include $2.1 million for Rio Salado, the Salt River ecosystem restoration project (as opposed to the budgeted $938,000), and retain $610,000 in the Corps budget for feasibility studies at the Tres Rios wetlands project and capability funding for the Gila River, North Scottsdale project. Additionally, it is critical to maintain the federal commitment at the Tres Rios Wetlands Demonstration project and add $1.1 million to the Bureau's budget for fiscal year 1999.

We sincerely appreciate your courtesy in considering this request. We would be pleased to provide any additional information you may need.

PREPARED STATEMENT OF JIM DUNLAP, NEW MEXICO RURAL WATER ASSOCIATION

Mr. Chairman, thank you for allowing me, as a Board Member for the New Mexico Rural Water Association and representative for the over 800 small communities with water systems in New Mexico, to appear before this Committee today. I am also here on behalf of all the other State Rural Water Associations and rural water folks all over this country to thank you for your personal support for small and rural water systems over the past twenty years.

Today, I would like to discuss the importance of the Bureau of Reclamation and its water projects to rural communities in the west and the need to initiate a new relationship between the Bureau and the small and rural water systems in each state. These water projects are of growing significance to many small and rural communities in their effort to improve the public health and strengthen local economic

opportunity. I am here today to request the support of you and the Committee for providing funding for a Rural Water Technical Assistance Demonstration Initiative in three western states.

Specifically, we are requesting $400,000 for a demonstration grassroots on-site technical assistance programs to fund a full time person working within each of three state rural water associations. This person would assist small systems and rural communities to coordinate their short and long range water needs with the broader federal and state water supply and conservation programs. This could include creation of regional water systems, centralized water treatment, tradeoffs for water rights from irrigation supplies, or increased use of surface supplies to save groundwater. Also this person would be available to work with water system officials on Indian and tribal lands.

BACKGROUND

Over the past ten years, rural communities have found themselves to be part of a much larger problem involving the securing and distribution of increasingly scarce western water supplies. In addition, the enforcement of the 1996 Amendments to the Safe Drinking Water Act has placed pressure on small systems to improve water quality through consolidation or obtaining new water sources.

As a result, the future of rural water is now tied to emerging state and federal water plans in the western states. Depletion of aquifers, changing water rights, and construction of distribution systems over wide geographic areas are going to be the major issues facing rural water systems in the immediate future.

What is needed is a new focus on integrating the needs of rural water systems into the larger strategies of state and federal governments for water supply, water conservation and water distribution systems. The access and delivery of water will determine the quality of drinking water to rural communities.

There is a need for a full time person working within each state rural water association to assist small systems and rural communities to coordinate their long range water needs with the broader water supply and conservation programs. This could include creation of regional water systems, centralized water treatment, tradeoffs for water rights from irrigation supplies, or increased use of surface supplies to save groundwater.

The primary objective of the program is to define an approach for more effectively integrating the grassroots on-site technical assistance of state rural water associations with the major water resources responsibility of the Department of the Interior as a demonstration project in three western states. Both the Environmental Protection Agency and the USDA Rural Utility Service use the state rural water associations to improve compliance with the Safe Drinking Water Act and to assist high risk small communities in obtaining funds for new systems. The Bureau of Reclamation needs to do the same.

Our initiative is an alternative to increased federal regulations. We believe that technical assistance operated by local governments provides more environmental benefits than increasing the size of the regulatory bureaucracy. We also feel that we are able to work in a special environment because we are not the regulators. This "good neighbor" element allows acceptance in Indian Lands and with local elected officials where environmental regulators may have more difficulty.

PROPOSAL

The Bureau of Reclamation—Rural Water Association Partnership would add an important new dimension to the Bureau's efforts to improve water management and water use in the more arid western states. The program would provide a full-time person in three western states to demonstrate the effectiveness of mobilizing the state Rural Water Associations resources to:

—Provide on-site assistance to communities that have access to or are seeking access to BOR water resources. This includes the use of consolidations, new construction and changed operating procedures to improve local water quality.

—Where appropriate and in some states, provide on-site assistance at the request of and in support of Indian Tribal Reservations and the Indian Health Service in their efforts to improve the delivery of quality drinking water throughout the reservation. This circuit rider would strengthen the capability of the local operation and allow tribes to improve water system management similar to the improvements achieved by small community water systems through similar circuit rider programs funded by the Department of Agriculture.

—Work with BOR, state government and local communities to develop a simple strategy for improving the use of Bureau of Reclamation water resources for rural domestic consumption. This strategy would tie BOR priorities into the

funds spent through the USDA Rural Utilities Service and the EPA drinking water state revolving loan funds.

—Other primary services provided to water utilities will include water conservation programs for water utilities and irrigation districts, water audits, leak detections, water meter installations/repairs, drought preparedness, regional water supply development, water rates structure, and wastewater system improvements.

PROPOSED APPROPRIATION FOR PROJECT

Provide $400,000 for three state rural water association grassroots circuit rider technical assistance programs. Each state rural water association would receive one full time program and the National Rural Water Association would be responsible for managing, evaluating, and reporting on the effectiveness of the overall project.

EXAMPLES OF WORK

The impact of the Bureau of Reclamation on the improvement of community water systems in the west is best illustrated by the role that the Bureau of Reclamation sponsored multi county rural water systems such as Webb, Tricounty and others have played in South Dakota. Without these Bureau of Reclamation projects there would be inadequate safe drinking water supplies in much of rural South Dakota. The South Dakota Bureau projects have increasingly relied on the rural water association circuit riders to assist in resolving small system relationships with major water supply efforts. It is this growing need that establishes the reason for requesting BOR funding for a circuit rider in each state with the primary responsibility for coordinating small community needs with the BOR water resources available in rural areas.

On a corresponding note, in most states the assistance provided to Indian Reservations by these same circuit riders provides the missing interface between local governments, water projects, and reservations that is so frequently requested. Our experience is that on-site discussions solve the vast majority of water supply problems and set the groundwork for long range solutions. This is needed if the federal government, state and local governments and tribes are going to conserve scarce water supplies in the west. The following are examples of the type of tribal assistance that would be addressed by this demonstration program.

North Dakota, Trenton.—The city of Trenton is located in Williams County and serves 150 connections. The city of Trenton is primarily an Indian community and is located on the very western edge of North Dakota. Recently they started to purchase their water from the city of Williston. Since the city has started purchasing their water, the system has been losing money in its water account. After going over the system's expenses and water rates, a new rate structure was recommended. Previous to this, the system still had a declining water rate—as in, the more water used, the cheaper the cost per thousand. Now that the system is purchasing water, the rate would remain constant. The long-term benefits to the water system in assisting them change their water rates will be that they will be able to more easily cover all their cost and start building a much needed reserve fund for future needs. This shows them that closer attention must be contributed to water rates and other charges. Every gallon of water purchased and lost is money lost to the system.

Arizona, Eden.—The Eden Water Company is located in Graham County and serves 100 connections. Verna Rae Colvin from the Eden Water Company requested assistance from the Arizona Small Utilities Association Circuit Rider. The system had been experiencing a water loss problem. The system is losing more water than is being sold to customers for the last two months. Long transmission lines (approximately 8 miles) are carrying water to the distribution systems with some customers on transmission lines. The main line and crossing valves are buried, and some have never been found in the last 10 to 15 years. The Circuit Rider assisted with valve location and leak detection and customers meter testing throughout the water system. Daily meter readings at the source of supply are now being taken. As a result of this contact, accounting for water loss and correcting the problem will save the Eden Water Company approximately $7,000 per year in purchased water. Locating main line water valves will limit customers who would be out of water during the water main and service line breaks. By conducting a valve exercise program, water line valves will be operational when needed. The operator is more aware of the system due to valve, meter and service crossing locations.

Idaho, Harrison, DW.—The City of Harrison is located in Kootenia County. The city water source is from metered ground water. There are approximately 150 metered connections and the system does not have full-time disinfection. The operator, Rhonda Wilcox, is full-time, but not certified. The Idaho Rural Water Association

Circuit Rider was requested to assist the operator. The system was losing approximately 100,000 gallons of water per day. The Circuit Rider delivered the Idaho Rural Water Association's leak detector to the City of Harrison. The operator was instructed on the use of the detector and instructions on how to survey the distribution system. The Circuit Rider and operator began checking every meter on the system. The operator was comfortable with using the equipment to proceed with attempting to locate the water leak. The following day, the operator located the leak. A one-inch water meter had frozen and broken. The repairs were made and the water loss eliminated. The operator was trained on the proper use of the leak detector and how to survey the water system. In the future, the operator will be able to use the training provided to locate water loss in the water system.

Idaho, Shoshone County.—Avery water system is located in Shoshone County and serves 29 unmetered connections. The system is supplied by a well which is chlorinated and unmetered. The operator is part-time and is not certified. Their pump was running almost continually. The Idaho Rural Water Association's Circuit Rider reviewed the system and began isolating parts of the system. Two leaks were located with the IRWA leak detection equipment. A shut-off valve was also located with the IRWA locator. The Circuit Rider reviewed their well and made some recommendations for improving their system. The recommendations were to install a run light, and a meter at the well head. Due to the leaks found and repaired, the system will save in excess of $60 per month in power savings. The operator will be able to use the leak detector loan equipment offered by IRWA. By installing a well head meter and run light, the operator will be able to monitor the well production and run time. Use of this information will help the operator to recognize the next time a leak occurs.

Montana, Deer Lodge.—The city of Deer Lodge is located in Powell County, Montana, and serves nonchlorinated water to 1,230 non-metered connections. The system is supplied by a groundwater source consisting of two metered wells. The full-time operator, Don Roberts, is certified. The operator contacted the Circuit Rider early one Sunday morning and requested immediate assistance with locating a water leak. The city's 2½ million water tank had only one foot of water in it. The Circuit Rider and the operator began a systematic check of the system in an attempt to locate the problem. The Circuit Rider determined that the "leak" was due to high usage because of hot weather and connections that were not metered. At their second well, a pilot control valve had been installed, and the pump had not been put back into operation. The Circuit Rider immediately checked the installation and found everything to be in order. He instructed the operator on the operation of the new control valve and the pump was started. By 7:00 am the next morning, the tank was three-quarters full. The Circuit Rider met with the mayor and recommended installing water meters which would save the system approximately $1,000 per month.

Nevada, Pioche.—Leak detection training was provided for Pioche Public Utility. Three leaks were located in a 2-inch distribution line which serviced three houses. The repair of leaks will stabilize line pressure above the minimum pressure required by the Safe Drinking Water Act, plus save utility district money.

Nevada, Steamboat Springs.—Steamboat Springs System is located in Washoe County, Nevada and serves unchlorinated water to 290 connections that are not metered. The system is supplied by a groundwater source which is metered. Tom Reese is the new full-time operator; he is not certified. The water system requested the Circuit Rider's help in locating some valves. The Circuit Rider was also asked to explain fire hydrant operation and maintenance. The operator received assistance in the location of the valves. He now has knowledge of the proper operation and maintenance of fire hydrants, including the importance of a regular exercise program for valves and fire hydrants.

North Carolina, Woodfin.—Woodfin Sanitary District is in Buncombe County and serves 2,100 connections. The water system was experiencing water pressure problems in upper areas and water loss. The State Regulatory people were pushing for some results. The problem area was located and later pinpointed by process of elimination due to interference in attempting to use leak detection equipment. The leak was located under a railroad track where an 8 foot water line was in 16 feet casing. The leak was midway of the encasement and flowed to the end drainage directly into a damaged sewer line. This explained some of the difficulty in locating the leak. It had become an 11,000,000 gpd leak and, when fixed, pressure from the other water system was eliminated. The staff is now much better prepared to deal with this type of problem due to the on-site assistance and training using leak detection equipment and pressure recording equipment, as well as simple field tools, and, most importantly, the process of elimination approach when necessary.

South Dakota, Butte-Meade, DW.—The Circuit Rider was requested to join the cooperative efforts of the Butte County Extension Office, FmHA District Office, and Butte-Meade Sanitary District during a public hearing to discuss the water system projected expansion project. The Circuit Rider was the main speaker, discussing the benefits, process, and potential addition of area ranchers, residents and communities, and the funding process needed. This system needed guidance and information to present to the attendees who are very concerned and in dire need of quality water. The water in this area is difficult to find, and it would be very costly to drill a new well. The benefits of the users hooking up to this system are many; most of all they would receive good quality water. At the present time, many ranchers in the proposed area have to haul the water for livestock and household use. Many people who live on acreage or just a household are also faced with poor quality water and must also haul water. The end result from this meeting was the information provided to the attendees of the possibility of a water system's capability to serve them a sufficient supply of quality water.

Colorado, General, DW.—Spread Eagle Water System is located approximately sixteen miles northwest of Westcliffe, CO. This system serves fifteen year-round connections and uses a ground water source to supply the system. Joe Defries, system operator, contacted CO Rural Water for assistance. The Circuit Rider conducted leak detection on three different sections of water line. Four leaks were found. The amount of water being lost was approximately 3.3 gallons per minute. As a result of this contact, the system saved approximately $500 in leak detection costs and water loss.

Idaho, Lapwai.—The Circuit Rider worked with the Nez Perce Indian tribe on five separate housing developments, investigating meter installation and some type of utility billing system. Possible connection to the city of Lapwai water system for one of the developments was also discussed.

Case Study

Idaho—The following local water issues represent candidates for assistance

Lapwai.—The possibility of the City of Lapwai taking over the operation and maintenance of the Nez Perce tribe drinking water and wastewater systems that are in close proximity to the city.

Worley.—Currently discussing the possibility of the Coeur D'Alene tribe assisting with the construction of a new well and storage tank. In return the city would operate the system which is on the reservation and includes the city of Worley.

Kamiah.—Discussions in first stages for the city to take over the operation and maintenance of the Indian drinking water system in close proximity to the city.

Fort Hall.—Major contamination problem with the water supply. Contamination may be related to chemicals that were used on Indian ground that may be used by some farmers in the area. The system has put in a charcoal filter but the problem still is being discussed.

PREPARED STATEMENT OF GRADY GAMMAGE, JR., PRESIDENT, BOARD OF DIRECTORS, CENTRAL ARIZONA WATER CONSERVATION DISTRICT

The Central Arizona Water Conservation District (CAWCD) is pleased to offer the following testimony regarding the fiscal year 1999 Energy and Water Development Appropriations Bill for the Central Arizona Project.

The Central Arizona Project or "CAP" was authorized by the 90th Congress of the United States under the Colorado River Basin Project Act of 1968. We thank the Committee for its continuing support of the CAP. The CAP is a multi-purpose water resource development project consisting of a series of canals, tunnels, dams, and pumping plants which lift water nearly 3,000 vertical feet over a distance of 336 miles from Lake Havasu on the Colorado River to the Tucson area. The project was designed to deliver the remainder of Arizona's entitlement of Colorado River water into the central and southern portions of the state for municipal and industrial, agricultural, and Indian uses. The Bureau of Reclamation (Reclamation) initiated project construction in 1973, and the first water was delivered into the Phoenix metropolitan area in 1985. CAWCD delivered over 1.3 million acre-feet of water to project water users in 1997 and anticipates delivering 1.4 million acre-feet in 1998.

CAWCD was created by the Arizona legislature in 1971 for the specific purpose of contracting with the United States to repay the reimbursable construction costs of the CAP that are properly allocable to CAWCD. In 1983, CAWCD was also given authority to operate and maintain completed project features. Its service area is comprised of Maricopa, Pima, and Pinal counties. CAWCD is a tax-levying public improvement district, a political subdivision, and a municipal corporation, and rep-

resents roughly 80 percent of the water users and property taxpayers of the state of Arizona. CAWCD is governed by a 15 member Board of Directors elected on a population basis from each of the three counties it serves. CAWCD's Board members are public officers who serve without pay.

Reclamation declared the CAP water supply system substantially complete in 1993, and declared the regulatory storage stage, or Plan 6, complete in 1996. Project repayment is provided for through a 1988 Master Repayment Contract between CAWCD and the United States. Project repayment began in 1994 and, in 1997, CAWCD's first payment for the regulatory storage stage (other than monies advanced by CAWCD during construction) was made. To date, CAWCD has contributed or repaid over $420 million toward project construction costs.

CAWCD and Reclamation disagree about the amount of CAWCD's repayment obligation for CAP construction costs. This dispute is the subject of ongoing litigation in United States District Court in Arizona.

In CAWCD's view, CAWCD's repayment obligation cannot exceed $1.781 billion under the repayment ceiling of the Master Repayment Contract. Reclamation takes the position that the contract repayment ceiling is $2.0 billion. However, Reclamation estimates that it will actually incur $2.33 billion in reimbursable construction costs for completed CAP features. Reclamation insists that CAWCD must agree to repay this larger amount, despite the repayment ceiling of the Master Repayment Contract. Otherwise, Reclamation claims that it may deny CAWCD the use of project facilities to deliver CAP water supplies to its customers. For this reason, CAWCD has scrutinized Reclamation's budget requests very carefully over the last two fiscal years and has objected to requests for funding of activities that seem unnecessary or which could be delayed without harm to the project.

Reclamation is requesting $49,908,000 for the CAP in fiscal year 1999 (fiscal year 1999). Of this amount, $25,014,000 is requested for the construction of Indian distribution systems, and $8,133,000 is requested for completion of construction of sulfur dioxide scrubbers at the Navajo Generating Station (NGS). The balance, $16,761,000 is sought for other CAP activities.

All features of the project that are subject to repayment by CAWCD and are likely to be constructed (other than reliability features for the Tucson area which have been deferred) are now complete, are in repayment status, and are being operated and maintained by CAWCD. Significant work remains to be done to complete Indian distribution systems and some work remains to be done to install sulfur dioxide scrubbers at NGS; however, much of this work is being accomplished by entities other than Reclamation. For example, the NGS scrubber project is being completed by the Salt River Project and, according to Reclamation, all CAP Indian distribution systems will be constructed under contracts authorized by the Indian Education and Self Determination Act (Public Law 93–638). While Reclamation's activities and role will likely vary with each Tribe, a significant amount of this effort will be performed by the Tribes themselves. CAWCD fully supports appropriations necessary to ensure early completion of all Indian distribution systems and the NGS scrubbers.

Of the remaining funds ($16,761,000) that are not related to NGS or to Indian distribution systems, over 20 percent is requested to support Reclamation's non-contract costs. These non-contract costs total about $3,548,000. Non-contract costs typically represent Reclamation's labor and associated overhead costs, such as utilities, rent and travel, which are incurred for the administration of Reclamation's construction program. CAWCD recognizes that some funds are needed to support Reclamation's non-contract costs, and that Reclamation's fiscal year 1999 budget request for such funds is about $1.8 million lower than last year. CAWCD congratulates the Bureau of Reclamation for its efforts to reduce the size of its workforce and to close out completed construction contracts over the past year. However, we believe that further reductions in non-contract costs are warranted. Finally, other than a very modest amount to enable Reclamation to defend ongoing litigation over the validity of a biological opinion regarding delivery of CAP water to the Gila River Basin, no funds should be appropriated for native fish protection until that litigation is resolved.

CAWCD urges the Committee to consider the following areas of concern in determining fiscal year 1999 appropriations for CAP:

1. New Waddell Dam: $4,302,000

New Waddell Dam is the central feature of the CAP regulatory storage stage. The reservoir formed by New Waddell Dam was first filled in early 1994, and the dam was declared substantially complete in October 1996. Of the requested $4,302,000, $700,000 is being requested to cover non-contract costs to support remaining activities at New Waddell. Reclamation has indicated to CAWCD that its remaining activities include replacing campgrounds, picnic areas, and access roads ($3,450,000),

conducting fish limnology studies ($150,000), fish and wildlife mitigation activities, and contract close-out work. Reclamation has indicated to CAWCD that 11 contracts were closed during 1997 and that 11 others remain open, of which 3 will be closed in fiscal year 1998 and the remainder in fiscal year 1999. Reclamation has also informed CAWCD that much of the remaining recreation development is being accomplished by Reclamation's local recreation manager (Maricopa County). CAWCD supports Reclamation's requests for funds to complete recreation development at Lake Pleasant, fish and wildlife mitigation activities and contract close out work. However, more work needs to be done to reduce non-contract costs. CAWCD supports appropriations necessary to cover Reclamation's reasonable non-contract costs with the expectation that remaining reimbursable activities at New Waddell be concluded as soon as possible. In addition, CAWCD objects to an appropriation of funds to conduct fish limnology studies ($150,000) in fiscal year 1999. In light of ongoing litigation regarding the protection of endangered native fish in the Gila River Basin from predation by non-native fish, Reclamation should cease activities associated with supporting the sport fishery at Lake Pleasant.

2. Modified Roosevelt Dam, Non-contract Costs: $7,120,000

Like New Waddell Dam, Modified Roosevelt Dam was declared substantially complete in 1996. Reclamation is requesting $7,120,000 in fiscal year 1999 to fund activities associated with protection of the endangered Southwestern Willow Flycatcher, completion of public recreation facilities at Roosevelt Lake by the U.S. Forest Service, completion of remaining fish and wildlife mitigation activities, and to cover non-contract costs. CAWCD supports appropriations necessary to protect endangered species, to complete remaining recreation facilities, to complete fish and wildlife mitigation activities, and to support a reasonable level of non-contract costs.

Out of a total request of $7,120,000, about $5.8 million is for work to be done by others, with Reclamation identifying $1.171 million of the remaining amount for non-contract activities. Reclamation has informed CAWCD that there are currently 14 active contracts or agreements for Modified Roosevelt Dam, and its schedule for closing out these contracts will stretch from 1999 to 2007, and that one contract associated with maintaining the San Pedro Preserve for the Southwestern Willow Flycatcher may be perpetual. CAWCD believes that more work needs to be done to reduce non-contract spending; however, CAWCD supports appropriations necessary to cover Reclamation's reasonable non-contract costs with the expectation that remaining reimbursable activities at Modified Roosevelt Dam be concluded as soon as possible.

3. Tucson Reliability Division: $560,000

Reclamation is requesting $560,000 in fiscal year 1999 to fund continuing activities associated with assisting the City of Tucson to design a system including adequate reliability to efficiently utilize project water. CAWCD questions the need for this level of funding, but supports a reasonable level of appropriations which will allow planning work to continue. Reclamation has estimated that its expenditures associated with the Tucson Reliability Division in fiscal year 1998 will total about $200,000. CAWCD would support a fiscal year 1999 appropriation at that same level.

4. Other Project Costs, Water Allocations, Non-contract Costs: $224,000

Reclamation has indicated to CAWCD that these funds are needed to support administrative staff activities associated with the overall project including cost allocation reports and analysis, water quality data collection, responses to various inquiries, archiving historical records, budget request support and financial management. First, CAWCD questions Reclamation's use of the term "water allocations" to represent this budget category since no water allocation work is being done. CAWCD is not aware of any need to prepare cost allocation reports or conduct such an analysis, especially in light of the current status of the litigation regarding project repayment. Water quality data collection is related to the Gila River, and is not necessary since construction of those CAP features has been deferred. Responses to various inquiries, archival of records, budget support and financial management may be necessary Reclamation activities; however, they should not continue to be funded from CAP construction funds. Consideration should be given to funding these activities from one of Reclamation's administrative appropriations, such as General Administrative Expenses.

5. Other Project Costs, Native Fish Protection: $3,558,000

Of the total $3,558,000 requested, $3,058,000 is earmarked to fund activities associated with implementation of a 1994 biological opinion of the U.S. Fish and Wildlife Service (FWS) pertaining to delivery of CAP water to the Gila River Basin. These

funds are requested for construction of fish barriers ($1,943,000), payments to FWS for non-native fish eradication and native fish conservation ($500,000), and Reclamation's non-contract costs ($290,000). A local environmental organization has sued both Reclamation and FWS on the basis that the reasonable and prudent alternatives of the biological opinion are not stringent enough, and it is likely that this matter will be at issue for some time. Since the litigation may produce a result which is very different from that currently provided for in the biological opinion, CAWCD continues to believe that Reclamation should cease spending in this area until the pertinent issues are resolved. CAWCD supports a reasonable level of non-contract funding for Reclamation's litigation activities and to continue Endangered Species Act consultation activities on the Santa Cruz River.

CONCLUSION

CAWCD welcomes this opportunity to share its views with the Committee, and would be pleased to respond to any questions or observations occasioned by this written testimony.

UPPER MIDWEST WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF KURT PFEIFLE, GENERAL MANAGER, MID-DAKOTA RURAL WATER SYSTEM, INC.

FISCAL YEAR 1999 FUNDING REQUEST

First let me thank the Subcommittee for the opportunity to testify in support of the fiscal year 1999 appropriations for the Mid-Dakota Project and for the Subcommittee's support.

The Mid-Dakota Project is requesting $32,150,379 in federal appropriations for fiscal year 1999. As with our past submissions to this subcommittee, Mid-Dakota's fiscal year 1999 request is based on a detailed analysis of our ability to proceed with construction during the fiscal year. In all previous years, Mid-Dakota has fully obligated its appropriated funds, including federal, state, and local, and could have obligated significantly more were they available.

In February the President's Budget recommendations to Congress were released. Mid-Dakota Rural Water was included in the proposed budget at a level of $10,000,000 for fiscal year 1999. This is the same funding level recommended for the project in fiscal year 1998 by the Administration. Fortunately Congress in fiscal year 1998 "disagreed" with the President's budget recommendation for this important project and increased the appropriation to $13,000,000.

The funding provided by the Subcommittee in fiscal year 1998 provided Mid-Dakota with the opportunity to achieve the most significant and exciting accomplishment for fiscal year 1998. The beginning of water deliveries to those who need it most. Mid-Dakota has begun deliveries to five community water systems; Highmore, Blunt, Onida, Gettysburg and the Oahe Plains Rural Water System and a significant number of rural household connections. Upon the completion of contract 4–1A/B (schedules 1–5) an additional 450 rural households will be connected to the system as well as an additional community system.

This year (fiscal year 1999) the project is seeking additional funds above the President's budget recommendation in the amount of $22,150,000. Mid-Dakota understands and appreciates pressures on Congress to pass and maintain a balanced and ostensibly an austere budget and in that respect we understand the difficulties before Congressional Appropriators to "find" additional funds to supplement the President's budget request. However, we request and strongly urge Congress to closely examine the priorities of the President's budget proposal and strive to "rearrange" the President's budget recommendations in as favorable a manner to Mid-Dakota as is possible.

As in the past, Mid-Dakota is in "catch-up" mode, due to lower than expected appropriations in prior years. The $32.15 million request for fiscal year 1999 would bring the project close to our prior construction schedule. If the additional funds are provided this would also make significant strides towards fulfilling a goal outlined in the Bureau of Reclamation's own strategic planning document that calls for the completion of ALL on-going construction projects within the next five years.

The Project facilities proposed for construction are representative of Project design that is currently, or will be far enough along to proceed with construction in the fiscal year. Mid-Dakota has a track record of high credibility when it comes to our ability to do those things we say we are capable of doing. The emergency pipeline to the City of Gettysburg, South Dakota is a prime example of this project's willing-

ness and ability to GET THINGS DONE. Mid-Dakota invites a close examination of this important project from any and all angles and in the final analysis we believe that everyone will agree—Mid-Dakota is a project of high credibility and ability and is deserving of strong endorsement.

HISTORY OF PROJECT FUNDING

Federal fiscal year	Project's request	President's budget	Enacted levels	Award level (underfinancing) applied
1994	$7,991,000		$2,000,000	$1,500,000
1995	22,367,000		4,000,000	3,600,000
1996	23,394,000	$2,000,000	11,500,000	10,902,000
1996	n/a		(1)	2,323,000
1997	29,686,000	2,500,000	10,000,000	9,400,000
1997	n/a		(2)	2,950,000
1998	29,836,379	10,000,000	13,000,000	12,221,300
1999	32,150,000	10,000,000	(3)	(32,150,000)
Totals	145,424,379	24,500,000	40,500,000	42,896,300

[1] Additional funding.
[2] Additional funding and adjustment.
[3] Fiscal year 1999 requested.

Note: Additionally, the State of South Dakota has contributed $8,370,000 in grants to the Mid-Dakota Project, in previous years. It is likely that the Project will receive $1,300,000 in grant this Legislative Session. This will complete the State of South Dakota's financial commitment to the Mid-Dakota Project.

The Project was authorized by Congress and signed into law by President George W. Bush in October 1992. The federal authorization for the project totaled $100 million in a combination of federal grant and loan funds (grant funds may not exceed 85 percent of federal contribution). The State authorization was for $8.4 million. As of October 1996, the total authorized indexed cost of the project was $141,535,000. All federal funding considered, the Government is now 33 percent into its commitment to providing construction funding for the Project. South Dakota Legislation has overwhelmingly passed the South Dakota House and Senate and contains a grant of $1.3 million, which will likely be made available to the Project in March, 1998. This latest appropriation by the State Legislature completes the State's authorized commitment to Mid-Dakota. When you look at the federal and state combined awards, you find that the project is approximately 36 percent complete. With this progress into total development, we are pleased to see that Congress, in particular the Appropriations, Energy and Water Development Subcommittees, intend to see the Mid-Dakota project through to its completion.

Mid-Dakota wishes to thank this committee for its support over the past five years. Within the limited monetary parameters of current federal awards and funds appropriated by the State of South Dakota, we have been able to make phenomenal progress on project construction.

IMPACTS OF AWARD

The most obvious impact of any significant reduction from Mid-Dakota's request will be the delay of construction of one or more Project components. The $32.15 million dollar request will allow the Project to proceed with construction of multiple contracts summarized later in this testimony. An award of less than our request will result in the deletion or reconfiguration of one or more of these contracts from the fiscal year 1999 construction schedule. Further, reduced appropriations have the effect of adding more cost to the amount needed for completion of the Project.

An impact not readily apparent, but certainly one that exists, is the impact funding has on other States. Many believe that Mid-Dakota is a Project that ONLY benefits people who live in South Dakota. Nothing could be further from the truth. The Great State of South Dakota is blessed with many things, however, industrial resources are not among them. Mid-Dakota has made what we consider a conservative estimate, stating that more than 70 percent of the total cost of the Mid-Dakota Project will be spent outside of our State. By way of example, millions of dollars have already been spent in pipe purchases in Alabama and Colorado. Similarly, hundreds of thousands of dollars have been expended by way of contractor payments to Companies in North Dakota, Wyoming, Minnesota, Indiana and Texas. Thousands and hundreds of thousands of dollars has been expended in many other

States. Potentially, States such as Pennsylvania, Louisiana, Washington, Oregon and Kentucky will also benefit. Mid-Dakota is truly a "federal" Project, being constructed and providing benefits to people throughout the Nation, from California to Pennsylvania, from Texas to Montana.

Mid-Dakota has consistently informed members of Congress and the various federal agencies, about the detrimental effects insufficient funding has on the Project and ultimately the people who will receive the water. Always in character with the tough and individualistic portrayal of people living in the Great Plains, Mid-Dakota and the people we will serve have accepted the hardships imposed on the Project with a quiet resolve. However, failure to provide full funding has had profound consequences.

CONSTRUCTION IN PROGRESS

Mid-Dakota began construction in September of 1994, with the construction of its Water Intake and Pump Station. Since that eventful day of first construction start, we have bid, awarded, and completed six project components and are into construction on two other major Project components. The following bulleted list provides a synopsis of each major construction contract:

—Contract 1–1 (Oahe Water Intake and Pump Station), Contract was awarded to Industrial Builders, Inc., of Fargo, ND, in August of 1994. The Intake structure is of a vertical caisson design and is complete. Cost of the Intake is approximately $3.95 million.

—Contract 2–1 (Oahe Water Treatment Plant), Contract was awarded to John T. Jones Construction Co., of Fargo, ND, in October of 1994. The Water Treatment Plant is a "Direct Filtration" design, capable of producing 9.0 million gallons of treated water per day. The Treatment Plant is complete. Cost of the Treatment Plant is approximately $10.3 million.

—Contract 3–1A (Raw Water Pipeline), Contract was awarded to Larry's Construction, Co., of Gillette, WY, in June of 1995. The contract consists of nearly four miles of large diameter (30 inch) "Ductile Iron Pipe." The Raw Water Pipeline is complete. Cost of the Raw Water Pipeline is approximately $1.7 million.

—Contract 3–1B (Main Transmission Pipeline—to Blunt, SD), Contract was awarded to Kenko Inc., of Minneapolis, MN, in April of 1996. The contract consists of nearly 24 miles of large diameter (30 and 24 inch) "Steel Pipe." The contract is complete. Cost of the contract was $6.9 million.

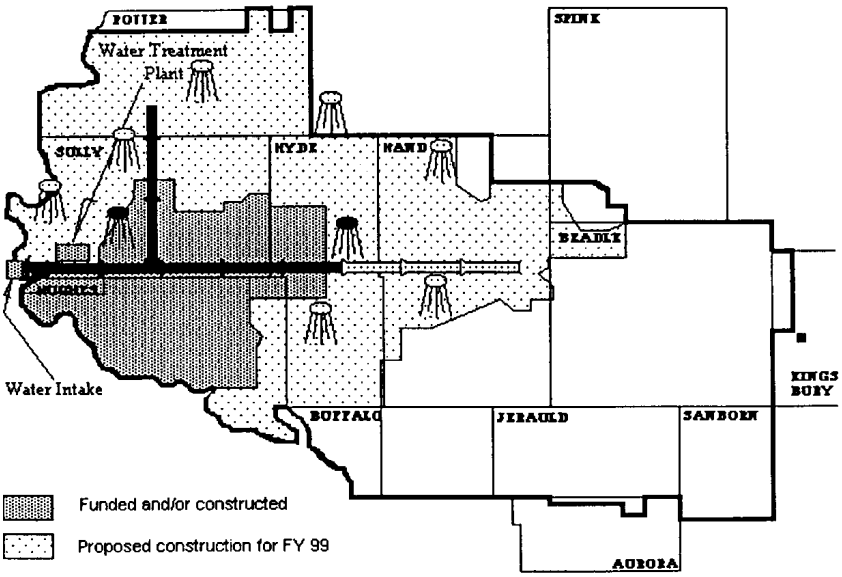
—Contract 3–1C (Main Transmission Pipeline—to Highmore Water Storage Tank), Contract was awarded to S.J. Louis Inc., of St. Cloud, MN, in April of 1996. The contract consists of nearly 18 miles of large diameter (30 and 24 inch) "Ductile Iron Pipe." The contract is complete. Cost of the contract was $4.8 million.

—Contract 5–1 (Highmore Water Storage Tank), Contract was awarded to Landmark Structures Inc., of Keller, TX, in April of 1996. The contract provides for the erection of a 1.5 million-gallon water storage tank (composite design) near the Town of Highmore, South Dakota. The contract is complete. Cost of the contract was $1.4 million.

—Contract 4–1A/B schedules 1–5 (Rural distribution and service), Contract was awarded to Eatherly Contractors Inc., of Garden City Kansas. Contact provides for the emplacement of nearly 500 miles of rural distribution pipeline and connection to approximately six community water systems and 500 rural homes. Contract is approximately 25 percent complete. Cost of the contract is currently $10.2 million.

—Contract 5–1A (Onida Water Storage Tank), Contract was awarded to Phoenix Fabricators, of Indianapolis, Indiana in October of 1997. The contract provides for the erection of a .250 million gallon water storage tank (multi-column design) near the Town of Onida, South Dakota. The contract is approximately 6 percent complete. Cost of the contract is currently $.4 million.

Funding for the preceding contracts was reserved from previously appropriated and reprogrammed funds.



USE OF FUNDS REQUESTED

The following numbered items represent the Project's proposed use of the $32.15 Million request in fiscal year 1999. Reduction of award from our request will cause the Project to delete or modify (depending upon size of any reduction) one or more of the delineated Project Components:

Fiscal Year 1999 proposed construction

[In millions of dollars]

1. Basic Services (Admin., Eng., Legal, BOR etc.—)	1.13
2. Canning Distribution System, N. CFB	0.40
3. Agar Distribution System	1.88
4. Okobojo Distribution System	1.96
5. Gettysburg Distribution System	6.94
6. Main Pipeline to St. Lawrence, SD	8.13
7. Highmore Central Distribution System	4.80
8. Mac's Corner Distribution System	3.44
9. Collin's Slough Distribution System and WST	2.55
10. Rezac Lake Distribution System and WST	2.15
11. Orient Distribution System and WST	1.51
Total fiscal year 1999 Program Requirements	[1] 32.15

[1] Excludes approximately $2.75 Million in current year funds.

BEGINNING TO DELIVER

Funding levels provided the Mid-Dakota Project from this point forward will have profound consequences on our ability to deliver the intended benefits of this project in a timely manner. A very high percentage of any appropriation provided by the federal government has a direct and proportional effect on the project's ability to connect even more users to the water system.

Mid-Dakota concludes its testimony to the Energy and Water Subcommittee with the following excerpts from a letter to Mid-Dakota from Mayor William R. Davis, City of Gettysburg, SD:

"Our municipal water supply was in serious jeopardy as the main line was continually breaking apart due to sloughing of the hillside. The cost of constantly repairing these breaks depleted our maintenance reserves and left the City struggling to

find a solution to the problem. Without a reliable source of water, the residents and businesses were concerned about [the] future of Gettysburg."

"If outside funds had not been made available to help complete the connection to Mid-Dakota Rural Water System, Gettysburg would be without water this winter."

"I am sure there are other communities that are facing the same reality as Gettysburg and will need speedy connection to Mid-Dakota. Providing a source of funding to aid in the construction of this rural water system is very important to finish this project for everyone."

The comments and observations provided by Mayor Davis speaks volumes for the need of this important project—and provides a fitting end to our testimony.

Again, we thank the Subcommittee for your strong support in the past.

PREPARED STATEMENT OF THE FORT PECK ASSINIBOINE AND SIOUX TRIBES

FISCAL YEAR 1999 APPROPRIATIONS REQUEST

The Fort Peck Assiniboine and Sioux Tribes respectfully request funds to continue planning of the Fort Peck Reservation RWS, Montana, in the amount of $360,000. The Tribes are joined in fiscal year 1999 by the Counties' Water System, a part of the Fort Peck Assiniboine and Sioux Rural Water System, that is planning water service to all or parts of Roosevelt, Sheridan, Daniels and Valley counties outside the Fort Peck Indian Reservation. The request for funds is for continued pre-authorization work on the Fort Peck Indian Reservation ($200,000) and within the Counties' Water System ($160,000).

The Tribes are highly appreciative of the work by this Subcommittee on the project previously. In fiscal year 1993 and fiscal year 1994, $350,000 were appropriated, and in fiscal year 1997, $210,000 were appropriated. Last year the Subcommittee appropriated $240,000. The funds were line items in the Bureau of Reclamation "General Investigations" budget.

ACCOMPLISHMENTS WITH PRIOR APPROPRIATIONS AND PROPOSED ACTIVITIES

The work products completed to date by the Bureau of Reclamation include a "Needs Assessment and Feasibility Report" within the boundaries of the Fort Peck Indian Reservation. The Fort Peck Sioux and Assiniboine Tribes have continued to work with the Bureau of Reclamation and Tribes' engineer to improve upon and update the cost estimates for a regional project. The "Final Engineering Report" is in progress and will be completed in fiscal year 1998, incorporating the cost of expanding facilities on the Fort Peck Indian Reservation to serve the Counties Water System outside the Fort Peck Indian Reservation. The State of Montana, by action of its legislature, appropriated $62,000 in fiscal year 1997 to provide for a "Needs Assessment" and cost estimate of facilities outside the Reservation. The needs and facility costs determined for the Counties' Water System are being incorporated into the "Final Engineering Report."

Based on the considerable pre-authorization work that has been completed, fiscal year 1999 funding will provide for conclusion of investigations needed prior to authorization. In the event the project is authorized in fiscal year 1998, the fiscal year 1999 appropriations will be used, in part, to upgrade the environmental and engineering work on the project to meet NEPA compliance requirements and to begin design level investigations, respectively.

Through the efforts of this Subcommittee, planning for the project has been adequately advanced and can be concluded with fiscal year 1999 funds. Specific technical objectives with the fiscal year 1999 funds include continued public involvement and coordination with off-Reservation interests in the Counties' Water System by the Fort Peck Assiniboine and Sioux Tribes, continued work with the Bureau of Reclamation on the Level I cultural and historic data gathering, continued work with the Bureau of Reclamation on the Environmental Baseline Report and continued attention to alternatives for project improvements that reduce costs of the project and deliver the full water requirements. The Counties' Water System funds will be used specifically for first time cultural and historic data gathering efforts, wetlands analysis, environmental baseline report and revision of cost estimates based in increasing refinement of interest by the communities of the region and individual farms and ranches. The funding request of the Counties' Water Systems ($160,000) is in keeping with the cost share provisions of the proposed legislation, in which 25 percent of the funds would be derived from a non-federal source. The State of Montana has previously provided $62,000 or 27 percent of the total $222,000 (including $160,000 in fiscal year 1999 and $62,000 from Montana) of funding for off-Reservation activities.

PROGRESS OF THE FORT PECK ASSINIBOINE AND SIOUX TRIBES

The Tribes are extremely pleased with progress on the project to date. Fiscal year 1997 and 1998 focused on public involvement within the Fort Peck Indian Reservation and outside it. The Tribes held numerous public meetings to acquaint residents within the boundaries of this regional project with capital costs, operation and maintenance costs, planning for the establishment of an operation and maintenance entity and the potential impact on environmental resources. The Tribes have planned the use of water from the Missouri River on the basis of their Compact with the State of Montana which assures a dependable supply of project water without shortage. The efforts of the Tribes have involved members of the Tribal Council, Water Resources staff, the Tribes' Water Commission, members of the Fort Peck Assiniboine and Sioux Tribes and other residents of the Fort Peck Indian Reservations.

Detailed cost estimates have been refined and expanded off the Reservation by the Fort Peck Assiniboine and Sioux Tribes and Counties' Water System to assist water users and communities in an evaluation of the costs of participating in the project and improving drinking quality.

The total project cost within the Reservation, sized to carry off-Reservation water demands, is $103 million. The cost of enlarging the facilities to carry water to meet off-Reservation municipal, rural and industrial demands is $26 million (included in the $103 million). The cost of facilities outside the reservation is $76 million. Therefore, total project costs are $179 million. Assuming a cost share of 75 percent federal and 25 percent local, consistent with the Safe Drinking Water Act, as amended, and comparable projects funded by the Subcommittee, the local cost share would be $25.5 million. The Tribes recognize that the cost share details necessarily require Congressional concurrence and authorization.

The cost of annual operation and maintenance of Fort Peck and Counties' facilities is estimated at $2.57 per thousand gallons. Off-Reservation users will have additional costs to operate and maintain off-Reservation transmission and distribution facilities. These costs compare favorable with Mid-Dakota costs of $2.50 per thousand gallons.

COUNTIES' WATER SYSTEM ACTIVITIES

Part of the effort of the Fort Peck Assiniboine and Sioux Tribes during fiscal year 1997 and the first two quarters of fiscal year 1998 was to work with off-Reservation interests in the project to assist them with organization and an improved understanding of the project. This has resulted in the formation of a Steering Committee for the Counties' Water System. The Steering Committee has elected officers and meets on a monthly basis. The Counties' Water System is engaged in refining the needs of the project outside the Fort Peck Indian Reservation, and considerable progress has been made.

WATER QUALITY OF EXISTING DRINKING WATER SUPPLIES AND NEEDS

The geologic setting of the Fort Peck Indian Reservation and the counties outside the Reservation is comparable to the rest of eastern Montana, North Dakota and South Dakota. With the exception of the Missouri River, which is a high quality water source, the groundwater supplies of the region are of poor quality, derived from shales deposited in ancient seas. Some of the worst water on the North American Continent lies below the Fort Peck Indian Reservation in the Madison Formation. This water is not used for human or livestock consumption. It is a brine several times more concentrated than sea water. Above this unsuitable aquifer are lesser aquifers that have been subjected to oil and gas development and have been contaminated, in part, by those activities. Other near-surface aquifers are subject to growing nitrogen contamination from agricultural activities within the area.

The Poplar River, which flows through the central portions of the Fort Peck Indian Reservation and the region is the subject of an Apportionment Agreement between Canada and the United States. Half of the water supply is available for Canada as measured at the International Boundary, and the balance is available for use in the United States. Depletion of this resource by agricultural and coal-fired power generation on the Canadian side increases the concentrations of chemicals and contaminants in the supply for the United States. The Poplar River and its principle tributaries are neither dependable supplies of water nor are they of suitable quality for this project. Thus, the Fort Peck Tribes and the Counties' Water System are seeking a regional water project, comparable to Garrison, WEB, Mni Wiconi and Mid-Dakota that rely on the high quality waters of the Mainstem Missouri River.

The feature of this project that makes it more cost effective than similar projects is its proximity to the Missouri River. The southern boundary of the Fort Peck In-

dian Reservation is formed by the Missouri River for a distance of more than 60 miles. Many of the towns in this regional project are located two to three miles from the river, including Nashua, Frazer, Oswego, Wolf Point, Poplar, Brockton, Culbertson, and Bainville. As shown on the enclosed project map, a looping transmission system outside the Fort Peck Indian Reservation will deliver water 30 to 40 miles north of the Missouri River. Therefore, the distances from the Missouri River to all points in the main transmission system are shorter than in other projects of this nature in the Northern Great Plains.

For comparison of water quality of this project with other regional projects, please refer to Table 1.

TABLE 1.—WATER QUALITY INDICATORS OF COMPARABLE PROJECTS

Dissolved solids project (mg/l)	Community	Sulfate (mg/l)	Project	Community
Lewis and Clark—2,730	Upper Limit	1,500	Fort Peck	Fort Kipp.
Mni Wiconi—2,600	Reliance	1,139	Lewis and Clark	Upper Limit.
Fort Peck—2,332	Fort Kipp	1,120	Mni Wiconi	Red Shirt.
Mni Wiconi—2,056	Red Shirt	1,080	Mni Wiconi	Reliance.
Mni Wiconi—1,761	Murdo	1,042	Mni Wiconi	Murdo.
Mni Wiconi—1,740	Kennebec	984	Mni Wiconi	Kennebec.
Mni Wiconi—1,398	Presho	644	Mni Wiconi	Presho.
Lewis and Clark—1,380	Lower Limit	538	Fort Peck	Poplar.
Fort Peck—1,180	Frazer	498	Fort Peck	Frazer.
Mni Wiconi—1,179	Horse Creek	410	Lewis and Clark	Lower Limit.
Mni Wiconi—1,125	Wakpamni Lake	398	Mni Wiconi	Wakpamni Lake.
Fort Peck—869	Brockton	212	Mni Wiconi	Horse Creek.
Fort Peck—748	Poplar	103	Fort Peck	Brockton.
Mni Wiconi—416	Pine Ridge Village	70	Mni Wiconi	Pine Ridge Village.

PROJECT AUTHORIZATION SOUGHT IN FISCAL YEAR 1998

In the first session of the 105th Congress, the Montana delegation introduced S. 841 and H. 2306, comparable bills in both houses of Congress for authorization of the Fort Peck Assiniboine and Sioux Rural Water Project. A hearing was held on the proposed legislation by the Senate Water and Power Subcommittee in fall 1997. A hearing before the House Water and Power Subcommittee is anticipated in spring 1998.

The Montana delegation is working with the Tribes and the Counties' Water System. This project is building good relationships throughout the region as we determine the interests of those outside the Reservation in participating in this most important project. The community-building aspects of the project have been considerable over a short period of time.

We are working with the Bureau of Reclamation to address some of the concerns expressed by its Commissioner in testimony delivered in the Senate Hearing of November 1997. These concerns have or will be addressed.

We are hopeful authorizing legislation will be accomplished by Fall 1998.

PREPARED STATEMENT OF THE CROW CREEK SIOUX TRIBE

INTRODUCTION

The Crow Creek Sioux Tribe is working with the Bureau of Reclamation on the development of the Crow Creek Sioux Rural Water Supply System. The Tribe has completed the Crow Creek Sioux Rural Water Supply System, Needs Assessment Report, and is currently developing a feasibility study for this project.

In fiscal year 1999, the Crow Creek Sioux Tribe shall need $180,000 for the completion of the feasibility study, including environmental and cultural resources compliance, and the acquisition of GIS software for predesign and easement planning. In addition, the Bureau of Reclamation has informed the Tribe that it requires funds for the review and approval of the feasibility study, and $30,000 is requested for this purpose. The Tribe requests an appropriation of $210,000 in fiscal year 1999 for the Crow Creek Sioux Rural Water Supply System.

NEEDS ASSESSMENT AND FEASIBILITY STUDY

The Crow Creek Rural Water Supply System has completed a Needs Assessment Report, in which alternatives for the development of a Reservation-wide rural water system were evaluated. Three alternatives were assessed: (1) upgrading of existing facilities; (2) linkage with the nearby Mid-Dakota Rural Water System; and (3) development of a new Reservation-wide municipal, rural and industrial (MR & I) water supply system.

The Crow Creek Indian Reservation is located along the Missouri River in central South Dakota. Most of the Reservation population of 3,100 (1997 Tribal Census) is located in the community of Fort Thompson. The Fort Thompson public water system, has as its source the Missouri River. This system lacks adequate capacity for Fort Thompson. During periods of peak demand, water pressure is very low, and there are frequent interruptions in service to various users on the system.

Three other Reservation communities utilize groundwater as their source. The water is of poor quantity and quality. There are periodic exceedances of the maximum contaminant levels for bacteriological contaminants, and volatile organic chemicals including sodium, fluoride, manganese, endothall, benzoapyrne and other minerals and contaminants.

Of the various alternatives investigated in the Needs Assessment, it has been determined that merely upgrading the existing water systems will not substantially improve drinking water supplies, because the Fort Thompson system lacks capacity and the other systems have inadequate source water. It has been determined that the nearby Mid-Dakota water system lacks capacity to serve Fort Thompson, where most Tribal members live. Moreover, there are operational and water service impediments to this alternative. The optimal approach is the development of a Reservation-wide MR & I water system for the Reservation.

The Tribe is currently completing a feasibility study for the Crow Creek Sioux Rural Water Supply System. It has been determined that the cost of this system shall be approximately $24.7 million. This shall provide for improvements and increased capacity at the existing water treatment plant at Fort Thompson, and construction of a distribution system for Fort Thompson, the neighboring community of Bad Nation, and the rural communities of Stephan, Big Bend and Crow Creek. The project shall require 274 miles of pipeline.

Rural homesites shall receive service, and pasture taps are planned for livestock on Indian allotments on the Reservation. This shall improve the livestock grazing economy on the Reservation, which constitutes the predominant economic activity on the Reservation.

The water system as planned shall meet the future water needs of the Reservation, for the population estimated in 2020 and beyond. The project will meet immediate, serious drinking water needs on the Reservation, and will supply safe and adequate drinking water for the projected population, the development of commercial and business activities and the support of all livestock on the Reservation.

FISCAL YEAR 1999 ACTIVITIES

In the next year, the Tribe shall finalize the feasibility study and work with the Bureau of Reclamation for approval. The Tribe shall commence predesign activities, including establishing the Crow Creek Rural Water Supply System Office with adequate computer hardware and software to plan for the acquisition of easements and for environmental and cultural resources compilations and analyses.

The Tribe shall establish the Crow Creek Rural Supply System Office. Geographic Information System (GIS) computer hardware is required to complete the feasibility and for predesign activities. This shall require $75,000. An additional $70,000 is needed for a technician (one full time equivalent employee) and a project coordinator (one full time equivalent employee). The Crow Creek Rural Supply System shall require an additional $35,000 to ensure compliance with the National Environmental Policy Act, namely, to evaluate the environmental impacts of the alternatives that were evaluated in the Needs Assessment Study, and to perform a Class I cultural resources survey.

The information acquired through these activities shall be uploaded in the GIS. The feasibility study shall be completed, and the Tribe shall work with the Bureau of Reclamation for final approval of the feasibility study. The Bureau of Reclamation shall need an estimated $30,000 in administrative costs.

CONCLUSION

The Crow Creek Rural Water Supply System shall need an appropriation of $210,000 in fiscal year 1999, to finalize the feasibility study and for predesign activi-

ties. The Crow Creek Rural Water System shall complete an Environmental Assessment and Class I cultural resources survey, and shall acquire a Geographic Information System for the environmental and cultural resources information that is obtained and analyzed. The feasibility study shall be completed and the Tribe shall work with the Bureau of Reclamation for final approval of the planning documents.

This will provide all of the information that is needed for authorization of an MR & I water system for the Crow Creek Sioux Indian Reservation. Unemployment on the Reservation is estimated at 60 percent. The 1994 Bureau of Indian Affairs Labor Force Report determined that Buffalo County, in which most of the Reservation is located, is the fifth poorest county in America. Drinking water supplies are documented by the Bureau of Reclamation and the Indian Health Service to be woefully inadequate. The construction of an MR & I water system for the Reservation shall meet immediate and dramatic public health and economic development needs on the Crow Creek Indian Reservation.

PREPARED STATEMENT OF HON. JIM GERINGER, GOVERNOR, STATE OF WYOMING

This testimony is submitted in support of a fiscal year 1999 appropriation of $17,500,000 for the Bureau of Reclamation's Colorado River Salinity Control Programs. This Subcommittee recently received testimony from the Colorado River Basin Salinity Control Forum (Forum). The Forum's Executive Director, Jack Barnett, submitted that testimony on behalf of the Forum's seven member states. The State of Wyoming concurs in the fiscal year 1999 funding requests and justification statements set forth in the Forum's testimony. While the President's recommended budget line-item for the basin-wide Colorado River Basin Salinity Control Program is $12,300,000, the State of Wyoming and the Forum believe that the Congress should increase appropriation for this Program by $5,200,000 to appropriately recognize the need to expeditiously implement this important basin-wide program.

The State of Wyoming is one of the seven member states represented on the Forum and the Colorado River Basin Salinity Control Advisory Council (Council). The Council was created by Section 204 of the 1974 Colorado River Basin Salinity Control Act, Public Law 93–320, and like the Forum, is composed of gubernatorial representatives of the seven Colorado River Basin states. Both the Council and Forum serve important liaison roles among the seven states, the Secretaries of the Interior and Agriculture and the Administrator of the Environmental Protection Agency (EPA). The Council is directed by statute to advise these federal officials on the progress of the federal/state cost-shared, basin-wide salinity control programs, and annually recommends to the Federal agencies what level of funding it believes is required to allow the Program to meet its objective of assuring continuing compliance with the basin-wide water quality standards.

The Council last met in October 1997 and developed funding recommendations for fiscal years 1999 and 2000 based on the progress the salinity control programs being implemented by Reclamation, the U.S. Department of Agriculture and the Bureau of Land Management are making in managing and reducing the salt loading into the Colorado River System. The Council's funding recommendations further considered analyses made by the Bureau of Reclamation and the Forum. Each three years the Forum updates the plan of implementation for maintaining the Colorado River water quality standards for salinity, in accordance with Section 303 of the Clean Water Act. The 1996 triennial review of the standards identified the need for the Bureau of Reclamation to expend $17,500,000 per year in order to carry out its portion of the plan of implementation. The plan is intended to assure that the salinity concentrations of Colorado River water do not exceed the numeric criteria set forth in the standards. Based on its own review of the facts, the Council recommended that a minimum of $17,500,000 needs to be expended by the Bureau of Reclamation during fiscal year 1999 to accomplish salinity control activities.

If the necessary levels of funding are not provided for the Colorado River Basin Salinity Control Programs, there is an increased probability that the numeric criteria established in the water quality standards for salinity in the Colorado River may be exceeded. Delaying or deferring adequate funding for the Program at this time will create the need for a much more expensive salinity control effort in the future to assure that the Colorado River Basin states are able to meet the water quality standards for salinity in the Colorado River. "Catch-up" funding in future fiscal years will require the expenditure of greater sums of money, increase the likelihood that the numeric criteria for Colorado River water quality are exceeded, and create undue burdens and difficulties for one of the most successful Federal/State cooperative non-point source pollution control programs in the United States.

We urge this Subcommittee to increase the funding level for the Colorado River Basin Salinity Control Program line-item in Reclamation's budget, beyond the funds requested by the President's budget, to $17,500,000. In addition to the funding needs identified for the basin-wide Colorado River Basin Salinity Control Program, the State of Wyoming supports the appropriation of Operation and Maintenance funds to allow the Bureau of Reclamation to continue to operate completed salinity control projects, including the Paradox Valley Unit. The State of Wyoming understands that a portion of the General Investigation Funds included in the President's budget are intended for salinity control activities. Wyoming supports the appropriation of funds to accomplish these necessary planning and investigation activities.

Thank you for the opportunity to submit this testimony. I request, in addition to your consideration of its contents, that you make it a part of the formal hearing record concerning fiscal year 1999 appropriations for the Bureau of Reclamation.

LETTER FROM GOV. JIM GERINGER

STATE OF WYOMING,
Cheyenne, WY, March 3, 1998.

Hon. PETE V. DOMENICI,
Chairman Subcommittee on Energy and Water Development Senate Appropriations Committee U.S. Senate,
Washington, DC.

Dear CHAIRMAN DOMENICI: I am writing on behalf of the State of Wyoming to request your support for an appropriation in fiscal year 1999 of $8,687,000 included in the Administration's proposed fiscal year 1999 budget for the Bureau of Reclamation under an item labeled "Upper Colorado Region—Endangered Species Recovery Programs and Activities." The bulk of that amount, a sum of $7,628,000, is designated in the President's Budget for expenditure on construction activities associated with the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program).

The State of Wyoming, along with the States of Colorado and Utah, environmental organizations, power users, water development interests, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the Western Area Power Administration have been actively conducting and jointly managing the Recovery Program since its initiation in 1988. Now in its tenth year, the Program has as its objectives recovering (accomplishing de-listing from the ESA's endangered species listing) four endangered fish species native to the waters of the Upper Colorado River Basin while water use and development continues in full compliance with the Endangered Species Act. The Recovery Program is a cooperative partnership that provides, we believe, the best opportunity to recover the endangered fish species and is providing regulatory certainty for water use and continuing development in the Upper Colorado River Basin portion of the three participating States.

Beginning in fiscal year 1994, the Recovery Program initiated specific studies and actions in preparation for the construction projects and programs necessary to recover the endangered fish. These activities included restoration of fish passage to historical habitat, providing instream flow and habitat flow maintenance and protection (in full compliance with the involved States' water laws) and changing reservoir release patterns or other modification of existing projects. Other efforts include fish habitat restoration projects, (flooded bottomlands and wetlands in Utah and Colorado that provide habitat for young fish) and development of facilities for propagation and genetics management. The fiscal year 1999 USBR budget line item that this letter is supporting will enable these vital activities to continue and to be successfully completed in subsequent fiscal years.

The State of Wyoming greatly appreciates the Subcommittee's support of the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin in past years. We respectfully request your continuing funding support for this vitally important multi-state, multi-agency program. With the funding support of all participating states and the Federal Government, this Program is succeeding in meeting the most challenging tasks of accomplishing conservation and recovery of the four endangered fish species while allowing water use and development to occur in the Upper Colorado River Basin in full compliance with the Endangered Species Act. Thank you for your consideration of this funding request and for including this letter in the hearing record.

Best regards,

JIM GERINGER,
Governor.

MIDWEST WATER RESOURCE PROJECT

PREPARED STATEMENT OF J.M. PETERSON, PRESIDENT, AND DARREL G. CURRY, VICE PRESIDENT, MISSOURI RIVER BANK STABILIZATION ASSOCIATION

Mr. Chairman and Members of the Sub-Committee: The Missouri River Bank Stabilization Association, its members, and officers thank you for the opportunity to present this statement and request relating to the budget for the fiscal year 1999.

This statement refers to the Missouri National Recreational River project authorized by the Congress in 1978 per Section 707 of Public Law 95–625. The Association's request for fiscal year 1999 is $350,000, an amount to be used for these purposes:

—operation and maintenance and, in some instances, replacement of structures built prior to 1978 pursuant to Section 32 of the Streambank Erosion Control and Demonstration Act;
—providing some additional access to the river;
—acquiring shoreline easements to increase wildlife habitat and preserve the scenic attributes of the river;
—provide streambank protection where needed;
—meet such other needs as may be required to achieve the completion of this project.

This project seeks to preserve and protect the fifty-nine mile reach of the Missouri River from near Yankton, South Dakota, to the Ponca, Nebraska State Park. This reach of river is the only portion of the Missouri lying below the "main-stem" dams, which is still in a relatively natural state. The river here is neither channelized nor are its banks protected by other than isolated areas of bank stabilization. The result is continuous and inexorable erosion. Such is a natural process. Lacking, however, is yearly flooding which is prevented by the "main-stem" dams. Thus the endless erosion is not offset by the accretion which normally accompanied the traditional annual flooding—the "June Rise".

This decades—old problem was underscored dramatically by the record discharges of water from the "main-stem" dams through most of 1997. The run-off resulting from the melting of the massive snowpack created by the unbelievably severe winter of 1996–1997 threatened to exceed the reservoir capacity available and record discharges of water from the impoundments was required. These caused a veritable man-made flood inflicting damage along the Missouri National Recreational River. The nature of that damage ranged from the loss of or damage to cabins and homes to extensive losses of fertile farmland—losses all too often measured in yards rather than feet. Beyond that, 1997's massive flows damaged, and in some instances, destroyed structures previously installed in an attempt to prevent the erosion problems.

Of the $21,000,000 authorized expenditure for this project, less than $4,000,000 has been spent. The review by the National Park Service of the existing management plan is nearing an end. Among matters considered by the management plan review team are these for which the Missouri River Bank Stabilization Association seeks funding.

Germane to this request, too, is the soon-to-arrive bicentennial celebration of the Lewis and Clark Expedition. Interest in the expedition is increasing at a significant pace. Such interest is evident by increased visitations to this reach of the Missouri, a marked increase in inquiries related to the trail, filming of "wild Missouri" sites, and a variety of other expedition-related activities. Preservation and protection of this natural treasure is surely a worthwhile endeavor!

The Association is most appreciative of the support the Congress has previously readily provided and we surely thank you for the concern and consideration for the farmers, outdoorsmen, environmentalist and the many others who love, respect and wish to preserve this unique segment of the historic Missouri.

PREPARED STATEMENT OF DON D. HURLBERT, SR., P.E., EXECUTIVE DIRECTOR, MO–ARK, KANSAS CITY, MO

Following is the list of projects with the money requested for the 1999 budget. We ask you to give serious consideration to them in the development of fiscal year 1999 Budget. The president's budget submittal simply does not get the job done, and breaks faith with the Community, particularly with the Blue Valley businesses employing over 10,000 people.

REQUESTED FISCAL YEAR 1999 APPROPRIATION

1. Blue River Channel, Kansas City, Missouri—$24,700,000. Continue construction Stage 3. Complete all construction by 2003. The project is now 12 years late. This appropriation will expedite completion.

2. Missouri River Levee System:

—Restudy KC levees—$553,000. For 100/500 year protection.

—Unit L–385—$400,000. Revise plans. (Quindaro Bend). Local sponsor funding plan is approved. ROW is being acquired by sponsor, and has CMA approval.

—Unit L–142—$450,000. (Jeff City) Begin PED. 500 year levee of reduced scope appears feasible since Cedar City buyout.

3. Turkey Creek, Kansas City, Kansas and Missouri—$400,000. Complete Design for a 1999 Construction start. Turkey Creek overflows onto Southwest Boulevard almost every three years. This project has been studied for over thirty years.

4. Upper Blue River, Kansas and Missouri—$457,000. Complete Pre-construction Engineering and Design.

5. Swope Park Industrial Area, Kansas City, Missouri—$196,000.Continue feasibility study

Total—$27,156,000.

The list has been prepared in order of priority, supported by our Board, and other supporters will send separate statements for these appropriations. This request means jobs and better life safety. Thank you for the opportunity to place this request on the record.

PREPARED STATEMENT OF TERRENCE J. O'BRIEN, PRESIDENT, METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

On behalf of the Metropolitan Water Reclamation District of Greater Chicago (District), I want to thank the Subcommittee for this opportunity to present our priorities for fiscal year 1999 and, at the same time, express our appreciation for your support of the District's projects in the years past. The District is the local sponsor for three Corps of Engineers priority projects of the Chicagoland Underflow Plan: the O'Hare, McCook and Thornton Reservoirs. We are requesting the Subcommittee's full support for these vital projects. Specifically, we are asking that $1,000,000 in construction funding be made available for the O'Hare Reservoir in the Subcommittee's Energy and Water Development Appropriations Act for fiscal year 1999. Further, we request the Subcommittee to include $3,100,000 in construction funding for the McCook and Thornton Reservoir projects (beyond the $900,000 in fiscal year 1999 budgeted funds) in the bill. The following text outlines these projects and the need for the requested funding. Also, attached is a booklet indicating the municipalities in our area which benefit from these projects and the need for the requested funding. The booklet reviews the history of the issues involved, including newspaper articles and pertinent data from the Corps of Engineers and the Illinois State Water Survey.

THE CHICAGOLAND UNDERFLOW PLAN

The Chicagoland Underflow Plan (CUP) consists of three reservoirs: the O'Hare, McCook, and Thornton Reservoirs. The O'Hare Reservoir Project was fully authorized for construction in the Water Resources Development Act of 1986 (Public Law 99–662). The authorization provides for the construction of a 1,050 acre-foot floodwater storage reservoir which will be connected to the existing O'Hare segment of the District's Tunnel and Reservoir Plan (TARP). Adopted in 1972, TARP was the result of a multi-agency effort which included officials of the State of Illinois, County of Cook, City of Chicago, and the District.

TARP was designed to address the overwhelming water pollution and flooding problems of the Chicagoland combined sewer areas. These problems stem from the fact that the capacity of the area's waterways has been overburdened over the years and has become woefully inadequate in both hydraulic and assimilative capacities. These waterways are no longer able to carry away the combined sewer overflow discharges nor are they able to assimilate the pollution associated with these discharges. Severe basement flooding and polluted waterways (including Lake Michigan which is the source of drinking water for millions of people) is the inevitable result. We point with pride to the fact that TARP was found to be the most cost-effective and socially and environmentally acceptable way for reducing these flooding and water pollution problems. Experience to date has reinforced such findings with respect to economics and efficiency.

The TARP plan calls for the construction of new "underground rivers" beneath the area's waterways. The "underground rivers" would be tunnels up to 35 feet in diameter and 350 feet below the surface. To provide an outlet for these tunnels, reservoirs will be constructed at the end of the tunnel system. Approximately 93.4 miles of tunnels have been constructed or are under construction at a total cost of $2.1 billion and are operational. These tunnels capture the majority of the pollution load by capturing all of the small storms and the first flush of the large storms. Another 15.8 miles of tunnels costing $331 million need to be completed. The tunnels currently have no place to discharge when they fill up during large rainstorms because the O'Hare, Thornton, and McCook Reservoirs have not been built yet. Without these outlets, the local drainage has nowhere to go when large storms hit the area. Therefore, the combined stormwater and sewage backs up into over 470,000 homes. This is a reduction from the 550,000 homes impacted before the tunnels were put on line.

THE O'HARE RESERVOIR—CHICAGOLAND UNDERFLOW PLAN

The O'Hare Reservoir project is the first component of CUP, the Corps' reservoir plan. Understanding the severe flood threat to the densely populated north central Cook County area, Congress authorized the project in 1986. The project's 1,050 acre-feet of storage is the optimum cost-effective storage capacity for flood control purposes. In the fiscal year 1990 Energy and Water Development Appropriations Act, Congress provided $1.5 million in first-year construction funds for the O'Hare Reservoir and specified that the reservoir be built to at least 1,050 acre-feet in size as authorized, and in full accordance with the cost-sharing percentages specified in Section 103(a) of the Water Resources Development Act of 1986. The Fiscal Year 1992 Energy and Water Development Appropriations Act provided $4.0 million in third-year construction funds to continue construction on the O'Hare Reservoir project and contained language directing the Corps of Engineers to award continuing contracts until construction is completed. Total Federal funding contributed since 1990 is $23.5 million for this project.

As we have stated to this Committee over the years, the District is the local sponsor for this project and is fully committed to it. The District purchased the necessary land at a cost of $4.4 million and has spent $3.0 million for utility relocations and $2.1 million for modifications and betterments. The District will continue to meet its remaining cost-sharing obligations under the law, and will contribute $2.0 million in cash for this project.

Based on the present high flood risk and potential damage due to inadequate channel capacity, we, along with our supportive congressional delegation, are requesting that the Subcommittee make $1,000,000 in construction funds available to complete critical construction work on the O'Hare Reservoir project in the fiscal year 1999 Energy and Water Development Appropriations Act. With this funding the Corps of Engineers will be completing the first reservoir of the overall TARP system.

Based on two successive Presidentially-declared flood disasters in our area in 1986 and again in 1987 and dramatic flooding in the last several years, we believe the probability of this type of flood emergency occurring before implementation of the critical flood prevention measure is quite high. As the public agency for the greater Chicagoland area responsible for water pollution control, and as the regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal of construction completion.

THE MCCOOK AND THORNTON RESERVOIRS—CHICAGOLAND UNDERFLOW PLAN

The McCook and Thornton Reservoirs of the Chicagoland Underflow Plan (CUP) were fully authorized for construction in the Water Resources Development Act of 1988 (Public Law 100–676). CUP, as previously discussed, is a flood protection plan that is designed to reduce basement and street flooding due to combined sewer backups and inadequate hydraulic capacity of the urban waterways. These projects are the second and third components of CUP, they consist of reservoirs to be constructed in west suburban Chicago and Thornton in south suburban Chicago.

These reservoirs will provide a storage capacity of 15.3 billion gallons and will produce annual benefits of $104 million. The total potential annual benefits of these projects are approximately twice as much as their total annual cost. The District, as the local sponsor, is actively pursuing land acquisition for these projects, and is prepared to meet its cost sharing obligations under Public Law 99–662.

These projects are a very sound investment with a high rate of return. They will enhance the quality of life and the safety and the peace of mind of the residents

of this region. The State of Illinois has endorsed these projects and has urged their implementation. In professional circles, these projects are hailed for their far-sightedness, innovation, and benefits.

We have been very pleased that over the years, the Subcommittee has seen fit to include critical levels of funds for these important projects. We were delighted to see the $4,900,000 in unobligated construction funds included in the Energy and Water Development Appropriations bill for fiscal year 1998. However, it is important that we receive $3,100,000 in construction funds in fiscal year 1999 to maintain the commitment and accelerate these projects. This funding is critical to accelerate the detailed design and plans and specifications for key project components. The community has waited long enough for protection and we need these funds now to move the project forward. We respectfully request your consideration of our request.

SUMMARY

Our most significant flooding of the last year occurred on February 20, 1997, when almost four inches of rain fell on the greater Chicagoland area. Due to the frozen ground, almost all of the rainfall entered our combined sewers, causing sewage back-ups throughout the area. When the existing TARP tunnels filled with approximately 1.2 billion gallons of sewage and runoff, the only remaining outlets for the sewers were our waterways. Between 9:00 p.m. and 3:00 a.m. the Chicago and Calumet Rivers rose six feet. For the first time since 1981 we had to open the locks at all three of the waterway control points; these include Wilmette, downtown Chicago, and Calumet. Approximately 4.2 billion gallons of combined sewage and stormwater had to be released directly into Lake Michigan.

A second major storm occurred on August 16 and 17, 1997. Approximately 10,000 homes in the City of Chicago received damages and once again combined sewage was released into Lake Michigan. The damages from this storm were so extensive that a study was conducted by the Local Government Committee of the Illinois State Senate.

Given our large regional jurisdiction and the severity of flooding in our area, the Corps was compelled to develop a plan that would compliment the uniqueness of TARP and be large enough to accommodate the area we serve. With a combined sewer area of 375 square miles, consisting of the City of Chicago and 51 contiguous suburbs, there are 550,000 homes within our jurisdiction which are subject to flooding at any time. The annual damages sustained exceed $150 million. If these projects were in place, these damages could be eliminated. We must consider the safety and peace of mind of the two million people who are affected as well as the disaster relief funds that will be saved when these projects are in place. As the public agency in the greater Chicagoland area responsible for water pollution control, and as the regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal. It is absolutely critical that the Corps' work, which has been proceeding for a number of years, be continued on schedule.

Therefore, we urgently request that $1,000,000 in construction funds be made available in the Fiscal Year 1999 Energy and Water Development Appropriations Act to complete construction of the O'Hare Reservoir and we request that $3.1 million in construction funding for the McCook and Thornton Reservoirs (beyond the budgeted $900,000) be made available in the appropriations bill.

Again, we thank the Subcommittee for its support of our projects over the years and we thank you in advance for your consideration of our request this year.

PREPARED STATEMENT OF THE KICKAPOO TRIBE OF KANSAS

FISCAL YEAR 1999 APPROPRIATIONS REQUEST

The Kickapoo Tribe of Kansas seeks funds to plan the Pikitanoi Rural Water System, Kansas. The amount requested is $250,000, lower than last year's request for the reason that the Kickapoo Tribe has expended its own funds for preparation of a needs assessment.

The Administration has not included a line item in its budget for the Pikitanoi Rural Water System. Planning of the project began in 1996 and has proceeded to the point that federal funds are needed for continued planning. The Kickapoo Tribe seeks appropriations of $250,000 for feasibility study of the Pikitanoi Rural Water System and requests inclusion in the Corps of Engineers or Bureau of Reclamation budgets for water development.

NEED FOR FUNDS

The need for funds for feasibility investigation is long standing. The Corps of Engineers studied needs of the area as early as 1993 in "Partners for Environmental Progress, Type I Feasibility Study, Northeast Kansas Water Supply." Costs of alternative projects in the 1993 report ranged from $38.0 to $128.4 million, depending on demand assumptions.

The funds requested for fiscal year 1998 will be used to continue investigations by the Kickapoos, rural water districts and communities in the northeast corner of Kansas. The work will be conducted by non-federal entities with oversight by the appropriate federal agency. The project boundaries are the Missouri River on the east, the Kansas River on the south, the Blue River on the west and the Kansas/Nebraska state line on the north. The Kickapoo Indian Reservation is contained within the study boundaries. Doniphan, Brown, Nemaha, Jefferson, Pottawatomie, Jackson and Atchison counties are also within the boundaries.

The Kickapoo Tribe has completed a needs assessment of the present and future population and their water requirements within the boundaries of the Kickapoo Indian Reservation. The needs assessment also includes submissions from 10 rural water districts and 11 communities within the study area. Other systems have expressed interest in the project and are supplying information on future needs and points of interconnection to the Pikitanoi Rural Water System. The Kickapoo Tribe and other entities are coordinating with the State of Kansas and the Kansas Rural Water Association. A revised map of the proposed project is enclosed for reference as well as Table 1 on basic statistics.

The Kickapoo Tribe has developed a plan for a wholesale water supply system to serve the area, including the Reservation. The preliminary cost estimate, based on the system shown in Figure 1 for a wholesale system diverting from the Missouri River near Atchison, is $127 million. The project would include 304 miles of pipeline from 4 feet to 24 feet in diameter and 15 pumping stations of 1,300 horsepower or less. At the current level of interest, the treatment plant and transmission lines would be sized for a demand of 11.6 MGD or 9,669 gallons per minute. The system configuration and the cost estimate are expected to change as more of the rural water districts join in the feasibility analysis.

The need for drinking water in northeast Kansas is acute. Local groundwater sources are highly developed. When a request of the Kickapoo Tribe for additional water from its current supplier, the City of Horton, was made, it became clear that the City was without options to increase deliveries to the reservation. The Tribe now relies on the flows of the Delaware River at a diversion point constructed by the Corps of Engineers. The flows of the stream at our point of diversion are not dependable and will fall to zero (no flow) during times of drought. The lack of adequate water supply to meet the needs of the counties included in the service area (total population of 89,462) is common throughout northeastern Kansas, as evidenced by the considerable interest of rural water districts and communities in this project.

ALTERNATIVES FOR WATER SUPPLY ARE SUBJECT OF FEASIBILITY STUDY

Project participants are examining a number of alternatives for water source, transmission and distribution. The State of Kansas has developed Perry Lake and Tuttle Creek Lake within the boundaries of the project. The Kickapoo Tribe has received congressional authorization for construction of a reservoir on the Delaware River within the Reservation. The Missouri River forms the eastern boundary of the project area and constitutes an unlimited high-quality supply of water. Each of these alternatives will be investigated for the development of a regional rural water project with funds appropriated by the committee in the amount of $250,000.

SUMMARY

A steering committee of project participants has been formed. A scope of work for technical investigations has also been developed. Funds appropriated by the committee will be used to assess the needs of the region, lay out a transmission and distribution system, consider alternatives for intake location and regional treatment plant location and determine costs of construction, operation, maintenance and replacement. As initially conceived, part of the project facilities would be placed in trust on behalf of the Kickapoo Tribes, and other parts of the distribution system would be held by off-reservation community water systems and rural water districts. Non-reimbursable funds will be sought for the cost of the facilities held in trust by the United States, and federal and state cost shares will be sought for the remaining facilities.

PIKITANOI PROJECT

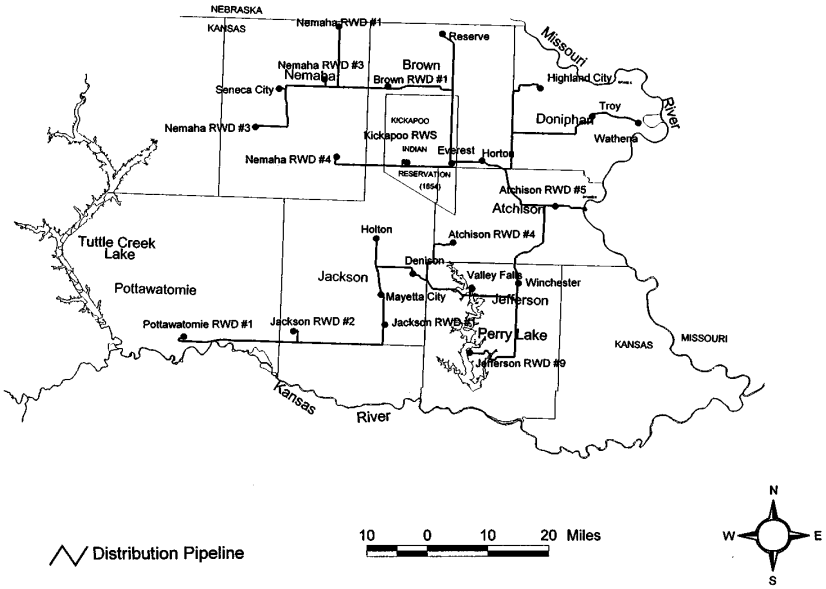


FIGURE 1

TABLE 1.—STATISTICAL SUMMARY—PIKITANOI REGIONAL WATER PROJECT

Statistic	1990 Census	2020 Projected
Kickapoo R. Population	477	1,490
Counties Population	90,198	89,462
Median Age:		
Kickapoo	25.5	
Kansas	36.7	
Kickapoo School Enrollment:		
Pre-Primary	23	
Elementary or High	80	
College	15	
Total	118	
Housing:		
Housing Units	139	527
Persons per House	3.44	2.83

Statistic	Kickapoo	Kansas
1990 Household Income	$14,464	$27,291
1990 Family Income	$16,250	$32,966
1990 Per Capita Income	$4,831	$13,300
Percent Families Below Poverty L	31.3	8.3
1990 Labor Force	126	765,003
Unemployed	18	13,419

Statistic	Kickapoo	Kansas
Percent in Labor Force	34.2	48.7
Percent Unemployed	14.3	3.6

	Value
Average Annual Water Availability, af:	
Missouri River Streamflows, Rulo, af/year	29,701,000
Big Blue River Near Mahattan, af/year, Tuttle	1,664,232
Delaware River Valley Falls, ay/year, Perry	280,785
Groundwater	(1)
2020 Design Needs, gallons per capita per average day:	
In-Residence	81.0
Water Conservation	−12.0
Lawns and Gardens	66.0
School Enrollment	3.0
Labor Force	3.0
Commercial and Industrial	8.0
System Losses	22.0
Total	171.0
2020 Design Needs, Kickapoo and Region:	
Average Day, gallons	4,479,755
Maximum Day, gallons	11,602,565
Maximum Day, gpm	9,669
Annual, af	5,086

[1] Good to Poor.

[In 1998 dollars]

Construction costs	Missouri—Alt A	Perry—Alt C
Intake	4,000,000	4,000,000
Treatment Plant	13,978,000	13,978,000
Pipelines	49,394,000	49,519,000
Pumping Stations	8,203,000	10,090,000
Meters	686,000	686,000
Reservoirs	3,875,000	3,875,000
SCADA	3,000,000	3,000,000
O and M Building	1,500,000	1,500,000
O and M Equipment	1,500,000	1,500,000
Easements	321,000	315,000
Mitigation	500,000	500,000
Non-Contract	35,123,000	35,933,000
Cost Indexing to fiscal year 1996 to 1998	5,471,000	5,598,000
Total	127,551,000	130,494,000

TABLE 1–1.—STATISTICAL SUMMARY—PIKITANOI REGIONAL WATER PROJECT

Statistic		
Pipelines, feet:		
24 inch diameter	34,975	236,167
20 inch diameter	294,228	93,203
18 inch diameter	47,234	.....
16 inch diameter	52,619	52,618
14 inch diameter	.....	15,615
12 inch diameter	489,510	493,887
10 inch diameter	147,369	150,407
8 inch diameter	172,773	283,661

TABLE 1–1.—STATISTICAL SUMMARY—PIKITANOI REGIONAL WATER PROJECT—Continued

Statistic		
6 inch diameter	66,607	17,120
4 inch diameter	229,042	195,196
2 inch diameter	71,520	37,267
Total	1,605,877	1,575,141
Miles	304.1	298.3
Pumping Stations:		
Number	15	16
Maximum Horsepower	1,300	1,350

PREPARED STATEMENT OF STANLEY J. HARRIS, P.E., CITY ENGINEER, PUBLIC WORKS DEPARTMENT, KANSAS CITY, MO

The City of Kansas City, Missouri welcomes the opportunity to provide written testimony to the Subcommittee on Energy and Water Development regarding appropriations for fiscal year 1999. Herein we discuss our concerns with the President's recommended fiscal year 1999 budget as it relates to flood mitigation projects in the Kansas City area supported by federal funding. All of these projects are essential to the sustainment and revitalization of prominent and long standing commercial, business, and industrial communities in this region, and when complete will provide substantially increased levels of flood protection.

We presently have five major flood mitigation projects underway in cooperation with the U.S. Army Corps of Engineers. These include the Blue River Channel, Blue River Basin, (also known as Dodson Industrial District), and Swope Park Industrial Area, Kansas City, Missouri, all located along the Blue River; the Turkey Creek Basin, Kansas and Missouri; and the Kansas City (7 Levees), Missouri and Kansas. We are providing below the necessary fiscal year 1999 appropriation, along with a justification for that request, for each project requiring more funding than is recommended in the President's budget.

BLUE RIVER CHANNEL, KANSAS CITY, MISSOURI—$24.7 MILLION—CONSTRUCTION

Our largest project, 12 miles of channel modification along the Blue River, has been under construction since 1983. Construction was originally scheduled to be finished this year. However, due to year after year of severe cuts in federal funding, the project is now just barely 50 percent complete. This is the most important of our projects and represents our most urgent need, as we are determined to gain back as much of the lost schedule as possible. This project includes environmental clean-up along the river and will also assist in reclamation of a Brownfield area into a once again thriving business district.

The seventh construction contract for the Blue River Channel, awarded earlier this year, can be completed over two years, provided adequate federal funding is available. The President's budget includes a recommendation of $9.6 million for the Blue River Channel project in fiscal year 1999. At best, this would allow the contractor to work from the beginning of the fiscal year in October of 1998 through May of 1999. At that point, or before, the $9.6 million will have been exhausted and the contractor will be forced to shut down operations. Having missed the peak construction season, the contractor will be required to remobilize in the fall when the fiscal year 2000 appropriation becomes available. This is an unworkable situation for a number of reasons; the most obvious are the increase in cost due to the contractor having to mobilize a second time, the further extension of the overall project schedule, and the continued threat of flooding resulting in potential loss of life and livelihood in the Blue Valley. Additionally, there is coordination required between contractors working along the river; 3 bridge projects are currently underway in this channel reach and other projects are expected to be forthcoming. The requested funding in the amount of $24.7 million in fiscal year 1999 will enable the contractor to work through the entire fiscal year and will allow for a two calendar year construction project.

KANSAS CITY, MISSOURI AND KANSAS (7 LEVEES)—$553,000—SURVEYS (RECONNAISSANCE STUDY)

Another important effort to address flooding in our area is the reconnaissance study of seven existing levee units at the juncture of the Kansas and Missouri Rivers, in Kansas City, Missouri and Kansas. These levees, namely, Fairfax, Armourdale and Argentine, all in Kansas; CID in Missouri and Kansas; and North Kansas City, East Bottoms, and Birmingham, all in Missouri; provide the primary flood protection for the most densely developed business regions in the Kansas City area. Evaluation of how these seven levee units function as an interdependent system is needed to determine inadequacies and inconsistencies in the current level of protection. There exists a critical need for this study as evidenced by the great flood of 1993 when several of the levees were nearly overtopped.

These seven major levee units cross both geographical and jurisdictional boundaries: two states and two major rivers, Missouri and Kansas, and have five separate local sponsors. The immense scope of this study and the complexities presented by the involvement of so many entities justifies the concern that the funding heretofore appropriated will be insufficient to develop a Project Study Plan adequate to move forward into the Feasibility Study phase. Another consideration is the current requirement that reconnaissance studies be completed within a one-year period. Due to the complexities surrounding this project, it is necessary that the study completion date be extended until September 30, 1999, and that $553,000 be appropriated in fiscal year 1999 to enable the Corps to perform the preliminary investigations required to develop an effective Project Study Plan and to identify the potential involvement of the five local sponsors during the Feasibility Study phase. This time extension and the $553,000 requested in fiscal year 1999, added to the $277,000 in the Corps' fiscal year 1998 budget, will provide the $830,000 requested last year to be appropriated over a two-year period for completion of this reconnaissance study.

The three remaining major flood control projects in the Kansas City, Missouri area which are mentioned above: Turkey Creek Basin, Kansas and Missouri; Blue River Basin, Kansas City, Missouri; and Swope Park Industrial Area, Kansas City, Missouri, were all also cut substantially in the President's fiscal year 1999 recommended budget. Although we consider these projects to be very important to the Kansas City region we recognize that there is a limited amount of funding availability and have respectfully refrained from asking that these appropriations be restored to the levels requested last October. The funding requested for the Blue River Channel and the 7 Levees projects requested above, however, is so critical to our region that we ask that these projects be given due consideration for restoration of requested funding during the deliberations by the Energy and Water Development Subcommittee.

The City would also like to take this opportunity to express our strong support of several other key programs which provide assistance for flood mitigation. Among these: Small Flood Control Authority, Section 205 of the 1948 Flood Control Act as Amended; Flood Plain Management Services, Section 206 of the 1960 Flood Control Act; Planning Assistance to States, Public Law 93–251; and Emergency Bank Stabilization, Section 14 of the 1946 Flood Control Act as Amended. We appreciate the availability of these programs and will continue to seek beneficial uses for them within Kansas City, Missouri. Finally, we are pleased that the Corps has undertaken the Flow Frequency Study, Upper Mississippi, Illinois and Lower Missouri Rivers. This study is essential in determining updated quantity of flow data and flood stage characteristics for the Missouri River and its tributaries in Kansas City and our surrounding areas.

In closing, Kansas City, Missouri, appreciates the past assistance we have received with these very important flood mitigation projects and is prepared to provide its share of funding in the future. We respectfully request that federal funding to keep the Blue River Channel construction moving toward the soonest possible completion, and to make the Kansas City 7 Levees study a worthwhile effort, be appropriated in the upcoming fiscal year. Thank you for your time, attention and consideration.

PREPARED STATEMENT OF WALLACE GIERINGER, CHAIRMAN, ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of this distinguished Committee, my name is Wallace Gieringer. I have recently retired as Executive Director of the Pine Bluff-Jefferson County (Arkansas) Port Authority. It is my honor to serve as Chairman of the Arkansas River Basin Interstate Committee, members of which were appointed by the governors of the great states of Arkansas, Colorado, Kansas, Missouri, and Okla-

homa. As Chairman, I present this summary testimony as a compilation of the most important projects from each of the member states. Each of the states unanimously supports these projects without reservation. I also respectfully request that the copies of each state's individual statement be made a part of the record, along with this testimony.

Mr. Chairman, the members of the Interstate Committee have again agreed to focus on a project which has been our number one priority for the past several years. A project that is vital to the five-state area and beyond—the urgently needed Montgomery Point Lock and Dam at the confluence of the McClellan-Kerr Arkansas River Navigation System and the Mississippi River.

Continuing problems caused by sediment and lowering of the Mississippi River plague McClellan-Kerr entrance channel users. Construction of Montgomery Point must continue as rapidly as possible before limited dredge disposal areas become inadequate. During times of low water on the Mississippi River the entrance channel is drained of navigable water depth. As the Mississippi River bottom continues to lower, the McClellan-Kerr moves toward total shutdown.

Thus, the entire Arkansas River Navigation System is at risk, and its long-term viability is threatened without Montgomery Point. Some $5 billion in federal and private investments, thousands of jobs, growing exports and future economic development are endangered.

The good news is that you, your associates, the Congress and the Administration have all recognized the urgency of constructing Montgomery Point!

Last year Congress appropriated $20 million to begin construction of the lock and dam proper; the Corps of Engineers awarded a $186 million construction contract in July, and work progressed at a rapid pace. The bad news is that the contractor has used all the funds available from the Corps and, now, has stopped work.

Mr. Chairman and Members of the Committee, continuing Congressional support is essential at this crucial time in the history of the project. We respectfully urge this committee to work with the Corps to do what is necessary to get this project back on track. An appropriation of $44 million is needed for fiscal year 1999 to insure that Montgomery Point is in operation as soon as possible at the lowest possible cost.

The Interstate Committee also respectfully urges:

For the McClellan-Kerr Arkansas River Navigation System, that the Corps be directed to complete installation of tow haulage equipment on the locks and between Little Rock and Fort Smith, AR. This efficiency feature will reduce lockage time by as much as 50 percent while permitting tonnage to double in each tow.

Needed funding for repairs to the Pueblo Reservoir in Colorado's Fryingpan-Arkansas Project. The Pueblo Reservoir, a 349,000 acre-foot storage facility serving southeastern Colorado, has recently undergone investigations as a part of the Bureau of Reclamation's Safety of Dams Program. These investigations resulted in the identification of concerns with foundations of seven of the dam's buttresses. At the present time, the Reservoir is operating under restricted status which means temporary loss of 38,000 acre-feet of important M&I and irrigation storage space. Congressional support is needed for the Bureau's request to access Safety of Dams funds to repair the dam and restore Pueblo Reservoir to normal operations. Local water users through the Southeastern Colorado Water Conservancy District will pay a portion of these repair costs.

Bureau of Reclamation funding for the Equus Beds Groundwater Recharge Demonstration Project in Kansas. This is a jointly sponsored groundwater recharge project of the City of Wichita, Groundwater Management District No. 2 and the State of Kansas. The Equus Beds provides water for one-half million irrigation, municipal and industrial users. The demonstration project is confirming the viability of protecting existing resources from saltwater intrusion and increasing supplies for use to the mid 21st century. Continued Bureau of Reclamation funding for this critical demonstration project is requested in the amount of $600,000.

The Interstate Committee also requests your support of the Planning Assistance to States Program (Section 22 or the 1974 Water Resources Development Act) which authorized the Corps of Engineers to use its technical expertise in water and related land resource management to help States and Indian Tribes solve their water resource problems. The program is used by many states to support their State Water Plans. As natural resources diminish, the need to manage those resources becomes more urgent. We urge your continued support of this program as it supports States and Native American Tribes in developing resource management plans which will benefit citizens for years to come. The program is very valuable and effective, matching Federal and non-Federal funds to provide cost effective engineering expertise and support to assist communities, states and tribes in the development of plans for the management, optimization and preservation of basin watershed and

ecosystem resources. The Water Resources Development Act of 1996 increased the annual program limit from $6 million to $10 million, however, the fiscal year 1998 appropriation was limited to $3 million. The committee requests the annual appropriation for this valuable program be increased to the full $10 million.

Mr. Chairman, Members of this Committee, we respectfully request that you and members of your staff review and respond in a positive way to the attached individual statements from each of our states which set forth specific requests pertaining to those states.

We sincerely appreciate your consideration and assistance. Thank you very much for foresight, wisdom and resourcefulness you and your colleagues demonstrate each and every year in providing solutions to our nation's water resource problems.

PREPARED STATEMENT OF WALLACE A. GIERINGER, CHAIRMAN, ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of the Committee, thank you for the opportunity to present testimony to this most important committee. I recently retired as Executive Director of the Pine Bluff-Jefferson County Port Authority and serve as Arkansas Chairman for the Interstate Committee. Other committee members representing Arkansas, in whose behalf this statement is made, are Messrs. Wayne Bennett, soybean and rice farmer from Lonoke; Colonel Charles D. Maynard, U.S. Army, retired, from Little Rock; Barry McKuin, a Director of the Morrilton Port Authority at Morrilton; and N.M. "Buck" Shell, transportation specialist of Fort Smith and Van Buren.

1997 was a memorable year in the history of the McClellan-Kerr Arkansas River Navigation System—and you helped make it so! Last year Congress continued to recognize the urgent need for Montgomery Point Lock and Dam by appropriating $20 million. This much needed facility is under construction near the confluence of the McClellan-Kerr System and the Mississippi River. To each of you, your staff and the Congress—our most heartfelt thanks!

The Corps of Engineers awarded a $186 million contract for construction of the lock and dam proper on July 19, 1997 and work progressed at a rapid pace. However, the contractor has used all the funds available from the Corps and, now, has stopped work. We urge this committee to work with the Corps to do what is necessary to get this project back on schedule. Completion was scheduled for 2003 assuming adequate funding.

When completed, Montgomery Point will protect over $5 billion in public and private investments, thousands of jobs and world trade created as a result of the McClellan-Kerr Arkansas River Navigation System. Without Montgomery Point Lock and Dam the future of our wonderful McClellan-Kerr navigation system remains threatened. Time is of the essence.

The absence of Montgomery Point Lock and Dam continues to deter economic growth along the entire McClellan-Kerr and the project is certainly time sensitive! As the Mississippi River bottom continues to lower, the McClellan-Kerr moves toward total shutdown. Existing dredge disposal acres are virtually full. Ongoing dredging and disposal of material can mean environmental damage. Construction must continue as rapidly as possible if the project is to be in place before disposal areas become inadequate.

During construction, and use of a temporary by-pass channel, navigation hazards will increase making it imperative that work on the lock and dam be completed as quickly and as safely as possible.

We are very grateful that you, your associates, the Congress, and the Administration have all recognized the urgency of constructing Montgomery Point. Appropriations of $45.6 million have been made to date for engineering, site acquisition and construction for this project which should be completed in 2003 according to the Corps' optimum construction funding schedule.

Mr. Chairman and Members of the Committee, continuing Congressional support is essential at this crucial time in the history of the project. We respectfully request and urge the Congress to appropriate $44 million for use in fiscal year 1999 to continue construction. Adequate funding will insure that the urgently needed facility is in operation as soon as possible at the lowest possible cost.

Other projects are vital to the environment, social and economic well-being of our region and our nation. We recognize the importance of continued construction of needed features to the McClellan-Kerr Arkansas River Navigation System and strongly recommend that you favorably consider the following in your deliberations:

—Support continued funding for the construction, operation and maintenance of the McClellan-Kerr Arkansas River Navigation System.

—Continue construction authority for the McClellan-Kerr Arkansas River Navigation Project until remaining channel stabilization problems identified by the Little Rock District Corps of Engineers have been resolved.
—Provide funding and direct the Corps to complete installation of tow haulage equipment on the locks and dams between Little Rock and Fort Smith. This efficiency feature will reduce lockage time by as much as 50 percent while permitting tonnage to double in each tow with only a minor increase in operating cost.
—Provide funds and direct the Corps of Engineers to begin construction of the Arkansas River Levees Project as authorized by Section 110 of the Water Resource Development Act of 1990. Continuing engineering and design is needed for these levees which have been previously studied in the cost-shared Arkansas River Arkansas and Oklahoma Feasibility Study.
—$1.5 million needs to be specifically provided and the Corps directed to begin rehabilitation construction on the Plum Bayou Levee.
—Fund continued repair and rehabilitation of the power units at the Dardanelle Lock and Dam which first went into operation in 1965. After this work is completed, power output will be increased by 13 percent and thus increase income to the Federal Treasury.

We also urge the Congress to encourage the Military Traffic Management Command to continue to identify opportunities to accelerate use of the nation's navigable waterways to move military cargoes thereby helping contain the nation's defense costs.

In conclusion, Mr. Chairman, please help prevent a crisis for the Arkansas River Navigation System and the multi-state region it serves by appropriating $44 million for use in fiscal year 1999 for Montgomery Point Lock and Dam.

The entire Arkansas River Navigation System is at risk, and its long-term viability is threatened. The system remains at risk until Montgomery Point is constructed. Some $5 billion in federal and private investments and thousands of jobs and growing exports are endangered.

We fully endorse the statement presented to you today by the Chairman of the Arkansas River Basin Interstate Committee. We appreciate the opportunity to provide testimony to your most important subcommittee and urge you to favorably consider our request for needed infrastructure investments in the natural and transportation resources of our nation.

PREPARED STATEMENT OF STEVE ARVERCHOUG, GENERAL MANAGER, SOUTHEASTERN COLORADO WATER CONSERVANCY DISTRICT

Mr. Chairman and Members of the Appropriation Subcommittee on Energy and Water Development, thank you for the opportunity to present these comments and requests on behalf of Colorado as a participant in the Arkansas River Basin Interstate Committee.

voice my support for the Interstate Committee's priority funding requests for the 1999 budget—the Montgomery Point Lock and Dam project and the other priority projects as listed by the Arkansas River Basin Interstate Committee member states.

Allow me to update the Subcommittee members on one of the most pressing needs in Colorado's Arkansas River Basin.

PUEBLO RESERVOIR SAFETY OF DAMS INVESTIGATIONS

Background.—The Bureau of Reclamation built the Fryingpan-Arkansas Project as authorized by Congress beginning in 1964. The Project was completed in the early 1980's as the Bureau put the finishing touches on Pueblo Reservoir, the centerpiece of the Fry-Ark Project. Water from the Project's west slope collection system began benefiting towns and farms in southeastern Colorado in 1972, and since that time the Project has delivered over one million acre-feet of valuable water.

The Southeastern District, as the local sponsor of the Fry-Ark Project, assumed the major financial responsibility for the reimbursable construction costs ($150 million) and the appropriate share of the Project's annual Operation and Maintenance (O&M) costs ($900,000). The District pays the Bureau of Reclamation approximately $4 million each year toward the construction costs repayment obligation and the O&M expenses. Revenue to make these annual payments comes from a property tax assessment on all property within the Southeastern District's nine-county service area (Bent, Chaffee, Crowley, Fremont, El Paso, Kiowa, Otero, Prowers, and Pueblo), and from direct charges on agricultural and municipal water-user entities.

Part of the Bureau of Reclamation's responsibility for the Fry-Ark Project includes the safe and efficient operation of the Project's five reservoirs and dams. Each Project dam is subject to periodic Safety of Dams investigations. Pueblo Reservoir

Dam underwent such an investigation in 1997, and based on the Bureau's current set of standards, Pueblo Dam was deemed to be below Bureau standards under normal operating configurations.

Bureau of Reclamation Decisions to Date.—June 1997, following the Safety of Dams investigation at Pueblo Dam, the Bureau of Reclamation issued a Decision Memorandum which initiated a Corrective Action Study and placed a storage restriction on Pueblo Reservoir. The storage restriction reduced the effective capacity of the reservoir from 349,000 acre-feet to 294,000 (the historic maximum storage level), a loss of 55,000 acre-feet of conservation pool storage space. After discussions with the Corps of Engineer (the Corps has flood control responsibility at Pueblo Reservoir), and with the help of members of Colorado's Congressional delegation, the Bureau modified the operation of the Reservoir so that the storage restriction would reduce conservation storage space by just 20,000 acre-feet, instead of the full 55,000 acre-feet.

The restriction was imposed because the Bureau's Safety of Dams engineers believe that several of the dam's buttresses, which where founded on thin shale seams during the construction of the dam, have the potential to slip and cause a dam failure. Even though monitoring of the buttresses has indicated no slippage, the Bureau's current risk tolerance standards mandate a storage restriction and some form of remedial action. The Bureau is in the process of completing the required Safety of Dams Corrective Action Study to determine the most cost effective remedial action necessary to return the Reservoir to normal operations.

At the January 1998 Board meeting of the Southeastern District, the Bureau announced that an additional storage restriction on Pueblo Reservoir was awaiting final action by the Regional Director, and would further reduce the operational capacity of the Reservoir. This additional restriction would cut another 18,000 acre-feet of storage capacity from the Reservoir's conservation pool. The Bureau is now operating the Reservoir under this additional restriction. The District expects the official decision documents from the Bureau shortly.

Total storage space lost to restriction: 38,000 acre-feet (with modified flood control operations).

Safety of Dams Response.—The Bureau is in the final stages of preparing the Corrective Actions Study which is to detail the remedial action necessary to repair the dam's foundation and bring the structure back within the Bureau's acceptable risk tolerances. To date the Bureau is proposing a repair alternative which would fill the dam's plunge pool with roller-compacted concrete (RCC) and adhere that RCC to the existing surface with a series of bolts and tow blocks. The Bureau's analysis and design for this alternative has undergone review by a panel of outside engineers. These outside engineers (Consultant Review Board) have met with the Bureau's engineers three times, and they now appear to be in general agreement with the proposed fix.

The District has hired engineer's from the firm of Black & Veatch to review the final design for the proposed fix. Based upon the Bureau's preliminary design and engineering reports, our engineers believe the RCC alternative to be a cost effective approach to address the stability concern.

Cost Estimate/Cost Sharing.—The proposed cost estimate for the RCC alternative is $23 million to $38 million. That estimate as currently presented by the Bureau includes $14 million for the actual construction (filed costs), and the remainder for Bureau engineering and administration. The Safety of Dams Act requires the Bureau to also investigate a non-construction alternative, which in the case of Pueblo Dam, would mean the Bureau would simply leave the current storage restriction in place indefinitely. That would mean the permanent loss of 55,000 acre-feet of storage capacity (with flood control operations fully restored).

Costs for the Safety of Dams repairs at Pueblo Reservoir are to be shared between the Bureau and local project beneficiaries. The federal Safety of Dams Act requires that the Bureau request funding from Congress for 85 percent of the costs and then secure repayment from power, irrigation, and municipal and industrial users for the remaining 15 percent of total project costs. This cost-share arrangement means that the Southeastern District, representing irrigation and municipal and industrial users would pay about $3 million to $5 million of the total costs.

Impacts on Municipal and Agricultural Water Users.—The most immediate impact to the constituents of the Southeastern District from the Bureau's decisions to date has been the loss of 38,000 acre-feet of conservation pool storage space. That space is used to store Project Water for supplemental irrigation and municipal uses, Winter Water available for irrigation, and If & When storage accounts for municipal users. All of these valuable storage components have been impacted, but the Winter Water Storage Program has been hardest hit.

This year is the first year in many that Arkansas Valley irrigators decided not to store their Winter Water in Pueblo Reservoir because of the limited space and the likelihood of a spill. For some irrigators Pueblo Reservoir is their only storage option under the Winter Water Storage Program, which means they will not have Winter Water available for late-season deliveries (annual average Winter Water storage in Pueblo Reservoir—40,000 acre-feet).

Over the long term the storage restrictions will reduce the yield of the Project, hurt the operation of important exchanges for municipal supplies, limit the Winter Water Storage Program, and diminish the ability of the District to meet our repayment obligations.

Next Steps.—Both the Bureau of Reclamation and the Southeastern District have many decisions to make before construction can begin to fix Pueblo Dam—proposed to begin November 1998. Some of the key decision areas are listed below:

Bureau of Reclamation:

1. Finalize Preferred Alternative (RCC) design/cost estimate and meet with Consultant Review Board.
2. Complete NEPA compliance requirements.
3. Finalize Corrective Action Study (including the preferred alternative) for presentation to Congress/OMB.
4. Execute a Repayment Contract with the Southeastern District for cost sharing of project costs.
5. Secure funding support for preferred alternative.

Southeastern District:

1. Complete in-house engineering review of Bureau's Preferred Alternative Final Design.
2. Develop a financing plan for repayment of cost-share of Project costs—user fees and District reserve funds.
3. Execute a repayment contract with Bureau for cost-share of Project costs.

District's Outstanding Issues/Congressional Assistance.—As the District works to execute a repayment contract for the Safety of Dams work at Pueblo Reservoir, we have a set of outstanding issues which we believe are important for our members of Congress to consider. First, the District supports the Bureau in their effort to bring Pueblo Dam in line with current Bureau standards. Our goal is to fully cooperate in the Safety of Dams work so that the Reservoir can be restored to normal operations, without further restrictions.

With that goal in mind, the District has the following outstanding issues:

1. The Bureau's total-project cost range is too broad—$23 million to $38 million—the Bureau has done extensive study of the preferred alternative and should be able to narrow this estimate before the District signs a repayment contract;
2. Non-construction costs (engineering, administration and overhead), as a part of the total-project costs, are too high—40 percent to 60 percent of total costs (based on current Bureau estimates)—the District's constituents want to fix Pueblo Dam, but don't want to send over 50 percent of their cost-share funds to pay for Bureau overhead;
3. The District has asked the Bureau to consider a fixed-price repayment contract so that we can know exactly what our financial responsibilities are before we sign a contract. At present, the best the Bureau will offer is an "estimate" of costs;
4. The District's water users need some level of assurance that the Bureau's proposed fix, when complete, will indeed allow the current storage restrictions to be lifted; and,
5. The Bureau should be held accountable to hold down the proposed repair costs and to perform the repairs within a reasonable period of time.

Again, the District supports the Bureau's work to repair Pueblo Dam, we're simply asking through this briefing document and our list of outstanding issues, that the financial impacts to our constituents be given proper consideration. Positive resolution of this Safety of Dams repair obligation at Pueblo Dam will benefit both the Bureau and the constituents of the District. Such a resolution will serve to maintain the intended benefits of the Fry-Ark Project, a valuable project for all the citizens of southeastern Colorado.

CONCLUSION

Mr. Chairman and Members, your time and interest in these matters is greatly appreciated. As I present these issues and requests to you, I recognize the difficulty you have in meeting these needs along with the many others you have been presented. Of course, like the others, the requests of the Arkansas River Basin Interstate Committee are important to us and our constituents. Your fair consideration of the needs of the member states of the Interstate Committee is all that I can ask.

Thank you for your commitment to the water resource needs of our citizens.

PREPARED STATEMENT OF THE KANSAS ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

The water resource projects in the Kansas portion of the Arkansas River Basin are summarized below. Many of the projects are safety, environmental and conservation oriented. In addition, we state our unanimous support for the fiscal year 1999 request of $44 million for continued construction of the authorized Montgomery Point Lock and Dam Project to maintain viable commerce of navigation on the McClellan-Kerr Arkansas River Navigation System.

We request your continued support for these important Bureau of Reclamation projects:

Equus Beds Groundwater Recharge Demonstration Project.—A City of Wichita, Groundwater Management District No. 2 and State of Kansas project to demonstrate the feasibility of recharging a major groundwater resource supplying water to nearly 500,000 municipal, industrial and irrigation users and will also reduce potential degradation of the existing groundwater quality by minimizing migration of saline water. Continued funding in fiscal year 1999 is requested in the amount of $600,000.

Cheney Reservoir.—On the North Fork of the Ninnescah River providing natural treatment of inflows in the upper reaches of Cheney Reservoir to control poor water quality due to agricultural runoff. Previous funding is appreciated. Bureau funding of $265,000 is requested.

Arkansas River Mineral Intrusion Study.—Between Nickerson and Hutchinson to mitigate saltwater intrusion into freshwater supplies. Funding in the amount of $135,000 is requested.

We request your continued support for these equally important projects of the Corps of Engineers:

Arkansas City, Kansas Flood Protection.—To protect homes and businesses from catastrophic damages resulting from either Walnut River or Arkansas River flooding. Previous funding is appreciated and continued funding is needed to complete the project, as authorized.

Winfield, Kansas Flood Protection.—This project will raise and extend an existing levee to provide badly needed flood control for the city. Previous funding is appreciated and continued funding is requested to complete the project.

John Redmond Reservoir Reallocation Study.—To ascertain the equitable distribution of sediment storage between conservation and flood control storage and evaluate the environmental impact of the reallocation. Funding requested in the amount of $525,000.

Continuing Authorities Program.—Several smaller Kansas communities are on the waiting list for funding from the Small Flood Control Projects Program and the Emergency Streambank Stabilization Program. Funding requested to the full programmatic limits.

Grand/Neosho River Basin.—Corps study nearing completion to evaluate the adequacy of federal flood control easements around Grand Lake. Solutions to up stream flooding impact both Kansas and Oklahoma. Follow-on studies are needed to fully identify/evaluate solutions.

Arkansas River Reconnaissance Study from Colorado Border to Dodge City.—$100,000 study to evaluate high flow carrying capacity in western Kansas as has been done in eastern Colorado.

Kanapolis Lake Water Quality Storage Reallocation.—To reallocate existing water quality storage for public supply availability and to give the Corps authority to sell existing storage at original construction cost and interest rates for a specified time.

Operation and Maintenance Budgets.—We request increased funding specifically for Water Control to eliminate the conflict between staffing and gaging support. Reduced funding in Kansas is evident.

We urge your continued support of the Department of Interior project:

Quivira National Wildlife Refuge.—A study to identify the options available for producing the most efficient use of resources for the refuge and irrigation needed to support the area agricultural economy. Research is 50 percent completed. Future support to implement solutions will be appreciated.

PREPARED STATEMENT OF GERALD H. HOLMAN, CHAIRMAN, KANSAS INTERSTATE COMMITTEE

Mr. Chairman and members of the committee, I am Gerald H. Holman, Senior Vice President of the Wichita Area Chamber of Commerce, Wichita, Kansas and Chairman of the Kansas Interstate Committee for the Arkansas Basin Development Association. This statement is submitted on behalf of the entire Kansas Delegation.

We are honored to join with our colleagues from the states of Arkansas, Colorado, Missouri and Oklahoma, to form the five state Arkansas River Basin Interstate Committee. We are unified as a region and fully endorse the statement of the Arkansas River Basin Interstate Committee.

In addition to the important projects listed below, we state our unanimous support for the continued construction of the authorized Montgomery Point Lock and Dam Project to maintain viable navigation for commerce on the McClellan-Kerr Navigation System. This inland waterway is vital to the economic health of the five state area and your support is needed to maintain its future viability. Construction has begun and continued funding authorization is needed. We hereby state our unanimous support for the $44 million needed by the Corps of Engineers to maintain the most economical and cost efficient construction schedule.

The water resources projects in the Kansas portion of the Arkansas River Basin have been carefully reviewed by the Kansas delegation and reflect accurately the need. Many of the projects are safety, environmental and conservation oriented. We are grateful for your past commitment and respectfully request your continued commitment.

We ask for your continued support for these important Bureau of Reclamation projects on behalf of the Wichita/South Central Kansas area:

Equus Beds Groundwater Recharge Demonstration Project.—This is the continuation of a Bureau of Reclamation project jointly endorsed by the City of Wichita, Groundwater Management District No. 2 and the State of Kansas. The project is demonstrating the feasibility of recharging a major groundwater resource supplying water to nearly one-half million irrigation, municipal and industrial users. This model technology has application to other areas throughout the nation. The full scale project, when implemented, will capture flood flows from the Little Arkansas River providing water for use during times of low rainfall or dry conditions and will also reduce on-going degradation of the existing groundwater quality by minimizing migration of saline water. The pilot project is operational with the guidance from the Bureau of Reclamation. Early data positively supports predictions that the full scale project can be successful and is capable of meeting the increasing water resource needs of the area to the mid 21st century. Additional data is needed to confirm early findings.

The Equus Beds provides approximately half of the Wichita area regional municipal water supply. This recharge project is vital to the future of the metropolitan Wichita area and surrounding farming communities. We are grateful for the $1 million funding in fiscal year 1995 and fiscal year 1996, the $875,000 in fiscal year 1997 and the $667,000 authorized in fiscal year 1998. Fiscal year 1999 funding in the amount of $600,000 is requested. Cost share funds are provided by the City of Wichita for this on-going federally supported project. Governor Graves supports this much needed project as a benefit to 20 percent of the state's population.

For fiscal year 1998, the Conference Committee also approved the following report language: "The conferees direct the Bureau of Reclamation to notify the Committees on Appropriations of the House and the Senate before reprogramming any funds from the Equus Beds Groundwater Recharge Demonstration Project in Kansas." We request this or similar language remain for fiscal year 1999.

Cheney Reservoir.—The reservoir provides approximately 50 percent of Wichita's regional water supply. Two environmental problems threaten the water quality and longevity of the reservoir. One is sedimentation from soil erosion and the other is non-point source pollution, particularly the amount of phosphates entering the reservoir resulting in offensive taste and odor problems. Potential pollution sites in the watershed above the reservoir have been identified along with Best Management Practices that can help reduce the pollution from those sites. The City of Wichita has committed $1.2 million to this project for implementing soil conservation practices consistent with the Management Plan. The Bureau of Reclamation constructed the reservoir and has remained involved in on-going support. Bureau funding in fiscal year 1997 and fiscal year 1998 in the amounts of $235,000 and $131,000 respectively was approved as cost share support for the local funding provided by the City of Wichita. However, of the $131,000 the Bureau withheld $30,000 as "overhead" expense on the project. Funding, fully allocated to the project, in the amount of $265,000 is requested for fiscal year 1999.

Arkansas River Mineral Intrusion Study.—Aggressive and innovative treatment techniques must be identified and implemented to protect our valuable water resources from increasing environmental problems. Authorization of on-going Bureau of Reclamation research is critical to protecting existing resources.

A critically important research project for Kansas is the Mineral Intrusion Study in the Equus Beds Aquifer along the Arkansas River between the cities of Nickerson and Hutchinson. Ground water pumping in the aquifer is inducing saltwater from the river into the freshwater supplies of the Equus Beds. The State of Kansas has supported this project with cost share monies in the State Water Plan over the last four years with the expectation that the Bureau of Reclamation would provide the necessary financial support to conduct the modeling of the region and ascertain problem areas and management solutions to be adopted by Groundwater Management District No. 2. Funding in the amount of $135,000 is requested.

This Committee has given its previous support to local protection and other important Kansas projects. A number of projects are now completed and we are most grateful for your construction authorization. Many of our agricultural communities have historically experienced major flood disasters, some of which have resulted in multi-state hardships involving portions of the state of Oklahoma. Because of this, we are most interested in rapidly moving other needed projects to completion. However, our small communities do not have the necessary funds nor engineering expertise. Projects in addition to local protection are also important and listed below. We request your continued support.

Arkansas City, Kansas Flood Protection.—This project is in response to a critical need to protect the environment, homes and businesses from catastrophic damages that would result from either Walnut River or Arkansas River flooding which could include flood borne petroleum products from the Arkansas City refinery. The Corps has extensively coordinated with the city and various state agencies in the development of this project, which when completed, will eliminate damage in a multi-county area and also result in benefits to the state of Oklahoma just a few miles south of the project. We appreciate the previous funding in the amounts of $700,000 in fiscal year 1996, $1 million in fiscal year 1997 and $2 million in fiscal year 1998. Also, in fiscal year 1997, the Secretary of the Army was authorized to construct the project. We request your continued support for the timely construction as authorized in fiscal year 1997 at the funding level needed by the Corps of Engineers.

Winfield, Kansas Flood Protection.—This project will raise and extend an existing levee to provide badly needed flood control for the city. Your authorized funding in the amounts of $670,000 in fiscal year 1996, $1 million in fiscal year 1997 and $2 million in fiscal year 1998 is appreciated. All design studies are completed. We urge your continued support for project construction at the level needed by the Corps of Engineers to insure the safety of Winfield's citizens.

John Redmond Reservoir Reallocation Study.—John Redmond Reservoir remains a primary source of water supply for small communities between Burlington Kansas and Grand Lake. It is suffering loss of capacity ahead of its design rate because of excessive deposits within the conservation pool. The flood pool remains above its design capacity. A study would ascertain the equitable distribution of sediment storage between conservation and flood control storages and also evaluate the environmental impact of the appropriate reallocation. Funding requirements are $525,000 and the Corps of Engineers could accomplish the study under its General Investigation authority. We request your support for this important project.

Continuing Authorities Program.—We support funding for this program including the Small Flood Control Projects Program (Section 205 of the 1948 Flood Control Act, as amended) as well as the Emergency Streambank Stabilization Program (Section 14 of the 1946 Flood Control Act, as amended). Smaller communities in Kansas (Iola, Liberal, Medicine Lodge, Altoona, Emporia and Parsons) and Oklahoma have requested assistance from the Corps of Engineers and are currently on the waiting list. We urge you to support these programs to the $40 million programmatic limit for the Small Flood Control Projects Program and $15 million for the Emergency Streambank Stabilization Program.

Grand (Neosho) River Basin.—The Grand-Neosho River Committee was formed at the request of the Kansas and Oklahoma congressional delegations to evaluate water resource problems affecting both Kansas and Oklahoma. A study, authorized by the Water Resources Development Act of 1996, is nearing completion and will evaluate whether the Corps of Engineers has adequate flood control easements in the upper reaches of Grand Lake. We support continued studies to fully evaluate and identify solutions to upstream flooding problems in Kansas which are associated with flood control operations of Grand Lake. Changes in operations of the Lake or other upstream changes could have a significant impact on flood control, hydropower, and navigation operations in the overall Grand-Neosho River system. We

urge continued funding in fiscal year 1999 for follow-on studies for this important project.

Arkansas River Reconnaissance Study from Colorado Border to Dodge City.—Environmental problems are increasing the importance of continued research to protect our valuable water resources. Aggressive and innovative treatment techniques must be identified and implemented. Authorization of on-going Corps of Engineers research is essential, and as appropriate, demonstration project funding.

A reconnaissance study of the high flow carrying capacity of the Arkansas River from the Colorado State Line to Dodge City is important to western Kansas. This study would compliment the research accomplished on the Colorado portion of the river below John Martin Dam. Lack of flows over the past two decades has allowed vegetation to encroach into the river channel thereby restricting its ability to convey flood flows during runoff periods. Additionally, the delineation of the Ordinary High Water Mark separating the river channel property between the public trust and private lands has become muddled because of the lack of definition of a permanent channel in the Western Kansas reach. We request this project be funded in the amount of $100,000 to complete the necessary research.

Kanapolis Lake Water Quality Storage Reallocation.—Agricultural communities in central Kansas are in need of additional public water supplies. A cost-effective solution is reallocating existing water quality storage in Kanapolis Lake for public supply availability. The Kansas Water Office has made a request of the Corps of Engineers to authorize the reallocation which is a most expeditious solution for central Kansas. We urge you to support our request of the Corps of Engineers. We also request that language be added to the Water Resource Development Act of 1998 which will give authority to the Corps on numerous projects to sell existing conservation storage at original costs and interest rates for a specific limited time.

Operation and Maintenance Budgets.—To effectively manage water resources in the state, continued funding from the Corps of Engineers for operation and maintenance is needed, specifically for Water Control. The Corps has experienced reduced funding and increased restrictions on use of in-house funds which is forcing the Tulsa District to allocate between staffing needs and stream gaging support. A withdrawal of Corps support in Kansas is now evident and a corresponding diminished ability to effectively monitor extreme events such as flooding is likely. Increased funding, specifically for Water Control, is requested along with reduced restrictions on its use.

Your continued support of a most important U.S. Department of Interior, Fish and Wildlife Service project is very much appreciated:

Quivira National Wildlife Refuge.—This is a joint project involving the U.S. Fish and Wildlife Service—Region 6, the State of Kansas, the local groundwater management district and the Water Protection Association of Central Kansas. Quivira provides a resting area for waterfowl and endangered species during their annual migrations in the Central Flyway. The Refuge is comprised of a series of shallow pools totaling about 6,500 surface acre-feet and is part of the Rattlesnake Creek basin. The Rattlesnake Creek basin has experienced significant groundwater and streamflow declines in recent years due to climatic conditions as well as expansion of irrigated agriculture. An engineering feasibility study is underway to identify the watershed-based options available for producing the most efficient and effective use of the water resources in the Rattlesnake Creek basin to protect the Wildlife Refuge as well as the agriculture economy of the area. Fiscal year 1996 funding in the amount of $760,000 and $1,400,000 in fiscal year 1997 is very much appreciated which along with cost share funds from the State of Kansas and area businesses/organizations, is sufficient for the study which is now approximately 50 percent complete. Design work could begin later this year. No funding was requested for fiscal year 1998 and none is being requested for fiscal year 1999. However, future funding requests may be made.

Finally, we are most concerned with any proposal to limit participation of both the Corps of Engineers and Bureau of Reclamation in development and protection of water resources infrastructure. It is essential to have the integrity and continuity these agencies provide on major public projects. Your continued support of these vital agencies, including funding, will be greatly appreciated. Our infrastructure must be maintained and where needed, enhanced for the future.

Mr. Chairman and Members of this Committee, we thank you for the dedicated manner in which you and your colleagues have dealt with the Water Resources Programs and for allowing us to present our views and recommendations. We look forward with great expectations and hope for the future of water resource development in Kansas and the entire Arkansas River Basin.

PREPARED STATEMENT OF JAMES M. HEWGLEY, JR., OKLAHOMA CHAIRMAN, ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

The water resource needs for the State of Oklahoma have been carefully reviewed and the following accurately represents the needs of the citizens of our region.

We hold as our number one priority the construction of the Montgomery Point Lock and Dam in Arkansas. The completion of this project is critical to the continued use of the navigation system and the continued growth of the entire region. We request an appropriation of $44 million for fiscal year 1999.

We also request your continued support of the Planning Assistance to States Program which authorizes the Corps of Engineers to use its technical expertise in water and related land resource management to help States and Indian Tribes solve their water resource problems. This committee requests the annual appropriation for this valuable program be increased to the $10 million authorization. This is a very important program to the states.

We are pleased that the President's budget includes money for flood control projects in Oklahoma. Two of those projects are the Skiatook Lake, Dam Safety Assurance project and the Mingo Creek project in Tulsa. We also support funding of $5 million for the Tenkiller Lake Dam Safety Assurance project.

We support the ongoing effort to evaluate water resource problems in the Grand/Neosho River Basin in Kansas and Oklahoma. We support the continued funding of studies to determine the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma.

We also support funding for the Continuing Authorities Program, including the Small Flood Control Projects Program, and the Emergency Streambank Stabilization Program.

We request your continued support of the Flood Plain Management Services Program which authorized the Corps of Engineers to use its technical expertise to provide guidance in flood plain management matters to all private, local state and Federal entities.

We have grave concerns about the Administration's proposed, radical cuts in the Corps of Engineers budget. We support a funding level equal to that of fiscal year 1998.

On a related matter, we have deep concerns about the attempt to reauthorize the Endangered Species Act without significant beneficial reforms. We urge further reforms or defeat of S. 1180.

Finally, the committee supports funding for the Environmental Restoration Program.

PREPARED STATEMENT OF JAMES M. HEWGLEY, JR., OKLAHOMA CHAIRMAN, ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of the committee, I am James M. Hewgley, Jr., Oklahoma Chairman of the Arkansas River Basin Interstate Committee, from Tulsa, Oklhaoma.

It is my privilege to present this statement on behalf of the Oklahoma Members of our committee in support of adequate funding for water resource development projects in our area of the Arkansas River Basin. Other members of the Committee are: Mr. Ted Coombes, Tulsa; Mr. Lew Meibergen, Enid; Mr. Edwin L. Gage, Muskogee; and Mr. Terry McDonald, Tulsa.

Together with representatives of the other Arkansas River Basin states, we fully endorse the statement presented to you by the Chairman of the Arkansas River Basin Interstate Committee. We appreciate the opportunity to present our views of the special needs of our State concerning several studies and projects.

As we have testified in the past, serious problems exist at the waterway entrance to the McClellan-Kerr Arkansas River Navigation System. Extensive testing has proven that construction of Montgomery Point Lock and Dam is the only acceptable means to correct the problem. The project has been started and adequate funding must follow to keep the project on its construction schedule.

Your recognition, as well as that of the Administration, of the importance of constructing Montgomery Point Lock and Dam is very gratifying. To date, you and your colleagues have appropriated $45.6 million for engineering, site acquisition and construction. This action is very much appreciated.

We are grateful that the Congress, in Public Law 102–580, directed that "The Secretary shall proceed expeditiously with design, land acquisition and construction of the Montgomery Point Lock and Dam on the White River, Arkansas, authorized as part of the McClellan-Kerr Waterway by section 1 of the River and Harbor Act of July 24, 1946 (60 State. 635–636)."

We respectfully request that Congress appropriate $44 million in the fiscal year 1999 budget cycle to continue construction of the authorized project. This is the amount the contractor has indicated they can effectively use during fiscal year 1999. This will help insure that the project is completed and in operation as soon as possible at the lowest possible cost.

Mr. Chairman, members of this distinguished Committee, we respectfully remind each of you this navigation system has brought low-cost water transportation to Oklahoma, Arkansas and surrounding states. There has been in excess of $5 billion invested in the construction and development of the McClellan-Kerr Arkansas River Navigation System by the Federal Government and the public and private sectors. There have been more than 50,000 jobs created as a result of this partnered investment.

We also request your support of the Planning Assistance to States Program (Section 22 of the 1974 Water Resources Development Act) which authorizes the Corps of Engineers to use its technical expertise in water and related land resource management to help States and Indian Tribes solve their water resource problems. The program is used by many states to support their State Water Plans. As natural resources diminish, the need to manage those resources becomes more urgent. We urge your continued support of this program as it supports States and Native American Tribes in developing resource management plans which will benefit citizens for years to come. The program is very valuable and effective, matching Federal and non-Federal funds to provide cost-effective engineering expertise and support to assist communities, states and tribes in the development of plans for the management, optimization and preservation of basin watershed, and ecosystem resources. The Water Resources Development Act of 1996 increased the annual program limit from $6 million to $10 million, however, the fiscal year 1998 appropriation was limited to $3 million. The committee requests the annual appropriation for this valuable program be increased to the full $10 million.

We are particularly pleased that the President's budget includes funds to advance work for flood control in Oklahoma. Of special interest to our committee is funding for the Skiatook Lake, Dam Safety Assurance Project, and the Mingo Creek, Tulsa, Oklahoma, and Fry Creeks, Bixby, Oklahoma, projects. We also support funding for the Tenkiller Lake Dam Safety Assurance project which will insure that Tenkiller Dam will be able to continue to operate under maximum upstream rainfall conditions and will be able to continue to provide the important water resource benefits to the region. We are grateful the Administration's budget request has included funds for this project. however, an appropriation of $5 million will be needed to allow the initiation of this important effort. We are also pleased that the President's budget includes funding for the Cimarron River Basin Reconnaissance study and we support funding to study watershed development needs in the Illinois River basin.

Studies conducted by the Tulsa District in the 1970's identified the potential for flood damage reduction measures in the Cimarron River Basin. Several potential multiple purpose reservoirs were considered for development in response to needs for flood control, water supply, fish and wildlife, and recreation. Development and operation of these projects in conjunction with the existing system of reservoirs in the Arkansas River Basin would provide for flood damage reduction along the Cimarron River downstream, as well as along the Arkansas River from Keystone Dam, near Tulsa, to Fort Smith, Arkansas. These projects would also offer the potential for development of hydropower and navigation benefits along the McClellan-Kerr Arkansas River Navigation System. Additional water resource development, including restoration of habitat lost as a result of Federal construction and rehabilitation of federally constructed watershed projects require further evaluation within the basin. Considerable local interest has developed in these projects, particularly the potential of Crescent Lake which would be located about 15 miles north of Oklahoma City. The Tulsa District has received letters of support for initiation of reconnaissance studies from the Oklahoma Water Resources Board and the mayors of Guthrie, Crescent, and Oklahoma City.

The Illinois River watershed is experiencing continued water resource development needs and is the focus of ongoing Corps and other agency investigations. There is a significant need to establish minimum streamflow levels downstream of the Lake Tenkiller Dam and there are increasing watershed influences upstream of Lake Tenkiller which impact on the quality of water available for fish and wildlife, municipal and industrial water supply users, and recreation users of the Lake Tenkiller and Illinois River waters. The committee requests funding to initiate reconnaissance studies for the Illinois River Watershed in fiscal year 1999.

We also support the ongoing effort to evaluate water resource problems in the Grand-Neosho River basin in Kansas and Oklahoma. We support the continued funding of studies to evaluate solutions to upstream flooding problems associated

with the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma. A study, authorized by the Water Resources Development Act of 1996, is scheduled to be completed in March of 1998 and will evaluate whether the Corps of Engineers has adequate flood control easements in the upper reaches of Grand Lake. If that evaluation indicates inadequate real estate interest is held for flood control operations, additional study will be required to determine the most cost-effective solution to the real estate inadequacies. Changes in the operations of the project or other upstream changes could have a significant impact on flood control, hydropower, and navigation operations in the Grand (Neosho) River system and on the Arkansas River basin system, as well. We urge you to fund follow-on studies for this important project in fiscal year 1999.

We also support funding for the Continuing Authorities Program, including the Small Flood Control Projects Program (Section 205 of the 1948 Flood Control Act, as amended) and the Emergency Streambank Stabilization Program (Section 14 of the 1946 Flood Control Act, as Amended). We want to express our appreciation for your continued support of those programs.

Although the Small Flood Control Projects Program addresses flood problems which generally impact smaller communities and rural areas and would appear to benefit only those communities, the impact of those projects on economic development crosses county, regional and sometimes state boundaries. The communities served by the program frequently do not have the funds or engineering expertise necessary to provide adequate flood damage reduction measures for their citizens. Continued flooding can have a devastating impact on community development and regional economic stability. The program is extremely beneficial and has been recognized nation-wide as a vital part of community development, so much so, in fact, that there is currently a backlog of requests from communities who have requested assistance under this program. Oklahoma communities that have requested assistance from the Corps of Engineers under the Section 205 authority and are currently on a waiting list include Bartlesville, Clinton, Dewey, Lawton, McAlester and Sayre. Additionally, the Pawnee Indian Tribe has requested the Corps' assistance with flooding problems. Kansas communities on the waiting list include Iola, Liberal, and Medicine Lodge. We further support continued efforts under this program which will ensure that Lake Carl Blackwell near Stillwater, Oklahoma, is rehabilitated and modified to provide effective downstream flood protection. We urge this program be fully funded to the programmatic limit of $40 million.

Likewise, the Emergency Streambank Stabilization Program provides quick response engineering design and construction to protect important local utilities, roads and other public facilities in smaller urban and rural settings from damage due to streambank erosion. The protection afforded by this program helps insure that important roads, bridges, utilities and other public structures remain safe and useful. By providing small, affordable and relatively quickly constructed projects, these two programs enhance the lives of many by providing safe and stable living environments. There is also a backlog of requests under this program. Counties in Oklahoma that have requested assistance under the Section 14 authority and are on a waiting list include: Blain, Caddo, Canadian, Choctaw, Cleveland, Garvin, Grady, Payne and Woods. Other Oklahoma communities needing assistance include Bartlesville and Shawnee. We urge this program be fully funded to the programmatic limit of $15 million, as is reflected in the President's budget.

We also request your continued support of and funding for the Environmental Restoration Program (Section 1135 of the Water Resources Development Act of 1986). The Environmental Restoration Program is a relatively new program which offers the Corps of Engineers a unique opportunity to work to restore valuable habitat, wetlands and other important environmental features which previously could not be considered. Local interest has been expressed for potential environmental restoration projects located at Great Salt Plains Reservoir, Lake Arcadia, Lake Eufaula, Lower Illinois River, Mountain Fork River, Meadow Lake, North Canadian River and the Sequoyah National Wildlife Refuge. This program is providing significant benefit to the states of Kansas and Oklahoma. We urge this program be fully funded to the programmatic limit of $25 million.

We also request your continued support of the Flood Plain Management Services Program (Section 206 of the 1960 Flood Control Act) which authorizes the Corps of Engineers to use its technical expertise to provide guidance in flood plain management matters to all private, local, state and Federal entities. The objective of the program is to support comprehensive flood plain management planning. The program is one of the most beneficial programs available for reducing flood losses and provides assistance to officials from cities, counties, states and Indian Tribes to ensure that new facilities are not built in areas prone to floods. Assistance includes flood warning, flood proofing and other flood damage reduction measures. Critical

flood plain information is provided on a cost reimbursable basis to home owners, mortgage companies, realtors and others for use in flood plain awareness and flood insurance requirements.

On a related matter, we would share with you that we are greatly concerned that the Administration has not requested sufficient funds to meet the increasing infrastructure needs of our nation. The Administration's request for $3.2 billion for the Civil Works budget is down $839 million (21 percent) from the fiscal year 1998 appropriation. Most troubling was the proposed cut in general construction funds, from $1.47 billion to $784 million (47 percent).

At the Administration's proposed level of spending, the Corps of Engineers cannot efficiently complete ongoing flood control and navigation construction projects throughout the nation because there will be enormous shortfalls in funding. This will reduce the economic benefits to be generated from construction projects with significant economic impact such as rehabilitating antiquated locks and dams on our inland waterways and deepening ports and harbors.

We urge you to work with the Leadership to ensure that sufficient resources are included in the fiscal year 1999 Budget Resolution to allocate funds for the Corps of Engineers at a level more in line with the real water resources development needs of the nation.

Also concerning another related matter, we have deep concerns about the attempt to reauthorize the Endangered Species Act without significant beneficial reforms. If the bill is passed through as it has been reported out of the Senate Committee, it will be devastating to industry and the country as a whole. We urge you to take a hard look at S. 1180 and do the right thing in amending this bill to include reasonable reforms.

Mr. Chairman, we appreciate this opportunity to present our views on these subjects.

SOUTHEAST U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF THE CITY OF MIAMI BEACH, FL

Mr. Chairman and Members of the subcommittee: The City of Miami Beach would first like to thank the members of the subcommittee for all their efforts in the past to provide support for the State of Florida's beaches and in particular, those of Miami Beach. Now, as you begin the difficult process of crafting the fiscal year 1999 Energy and Water Appropriations Bill, the city would like to bring to your attention an ongoing erosion problem for which a solution is desperately needed.

Beaches are Florida's number one tourist "attraction." Last year, beach tourism generated more than $16 billion dollars for Florida's economy and more tourists visited Miami Beach than visited the three largest national parks combined.

In addition to their vital economic importance, beaches are the front line defense for multi-billion dollar coastal infrastructure during hurricanes and storms. When beaches are allowed to erode away, the likelihood that the Federal government will be stuck with astronomical storm recovery costs is significantly increased. The Army Corps of Engineers estimated that more than 70 percent of the damage caused to upland properties in Panama City Beach by Hurricane Opal could have been prevented if their pending beach renourishment project had been completed before the storm.

The Florida Department of Environmental Protection estimates that at least 276 miles (35 percent) of Florida's 787 miles of sandy beaches are currently at a critical state of erosion. This includes the entire six miles of Miami Beach. As a result of the continuing erosion process and more dramatically, recent intense storms which have caused tremendous damage to almost all of the dry beach and sand dune throughout the middle segment of Miami Beach. Two years ago, most of the Middle Beach dune cross-overs were declared safety hazards and closed, as the footings of the boardwalk itself were in immediate jeopardy of being undercut by the encroaching tides. If emergency measures, costing approximately $400,000 had not been taken by the City, there would have been considerable risk of coastal flooding west of the dune line in residential sections of Miami Beach. As you can see, this example points to the commitment we as a beach community have to our beaches, but Federal assistance remains crucial. While we are thankful of the substantial commitment made by the subcommittee in the fiscal year 1998 Energy and Water Conference Report, there is still much work to be done. Our beaches must be maintained not only to ensure that our residents and coastal properties are afforded the best storm protection possible, but also to ensure that beach tourism, our number one industry, is protected and nurtured.

In 1987, the Army Corps of Engineers and Metropolitan Dade County entered into a fifty year agreement to jointly manage restore and maintain Dade County's sandy beaches. Since then, Metropolitan Dade County has been responsible for coordinating and funding the local share of the cost for the periodic renourishment of our beaches.

In order to ensure that adequate funding will continue to be available, the City of Miami Beach supports and endorses the legislative priorities and appropriation requests of Metropolitan Dade County, as they relate to the restoration and maintenance of Dade County's sandy beaches. Specifically, the City respectfully adds their strong support for the efforts of Miami-Dade County and wholeheartedly supports their fiscal year 1999 request for beach renourishment funds.

PREPARED STATEMENT OF VOLUSIA COUNTY, FL

On behalf of our citizens and fishermen, Volusia County, Florida, is requesting that the Subcommittee appropriate $4,034,000 from the U.S. Army Corps of Engineers (COE) Operations and Maintenance account to fund an 800-foot landward extension of the North Jetty of the Ponce DeLeon Inlet. This funding is essential to protect the existing North Jetty and the Inlet. A more detailed case history and description of the situation follows below.

The Ponce DeLeon Inlet is located on the east coast of Florida, about 10 miles south of the City of Daytona Beach in Volusia County. The Inlet is a natural harbor connecting the Atlantic Ocean with the Halifax River and the Indian River North. The Ponce DeLeon Inlet provides the sole ocean access to all of Volusia County. Fishing parties and shrimp and commercial fisherman bound for New Smyrna Beach or Daytona Beach use the Inlet, as well as others entering for anchorage. Nearby fisheries enhanced by the County's artificial reef program attract both commercial and sport fisherman. Head boat operators also provide trips to view marine life and space shuttle launches from Cape Canaveral. In addition, there is a U.S. Coast Guard Lifeboat Station on the east shore of the Indian River less than a mile south of the Inlet.

Unfortunately, the Inlet is highly unstable and, despite numerous navigation projects, continues to threaten safe passage for the charter boat operators and commercial fisherman who rely on the access it provides for their livelihood. Recreational boaters and Coast Guard operations are also at risk passing through this unstable inlet. The shoaling of the channels in the Inlet so restricts dependable navigation that the Coast Guard no longer marks the north channel in order to discourage its use. The Coast Guard continues to move the south and entrance channel markers and provides warnings that local knowledge and extreme caution must be used in navigating the inlet. More seriously, the Coast Guard search and rescue data for fiscal years 1981–1995 show that 20 deaths have resulted from vessels capsizing in the Inlet, the direct result of the Inlet's instability, 147 vessels capsized and 496 vessels ran aground in the Inlet during the same period.

The Federal interest in navigation through the Ponce DeLeon Inlet dates back to 1884 and continues to the present. The existing navigation project was authorized by the Rivers and Harbors Act of 1965. The construction authorized by that Act, including ocean jetties on the north and south sides of the Inlet, was completed in July 1972. It became evident soon after completion of the authorized project that the project did not bring stability to the Inlet. A strong northeaster in February 1973 created a breach between the western end of the North Jetty and the sand spit the Jetty was connected to inside the Inlet. The breach allowed schoaling to occur that was serious enough to close boat yards and require almost $2 million worth of repairs, including extending the western end of the North Jetty.

Under the existing maintenance agreement entered into upon completion of the construction, the COE periodically performs maintenance on the Inlet. Maintenance projects have included several dredging efforts, adding stone sections to the south side of the north jetty, extending the westward end of the North Jetty for the second time, and closing the North Jetty weir. The COE's last maintenance was dredging, completed on the entrance channel in January, 1990. In fiscal year 1998, the COE received a $3,500,000 appropriation for emergency maintenance on the North Jetty. Migration of the entrance channel undermined the North Jetty, seriously threatening its structural integrity. The fiscal year 1998 funds will be used to construct a granite rock scour apron for the 500 to 600 feet of where the Jetty is undermined.

Current conditions in the Inlet require that the North Jetty undergo additional maintenance work as soon as possible. This maintenance project, as described below, is estimated to cost $4,034,000 to be funded from Operations and Maintenance.

The COE in the Jacksonville District Office had originally determined that the North Jetty must be extended 800 feet landward and it must be completed by 2002. However, recent examination has concluded that the work must be completed as soon as possible. If the 800-foot landward extension is not completed as soon as possible, the COE estimates that the erosion it is designed to prevent will cause outflanking of the North Jetty. Continued outflanking of the west end of the North Jetty could create a new inlet for the Halifax and Indian Rivers resulting in major changes to the Ponce DeLeon Inlet. The resultant shoaling of both the north and south channels, as well as changes to the entrance channel, would make passage through the inlet extremely dangerous and unpredictable.

The Ponce DeLeon Inlet presents a serious engineering challenge; the success of which is measured in terms of human life and vessel damage. The existing project has failed to stabilize the Inlet. Extending the North Jetty is the first step toward correcting the failure and meeting the challenge. Funding the 800-foot landward extension of the North Jetty in fiscal year 1999 is critical to the safe passage of the commercial and recreational boaters in Volusia County. In addition, providing these funds at this time is likely to prevent the need to a much more substantial maintenance project in the near future.

For purposes of providing a clear picture of the extent of the problem in the Inlet, it is important to note that the COE is completing a feasibility study regarding the restabilization of the Ponce DeLeon Inlet. The COE is likely to seek a contingent authorization of a new project in the Inlet in the next Water Resources Development Act. The new project is designed to extend the South Jetty oceanward 1,000 feet. The COE anticipates that the construction of the jetty extensions will help stabilize the Inlet and reduce future maintenance costs.

Thank you for your consideration of this request.

PREPARED STATEMENT OF RALPH O. CLEMENS, JR., PRESIDENT, COOSA-ALABAMA RIVER IMPROVEMENT ASSOCIATION

SUMMARY

Mr. Chairman and distinguished Committee members: his statement includes the following:

(A) A plea to exercise caution and due deliberation before reducing funds for our Nation's transportation infrastructure;

(B) A request for support in the following areas:

—O&M funding in the Corps of Engineers' budget for the Coosa-Alabama River Basins as well as Mobile Harbor;

—Funding for an investigation of alternatives to improve the reliability of the navigation channel below Claiborne Dam on the Alabama River;

—Reopening the Coosa River Navigation Project;

—Resisting increases in fuel tax on the Inland River navigation industry;

—Amending the Endangered Species Act of 1973 with reasonable and effective measures to protect our citizens as well as the environment;

—Supporting the Sturgeon Conservation Plan in the Mobile River Basin as developed by the Alabama-Tombigbee River Coalition and the Fish and Wildlife Service.

EXPANDED STATEMENT

The Coosa-Alabama River Improvement Association represents a large and diverse group of private citizens and political and industrial organizations spread from Rome, Georgia to Mobile, Alabama. Our objective is to develop the Coosa-Alabama Waterway as an economic benefit for our region as well as the Nation. Our members consist of shippers, towboat operators, businessmen, bankers, and a variety of other private individuals who have an interest in the development of our region. Some are elected officials and their constituents from the twenty-three municipalities and nineteen counties along our waterway. These members work diligently to develop our waterway into a productive part of the river infrastructure of our State and Nation.

We are alarmed by the Administration proposal to slash the U.S. Army Corps of Engineers' Civil Works funding for fiscal year 1999 by 20 percent, literally undermining the waterway transportation infrastructure of this Nation. America's navigable waterways, ports, flood protection, water supply, environmental restoration, hydroelectric, and other water resources programs are indispensable to our economic development, national security, and general well-being. These programs return far more in public benefits than they cost. A top-notch navigation system serves both

domestic and international commerce and is a driving force behind the national economy, accounting for more than two billion tons of the nation's internal and foreign commerce every year. In Alabama alone, over 60,000 jobs depend on industries that use the inland waterways. We cannot allow this valuable infrastructure to deteriorate. We must maintain and improve the waterways so our economy can continue to grow.

On the Coosa-Alabama system, the Corps of Engineers manages many projects that support navigation, hydropower, and recreational activities so critical to our region's economy. The first priority is to maintain those projects by providing sufficient funding in accordance with the following:

Project	President's budget	Association's budget request
Alabama-Coosa River, AL (Includes Claiborne L&D)	$4,900,000	[1] $4,900,000
Miller's Ferry L&D	5,835,000	5,835,000
Robert F. Henry L&D	3,858,000	3,858,000
Lake Allatoona, GA	4,900,000	4,900,000
Carters Lake, GA	4,600,000	4,600,000
Lower Alabama River Study	.....	[2] 500,000
Total Coosa-Alabama	22,300,000	22,800,000
Mobile Harbor	21,000,000	21,000,000
Total	43,300,000	43,800,000

[1] Includes dredging from the mouth of the Alabama River through Claiborne L&D to Miller's Ferry. Coosa River not included.

[2] First year funding of a three-year $1.4 million feasibility study.

We must revitalize the economically depressed Alabama River Basin. Even in today's relatively good economic climate, the counties on the River between Montgomery and the mouth 40 miles above Mobile are experiencing unemployment between 8 and 12 percent. We must create jobs. One of the ways is to make the Alabama River more attractive to prospective industries by increasing the navigation reliability below Claiborne Dam. It can be done. A Corps study of May 1997 cited a benefits-to-cost ratio of over 2 to 1 if the training works below Claiborne are improved. Another Corps study, a draft Navigation report in support of the Comprehensive Basin Management Study, stated that one of the reasons river-related industries are not locating in the Alabama River Basin is the perception the river is unreliable, i.e., the authorized depth of nine feet is available on the average only 65–70 percent of the year. Failure to make every effort to create an environment in which river-related industries would want to bring in new jobs to this area is unconscionable. Therefore, we ask Congress to approve $500,000 for the first year of a feasibility study to improve the navigation reliability on the Lower Alabama River.

A major objective of our Association is the completion of a navigable waterway from Mobile to Rome, Georgia. The history of the Coosa River Project is well known to this committee, but the proposal is well in line with investment in infrastructure and the creation of jobs and economic opportunity throughout our region. The Predesign Engineering Surveys are complete, so one of the most time-consuming requirements of the project is already on the shelf. We are well aware of the restrictive funding for such an undertaking, but ask the Committee to recognize that completion of such a project is one of the largest and most rapid generators of jobs currently available. We owe it to the people of the Coosa-Alabama River Basin, the states of Alabama and Georgia, and the entire region to maintain the vision of completing the waterway.

Another mechanism to make the river system attractive to potential users is to keep the cost of shipping via waterways down. The President's Budget for fiscal year 1999 does not currently include a proposal to increase fuel tax, but we are well aware some in the Administration think such a tax is a good idea. We have in the past listed some of the negative aspects of such a proposal, so suffice it to say here that an increase in user fuel tax will have detrimental effects in the short run on consumer prices and the trade balance, and in the long run on the federal-private partnership and maintenance of the waterways system. As one of the most efficient modes of transportation this country possesses, the waterways system needs more incentive for investment, not obstacles and disincentives.

One of the national issues that affect the inland waterways system is environmental regulation. We cannot support the current proposal to revise the Endangered

Species Act (ESA), Senate Bill 1180, sponsored by Sen Kempthorne. The bill has very little to offer business, industry, and private landowners. Two provisions in particular are of great concern: protection of ESA given to candidate species and the elimination of a requirement to designate a critical habitat concurrently with the listing process. Both have the potential of shutting down navigable waterways without due regard to the economic impact such decisions would bring. These and several other provisions in S. 1180, e.g., the peer review process and unfunded mandates to federal agencies, will not serve business and private property owners. We strongly urge the Committee members to oppose S. 1180 until a full hearing on all of the issues associated with this proposal are heard and substantive changes are made to address the concerns of business and private property owners.

We ask the Committee to continue funding the Sturgeon Conservation Plan in the Department of Interior budget as the best and most expeditious way to save sturgeon in the Mobile River Basin. The Plan, as developed by the Alabama-Tombigbee Rivers Coalition and the U.S. Fish and Wildlife Service, is an excellent example of the compromise and cooperation required in the economic-environment debate.

We sincerely appreciate the opportunity to present our views and to thank you for your strong support of the Nation's waterways.

PREPARED STATEMENT OF R. MAX PETERSON, EXECUTIVE VICE PRESIDENT, INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES

The International Association of Fish and Wildlife Agencies was founded in 1902 as a quasi-governmental organization of public agencies charged with the protection and management of North America's fish and wildlife resources. The Association's governmental members include the fish and wildlife agencies of the states, provinces, and Federal government of the U.S., Canada, and Mexico. All 50 states are members. The Association has been a key organization in promoting sound resource management and strengthening Federal, state, and private cooperation in protecting and managing fish and wildlife and their habitats in the public interest.

BUREAU OF RECLAMATION (BOR)

Over its 96-year history, the BOR has played a vital role in harnessing and managing water resources for a young and growing Western United States. The fulfillment of those high national priorities has not always been accomplished with a long-term vision for the health of fish and wildlife resources within BOR project design, construction and operational practices. Thus, the development of high priority public services has sometimes proven highly detrimental to other public values, including certain fish and wildlife resources. The agency's publicly stated policy is to sustain the health and integrity of ecosystems and protect the environment as it goes about the important work of providing dependable sources of water. The agency has embarked upon a refreshing new mission that better balances these sometimes competing uses of limited natural resources. It is, therefore, eminently satisfying to the Association to witness and strongly support BOR's efforts to refocus considerable financial resources on ameliorating historical water development-related damages to fish and wildlife and their habitats.

California Bay-Delta Ecosystem Restoration.—The BOR seeks $143.3 million to continue this work. This program, which responds to Congressional direction through the California Bay-Delta Environmental Enhancement and Water Security Act, provides vital Federal cost-sharing dollars for ecosystem restoration in California's Bay-Delta. This effort is based on collaborative efforts among several Federal agencies and the State of California. Restorative efforts such as fish screening, flood plain habitat restoration, instream flow provisions and watershed management, typify the work being accomplished. The Association fully supports BOR's request for $143.3 million for this work for fiscal year 1999.

Central Valley Project.—Created by Congress in the Central Valley Project Improvement Act, the CVP Restoration Fund is expected to collect just over $49 million from rate payers for fish and wildlife management and development work in the Central Valley Project area of California. The BOR is seeking a Congressional appropriation of $49.4 million from the Fund to undertake important anadromous fisheries habitat work, water acquisition, fish screening and other works that are necessary to continue efforts to restore the fish and wildlife-related damages created by this Federal project. The Association encourages the Congress to fully fund this work at the requested level of $49.4 million.

Endangered Species Recovery Implementation.—The BOR is requesting a total of $15 million for endangered species recovery work spread among four BOR Regions. This is six percent above the 1998 appropriation. This represents a modest increase,

particularly when viewed in the context of the geographical areas affected by prior BOR activities and the complex of imperiled fish, wildlife and essential habitats that need attention as a consequence of these earlier actions. A significant proportion of the BOR's request for work in the Upper Colorado Region and Lower Colorado River Region is directed at endangered species recovery. As just one example of the important projects planned for fiscal year 1999, in this instance in the Upper Colorado, is the work on the Platte River. This multi-agency cooperative program is essential to restore endangered and threatened species and the requested $2.5 million would allow implementation activities such as water conservation and critical habitat restoration. The request for $15 million for endangered species recovery projects proposed by the BOR for fiscal year 1999, is deemed essential by the Association and is strongly supported.

Pacific Northwest.—As reported by the BOR, "perhaps the region's largest and most visible challenge is the restoration of the anadromous fishery." The Association concurs with this assessment. The fish and wildlife related request of $16.6 million, including $13.1 million for Pacific salmon recovery, is supported by the Association.

Water Reclamation and Reuse.—As the population of the West continues to grow at remarkable rates, competition will continue to intensify among the many important uses of water. Renewable natural resources, including fish and wildlife, are directly dependent upon the availability of water. To meet citizens' demands for water and water-related public services, including healthy natural resources, will require intelligent use, conservation and reuse of the limited water supplies. The Association is pleased to support efforts designed to conserve and reuse water and supports the BOR's fiscal year 1999 request for $37 million for these purposes.

Wetlands Development.—An important component of habitat restoration within BOR's management area, as elsewhere, is associated with wetland habitat. The Association is pleased to note, and to support, the increase requested by the BOR of $7.3 million for wetlands conservation work.

TENNESSEE VALLEY AUTHORITY (TVA)

TVA requests $76.8 million in appropriations for its nonpower programs for fiscal year 1999. The fiscal year 1999 proposal includes $70 million for continuing programs, the same amount as the appropriation for fiscal year 1998, plus $6.8 million for preconstruction activities on a project to replace the lock at Chickamauga Dam in Chattanooga, Tennessee. The Association strongly supports this request.

TVA has established itself as a global leader in tailwater restoration and technology and has established the national standard for such activity. The Association commends TVA for these efforts.

The Association recommends that TVA actively support and participate in the States' Clean Stream Initiative with the Office of Surface Mining (OSM) to complete projects in the TVA service area. These state-Federal-private cooperative projects are engaged in restoring fish, aquatic life, recreational and economic opportunity in watersheds damaged by acid mine drainage from past coal mining activities.

The Association recognizes the importance of boating, fishing, camping, hunting, wildlife observation, and other conservation-oriented activities at Land Between the Lakes (LBL) and supports funding of $6.9 million for these activities, the same amount as fiscal year 1998. Four million dollars in proceeds is expected from user and other sources for a total of $10.9 million.

We are encouraged that TVA has undertaken a serious review of public lands along TVA reservoirs and rivers to insure these properties are not utilized in such a manner as to exclude reasonable public use. Further, we support current and future planning efforts that insure conservation and protection of riparian habitat.

The Association notes that discussions continue regarding TVA programs. TVA has utilized appropriated dollars to improve the environmental quality of life in the Tennessee Valley. We urge careful study of the impacts of funding reductions should they be proposed in upcoming years.

U.S. ARMY CORPS OF ENGINEERS

The fiscal year 1999 budget proposal for Civil Works Appropriations of the U.S. Army Corps of Engineers is $3.4 billion, of which $3.2 billion is requested in appropriated funds and $0.2 billion would be financed through non-Federal funds and trust fund receipts up from $3.78 billion in fiscal year 1998. The budget proposal reflects continued commitment to proper management of our natural resources, through dedication of $671 million to environmental programs (a $79 million increase over fiscal year 1999) and through $454 million in contributions to intergovernmental environmental programs. This represents a significant increase from the $520 million funding level of 1998. The Association applauds the fact that many of

our recommendations for recent fiscal years have been incorporated by the Corps in their succeeding year's budget request.

The Association is excited by the potential for significant environmental accomplishments in restoration, conservation, and sustainable management of water, fish, and wildlife resources through the Administration's new Clean Water Initiative. The Association remains intrigued with the proposal and eagerly awaits further details concerning implementation of such a broad scale, multi-agency approach; early reviews of the Action Plan appear encouraging. The Association is especially pleased with Federal plans to partner with local, state and tribal agencies and with the watershed management emphasis. The States are interested in forging a true partnership through sharing ideas, plans, design, implementation structure and enforcement in establishing a unified, cooperative approach to improving water quality.

As an example of an earlier recommendation, we had encouraged the Corps to expedite design and grant administration associated with Section 1135 projects as provided for within the Water Resources Development Act of 1986. We are pleased the Corps has taken steps to expedite the approval process for those projects through delegation to Division Commanders. We note the fiscal year 1999 budget contains a request for $5.3 million is far less than the $21.175 million appropriated in fiscal year 1998. We question whether this decrease, as well as decreases throughout the budget, especially in the construction account, provide adequate funding to meet the Corps environmental and other responsibilities while retargeting that funding to other new programs. As of December 31, 1997, 19 projects were completed, 31 were under construction, planning or design and 47 were in the study phase. The Association has previously expressed a concern that some projects remain in the feasibility phase too long. We believe the Corps provided a sincere attempt to address this problem in 1997. However, only 16.5 percent of these projects have reached completion, and the Association fears the rate of project completions seen in previous years will slow or stop due to budgetary constraints posed by the fiscal year 1999 request. The Association questions the overall effectiveness of the Section 1135 projects if funding is restricted to the fiscal year 1999 level of $5.3 million.

The Association encourages the Corps to cooperate, coordinate, and develop civil works and restoration activities with State fish and wildlife agencies. The State fish and wildlife agencies are generally aware of where Corps projects could most effectively enhance the status of fish and wildlife resources through improvements to habitat. An example of this partnership is the successful Aquatic Ecosystem Restoration program authorized by the Water Resources Development Act of 1986 (proposed funding level: $2 million) which is supported by the Association.

Our Association particularly appreciates the leadership of Congress in providing funding for mitigation projects. We are especially pleased that the Corps is requesting, and the Association supports, $127 million for Columbia River Fish Mitigation in Washington, $3.4 million to complete mitigation of losses associated with the Tennessee-Tombigbee Waterway in Alabama, $3.9 million for Missouri River fish and wildlife mitigation in Iowa, and $363,000 to mitigate fish and wildlife issues in the Yazoo Basin in Mississippi. The Association also strongly encourages Congress to appropriate necessary funding within the Corps budget to facilitate the mitigation feature of the West Tennessee Tributaries Project, which is needed to satisfy legal constraints to enable initiation of river restoration work within this significant watershed. We recommend that the Congress explore the need for generic legislative direction to the Corps to ensure that the older projects include the authority for fish, wildlife, water quality, and sustained minimum flow mitigation and enhancement, and if legislation is necessary, to act on that need. Further, the Association recommends that mitigation funding for ongoing projects be listed as a separate line item within the Civil Works Appropriations. This action would separate the funds from routine operations and maintenance and better facilitate the separate states' ability to identify the funds and seek support for the projects.

The Association is also generally supportive of the funding requested for some of the large river restoration projects. The Association supports the fiscal year 1999 request of $27.3 million for restoration of meanders and wildlife habitat on the Kissimee River and $75 million to restore water flows through the Everglades and other areas in Florida. It is in the best interest of the country to restore the habitat and hydrologic components of these rivers that have been significantly altered under previous Corps projects.

With regard to the Corps' regulatory authority under the Clean Water Act of 1972, we strongly support the request of $117 million for implementation of a streamlined program to process, review, issue permits and provide an appeals procedure for the permitting of activities in waters of the United States, including wetlands associated permits and jurisdictional determination. Furthermore, the Asso-

ciation believes a strong partnership program with state agencies affords the best opportunity for balanced conservation of aquatic resources.

We support activities designed to enhance our environment. The use of dredge material to restore habitat in the Chesapeake Bay in an excellent example. We support continued funding for this project.

The Corps' request of $20 million to develop aquatic plant and animal (zebra mussel) control methods and strategies, evaluate ecological factors affecting control, and coordinate technology transfer is strongly supported. The Corps is the only Federal Agency directed to conduct research and development for the control of zebra mussels and their effects on public facilities. These mussels are having significant adverse effects on native shellfish and natural habitats.

The Association recommends that the Corps continue in partnership with State fish and wildlife agencies to initiate applicable restoration, mitigation and conservation projects. For example, we request the Corps continue to participate with State agencies and non-Federal interests in the North American Waterfowl Management Plan through wetlands conservation, wetlands identification, and wetlands acquisition. Additionally, we support ongoing coordination of activities conducted under the Coastal America initiatives.

The Association recommends that the Corps continue to work closely with and attempt improvement of the relationships between the Corps and the State fish and wildlife agencies as well as the state water resources agencies to identify priority restoration, mitigation and remediation projects needing the Corps' attention. In particular, we encourage the Corps to participate in funding projects to meet the objectives of the North American Waterfowl Management Plan. Further, we recommend that the Corps become a partner in the Appalachian Clean Stream Initiative to restore streams damaged by acid mine drainage.

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

The Association recommends Congressional appropriation of $5 million to allow FERC to reimburse state fish and wildlife agencies for studies and reviews associated with hydropower relicensing activities. Section 1701 of the Federal Power Act was amended in 1992 specifically to authorize reimbursement to states for this work. FERC has never sought appropriated funds for this purpose. If appropriated funds cannot be provided, FERC should be instructed to require reimbursement for this work by the licensee. Otherwise, projects will be proposed for relicensing without adequate studies of appropriate fish and wildlife licensing requirements. This invites conflict and possibly more stringent requirements, including water releases, than would be needed if more adequate studies were made.

PREPARED STATEMENT OF JAN JONES, EXECUTIVE DIRECTOR, TENNESSEE RIVER VALLEY ASSOCIATION

Mr. Chairman, Members of the Committee, thank you for allowing me the opportunity to present testimony for your consideration. I am Jan Jones, Executive Director of the Tennessee River Valley Association (TRVA), a regional, non-profit, nonpartisan, economic development association serving the seven states which comprise the Tennessee Valley. I respectfully submit this testimony on behalf of the approximate 350 broad-based membership of TRVA. In addition, some of our members have written personal letters to this distinguished Committee and copies are attached to this statement.

TRVA members appreciate the wisdom historically of this Committee in funding projects that have served to improve the Nation's economy, sustain and improve our Nation's waterway infrastructure and enhance the quality of life for its people. As taxpayers, we appreciate the problems of dwindling budgets, limited resources and the need to make every dollar count. For that reason, TRVA members have asked me to submit this statement to express our concerns and visions regarding two critical issues under consideration by this Committee.

Historically, the Tennessee River Valley Association has been a supporter, constructive critic, partner and friend of the Tennessee Valley Authority. We recognize the tremendous economic impact that TVA has made on the Valley, on navigation, business and industry, recreation and power production. In the past we have recommended various changes in direction for TVA. An agency such as TVA must be responsive to the people it serves, and the TRVA has traditionally brought the people's concerns to TVA. This has been a productive partnership. Today we recognize that major change is inevitable for TVA and this change could have significant impact on Valley citizens. Therefore, TRVA respectfully submits the following positive

ideas for consideration by this Committee as it endeavors to formulate plans regarding the future of TVA and its non-power program.

ISSUE ONE: THE FUTURE OF TVA AND ITS NON-POWER PROGRAM

Since its creation by the Congress in 1933, TVA has championed the wise use of the natural resources of the Tennessee Valley. It harnessed a raging, non-navigable river with a series of locks and dams which improved navigation, prevented devastating floods and offered hope of employment to thousands of destitute people. Today, TVA's integrated water control system of dams and reservoirs has transformed the Tennessee River and its tributaries into a useful, unified river system. Hydropower generation was made possible because of the series of dams and lake impoundment areas.

Funds have been provided to TVA by Congress to operate and maintain the Tennessee River system, provide for navigation, water and land resource development, flood control, etc. Congressional funding is also provided to the U.S. Army Corps of Engineers to provide similar services for the other river systems throughout the Nation. The Corps and TVA have worked in an excellent cooperative partnership on the Tennessee River. The Corps provides the resources and personnel to operate the locks. Through a joint effort, TVA provides the primary funding for maintenance and repair of the locks, dredge work, mooring cells, etc.

In recent months it has been suggested that TVA's non-power programs should be transferred to the Corps. This idea immediately raises the question, "Where would the savings be for the taxpayer?" The Corps would require additional monies in its operation budget to assume the responsibilities currently under the auspices of TVA. In fact, questions have been raised regarding the amount of money that would be necessary should such a change be effected.

Therefore, the Tennessee River Valley Association supports continued funding for TVA's non-power programs. But, I realize that the long-term future is not promising. It is important, even critical, for this region and the Nation that the current level of activity relative to the Tennessee River be continued, and we are confident that this distinguished Committee concurs. However, the real question we must all struggle with is how will these programs continue to be funded.

In the event that TVA's non-power program is not funded by Congressional appropriation, we earnestly encourage this Committee to consider and address the following points:

—Which programs would continue to be funded and at what level?
—Who will decide which programs survive and how will this decision be made?
—What other agency or organization should or could continue these programs?
—If TVA is required to fund these programs from existing or power funds, what oversight mechanism will be provided to ensure that the level of activity of these programs are carried out in the public interest?
—Is TEA's current structure adequate or prepared to handle such dramatic program change?
—If TVA is required to fund these programs from existing or power funds, and if in the future TVA were no longer a federal agency or was privatized, what then would happen to the non-power programs?

The potential withdrawal of Congressional funding for TVA's non-power programs, coupled with the financial pressures of electric utility restructuring, has raised serious questions about TVA's role as the manager of the Tennessee River. As the recipient of Congressional funding for these non-power activities, TVA historically was not forced to choose between the competing interests of power rates and the public interest programs associated with the Nation's fifth largest river system, the Tennessee River. Federally appropriated funds to TVA annually ensured a clear separation of ratepayer dollars and taxpayer dollars. A lack of appropriated funds will require TVA ratepayers to fund programs which are funded by federal dollars in other portions of the Nation. Under the current TVA management structure, the ratepayers would have no mechanism for input into decisions regarding the level of activity for the current non-power programs. The interest of the power program, with its inherent focus on "rates", coupled with new pressures of power utility restructuring, will be pitted against the interest of flood control, navigation, recreation, water quality, public land stewardship, etc.

There is a need to isolate and make transparent revenues from the public waters of the Tennessee River. The Tennessee River and its watershed should and could be allowed to fund the essential programs of the current non-power programs. The essential nature of an integrated system at TVA need not be destroyed but the interest of the non-power programs must be protected against the pressures of a much

larger and more costly power program. Therefore, I propose that the Congress move forward with a bold, new approach to funding the non-power programs of TVA.

I propose that Congress direct that TVA's hydropower generation revenues be recommitted to address the original charter of TVA, to provide for flood control, navigation, water and land resource development/management, recreation, water quality, lake impoundment management, etc. Hydropower revenues could finance all of the non-power programs, as well as provide for capital outlay projects such as lock improvement/replacement for the lock at Chickamauga Dam.

To assure that the hydropower revenues are allocated at a sufficient level to maintain the integrity of the aforementioned programs, I recommend that Congress establish an independent Board or Council to formulate recommendations to TVA and the Congress on how the revenues are to be allocated. This Board or Council would be similar in nature to the Inland Waterways Users Board which serves in conjunction with the Inland Waterways Users Trust Fund. Such a Board/Council would balance the need for providing low-cost hydropower for economical rates with the economic and public interest of other river related activities. The Board/Council would also allow for the continued integrated nature of TVA's power program but protect the public interest from being eclipsed by the economic pressures of the power program.

This proposal is timely. It would build on past successes and do so at no cost to the U.S. taxpayer. This proposal is in concert with the historical vision of multipurpose development of rivers * * * the idea of wrapping a system of dams into one project to address navigation, flood control, river basin management, recreation and economic development. It is time to forge a stronger bond between hydropower generation and resource development. In other words, let the river pay for itself!

Mr. Chairman, Members of this Committee, the Tennessee Valley Authority is very complicated in structure and programs, both power and non-power. These programs have tremendous impact on the lives of millions of people. I sincerely urge you to consider all ramifications associated with any change in TVA's funding structure before making a final decision. It is time to create a permanent fix for the funding of TVA's non-power programs and at the same time provide true savings for the taxpayer. We have a major opportunity today to make this innovative move to assure that critical programs continue to provide the region and the Nation with innovative ways to manage and conserve the resources of a major river system.

ISSUE TWO: KENTUCKY LOCK ADDITION—CORPS FUNDING

We sincerely request that this Committee include additional monies to the U.S. Army Corps of Engineers for fiscal year 1999 in the amount of $11.5M for the Kentucky Lock Addition Project. The Kentucky Lock Feasibility report was completed in 1992. The project was authorized for construction in WRDA 96. The funding provided for fiscal year 1998 of $4M will be used to continue WES model studies, lock DM, P&L railroad relocation DM, update the project cost estimate and subsurface exploration. TVA transmission tower relocations will be the construction start this year. Actual construction of the project could be complete as early as the year 2007, but funding constraints will push this date further into the future and would also tend to increase the overall costs associated with the project. Congressional guidance and funding of $11.5M for fiscal year 1999 is necessary to continue this much needed project.

Without a new lock in place, delays at the existing lock are expected to average 8.5 hours per tow by the year 2010 resulting in an increased transportation cost in excess of $24 million per year. Average annual benefits attributed to the new lock are $55.1M with a benefit/cost ratio of 2.5. With increased forecasted traffic levels, the average annual benefits and benefit/cost ratio should increase. An additional benefit of the construction project would be the addition of approximately 500 construction jobs.

We earnestly encourage this Committee to support funding to the Corps in the amount of $11.5M for the Kentucky Lock Addition Project for fiscal year 1999.

Mr. Chairman, Members of the Committee, I thank you for the opportunity to present this testimony for your information and consideration. I would welcome any questions or request for additional information that you might have.

LETTER FROM DONNIE HALL

HUNTER MARINE TRANSPORT, INC.,
Nashville, TN, March 2, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: This letter serves as endorsement of the Tennessee River Valley Association. As an operator on inland rivers and in the Tennessee River valley, we strongly believe the work conducted by the Association is vitally important to our continued success. Not only does the organization serve the needs of our company and other waterways operators like us, but (in an indirect manner) it also serves the economic interests of our entire region. Through its lobby for continued improvement in safety and navigation issues, we can be assured that the voice of the valley's commercial interest will be heard.

As the 1999 budget and appropriations battles unfold in our nations capitol, the efforts of the TRVA are needed now more than ever. Under the ever-present threat of dam closures and decreased channel maintenance, the Tennessee River Valley Association serves as the voice of prudence and common sense. We at Hunter Marine Transport, Inc. wholeheartedly endorse their efforts to maintain funding for the Tennessee Valley Authority and Army Corps of Engineers projects, such as Chickamauga and Kentucky Lock Projects.

Through the efforts of the TRVA, America's inland waterways remain the safest and most productive in the world.

Respectfully,

DONNIE HALL,
Director of Safety and Personnel.

LETTER FROM K.A. WHEELER

MIDLAND ENTERPRISES, INC.,
Cincinnati, OH, February 26, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U. S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: I am writing with regard to congressional support for two water development projects which are critical to the Tennessee River:

First, support for the U.S. Army Corps of Engineers fiscal year 1999 funding of $11.5 million for the Kentucky Lock addition. This project, which was authorized in fiscal year 1998, nevertheless is completely absent from the Administrations fiscal year 1999 Budget Request. Construction of the addition to Kentucky Lock is vital to continued growth of commerce on the Tennessee River. My company, which is a major operator of towboats and barges on the Tennessee River, has seen a significant growth in business related to low cost river transportation over the past several years. These industries will be deprived of this national asset if the construction of Kentucky Lock addition is delayed, since the long waiting times to transit this lock offset the savings from shippers from low cost river transportation.

Secondly, the construction of a new Chickamauga Lock to replace the present obsolete single barge lock which is now scheduled to close in the year 2005, due to structural failure. If this navigation lock is allowed to close, the entire upper reach of the Tennessee River above Chattanooga, Tennessee will no longer have access to commercial water transportation. Several large facilities which currently have major industrial sites along the Tennessee River in this area will be forced to close or shift to higher cost and less environmentally friendly modes of transportation. This is the only major reach of river in the entire inland waterway transportation system that is currently threatened with complete extinction by virtue of a lock closure.

The United States currently enjoys a distinct economic advantage over other countries by virtue of its magnificent inland waterway transportation system which permits the movement of bulk material at the lowest possible costs. Both of these projects are vital to maintaining this competitive advantage that we now enjoy. I can assure you that other countries with similar river systems are rapidly offsetting this competitive advantage; unless we invest in the infrastructure necessary to maintain our river system the best in the world we will soon find ourselves unable to compete in world markets.

Thank you for your consideration in supporting both of these projects.

Yours truly,

K.A. WHEELER,
Vice-President.

LETTER FROM TIM C. JONES

BURKHART ENTERPRISES, INC.,
Knoxville, TN, March 2, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR MR. DOMENICI: I am writing to express our continued support for funding of the Chickamauga Lock project and operation and maintenance of the Tennessee River as part of TVA's non-power programs. Also, I support the U.S. Army Corp of Engineers fiscal year 1999 funding and the additional funding for the Kentucky Lock Project. Any change in the integrity of our Inland River System would drastically effect our whole economy.

Sincerely,

TIM C. JONES,
General Manager.

LETTER FROM LEAMON B. LANE

R&W MARINE, INC.,
Paducah, KY, February 24, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: R&W Marine is a major carrier on the inland river system and as a member of the Tennessee River Valley Association, we are proud to participate in maintaining and developing the Tennessee and Cumberland River systems for commercial navigation. We believe that these two river systems are a vital link in transporting goods to national and international markets via our inland waterway system.

We believe it is vital to continue TVA's river management system and it must remain integrated. Transfer or privatization would have a drastic negative impact. Also, the Corp's budget is being severely cut and there are no other provisions for maintaining the Tennessee and Cumberland rivers. We fully support the Corps of Engineer's Nashville District funding request for fiscal year 1999 of $55.167 million plus additional $11.5 million, for the Kentucky Lock project.

We also support the TVA's request of $76.8 million, which includes $57.8 million for land and water management and $6.8 million for Chickamauga Lock.

This region of our country greatly needs your representation and support. We respectfully hope we can count on you.

Sincerely,

LEAMON B. LANE,
Manager.

LETTER FROM WILLIAM H. DYER

TENNESSEE VALLEY TOWING, INC.,
Paducah, KY, February 18, 1998.

Hon. PETE V. DOMENICI,
U.S. Senate,
Washington, DC.

DEAR SENATOR: We wish to enlist your support of Tennessee River Valley Association's objectives. They are as follows:

—Support TVA's budget request for sufficient funds to continue their land and water management functions plus the $6.8 million for Chickamauga Lock.

—Support the Corps of Engineers Nashville District fiscal year 1999 funding of $55.167M and the $11½ million to keep Kentucky Lock construction on schedule.

The maintenance and upgrading of our river infrastructure is of utmost importance to our Nation. It enables our producers to compete in the world market due to cheap freight rates. In addition to enabling cheap freight rates, waterborne traffic is much cleaner and safer, by all comparisons, to alternative modes. Additionally, you must consider all the other major benefits of waterways management and improvement; hydropower, recreation, flood and erosion control, tourism, wildlife habitat, water quality, wetlands management and drought management.

The Tennessee and Cumberland River Valley's are growing, dynamic and a prime example of how investment in and maintenance of infrastructure pays high dividends.

Sincerely,

WILLIAM H. DYER.

LETTER FROM JOHN B. HERBERT, PRESIDENT, AND THOMAS C. HERBERT, SR., VICE PRESIDENT

SANGRAVL CO.,
New Johnsonville, TN, February 18, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, U.S. Senate, Washington, DC.

DEAR SIR: We Support the Corps and TVA fiscal year 1999 budget request.

We support funding requests for Kentucky Lock Project (Corps) and Chickamauga Lock Project (TVA).

We support continuation of navigation, flood control, water and land resource development on the Tennessee and Cumberland Rivers at no less than the current level no matter which agency has the responsibility.

We support inland waterway navigation as an environmentally sound and cost efficient transportation mode in our region, helping to reduce freight rates and thus promoting trade and development.

We support the Tennessee and Cumberland Rivers as a vital natural resource (and, therefore, its maintenance) in our region as it pertains to our industry, municipality or interest in any number of the following ways: navigation, hydropower generation, recreation, flood and erosion control, agricultural irrigation, recreation and tourism, fish and wildlife habitat, drinking water, ground and surface water management, water quality, water supply, wetlands, drought management, reservoirs management.

We support sound economic development efforts to improve the Tennessee and Cumberland Rivers as a vital transportation link for the Tennessee and Cumberland River Valleys to export goods to other national and international markets via our inland waterway system.

Sincerely

JOHN B. (Jack) HERBERT,
President.

THOMAS C. HERBERT, SR.,
Vice President.

LETTER FROM WILLIAM H. HESS

PARKERT TOWING COMPANY, INC.,
Tuscaloosa, AL, February 16, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: Parker Towing Company is a major regional barge transportation company operating towboats, barges, and port facilities mainly on the rivers and waterways of the Southeast and Gulf Coast. As a member of the Tennessee River Valley Association, we are proud to be a part of a collective effort to maintain and develop the Tennessee and Cumberland River Systems for commercial navigation. We believe that these waterways are vital transportation links for the Tennessee and Cumberland River Valleys for exporting goods to national and international markets via our inland waterway system.

We believe it is vital to continue navigation, flood control, water and land resource development on the Tennessee and Cumberland Rivers at no less than the current level—no matter which agency has the responsibility. We fully support the Corps

of Engineers' funding request for fiscal year 1999 of $55.167M plus an additional $11.5 for the Kentucky Lock Project. We also support the TVA's request of $76.8 million, which includes $57.6 million for Land and Water Management and $6.8 Million for Chickamauga Lock. We hope that we can count on your

Sincerely yours,

WILLIAM H. HESS,
Sales Manager.

LETTER FROM CHARLES J. SANDERS, III

INGRAM MATERIALS COMPANY,
Nashville, TN, February 26, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SIR: I am asking for your support in favor of TVA's fiscal year 1999 budget request of $76.8 million, which includes $57.6 million for land and water management and $6.8 million for Chickamauga Lock on the upper Tennessee River. I further ask that you support an additional $11.5 million for Kentucky Lock on the lower Tennessee River in the fiscal year 1999 U.S. Army Corps of Engineers budget.

While there are numerous issues surrounding continued funding for TVA, the fact is that both TVA and the U.S. Army Corps of Engineers work together to manage the critical infrastructure necessary to support river transportation in my area, the south central region of the United States.

As an alternative mode of transportation, barging on the river provides the consumer with the most cost effective and energy efficient means for moving millions of tons of bulk freight both within the eastern half of the country and for export.

There is no doubt that dollars invested now in infrastructure maintenance and expansion create jobs, economic growth, and will continue to support the balanced budget goals and objectives.

Sincerely,

CHARLES J. SANDERS, III,
President.

LETTER FROM JAYCEE RAWLINGS

HUMPHREYS COUNTY, TN,
February 26, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

MR. DOMENICI: As County Executive of Humphreys County, Tennessee I strongly support Tennessee River Valley Association's funding request for TVA and the Corps for fiscal year 1999. Our County lies in the center of the TVA region. The fiscal year 1999 funding of $55.16M for the U.S. Army Corps of Engineers for the Nashville District and the $11.5M for the Kentucky Lock would continue to be a great benefit to our citizens.

It is important that TVA's river management system remain integrated. Transfer or privatization would have drastic negative impact. The Corps budget is being drastically cut and there are no other provisions for taking care of the Tennessee River.

Humphreys County is a rural but yet heavy industrialized county with several industries located on the banks of the Tennessee River. It is a vital resource to us. The Tennessee River provides jobs, and allows our residents and those of adjoining counties, to enjoy camping, boating, skiing, and fishing. The federal funding for the maintenance, operation, capital outlay projects, and flood control is imperative for the protection of the nation's inland waterway system.

I sincerely hope that you will join with me and support TVA's fiscal year 1999 funding requests of $76.8M. If you need further information please give me a call.

Sincerely,

JAYCEE RAWLINGS,
County Executive.

LETTER FROM DAVID C. COLE

ITAWAMBA COMMUNITY COLLEGE,
Fulton, MS, February 23, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: On behalf of Itawamba Community College and the citizens of Northeast Mississippi, I am writing to request your support of adequate funding for TVA and the CORPS for fiscal year 1999. Having lived my entire life in the region served by the Tennessee River Valley Association, I can attest to the vast improvements these organizations have made in the quality of life of those who live in this region. I sincerely believe we would be neglecting our responsibilities if we fail to adequately fund organizations that have clearly demonstrated their effectiveness.

Specifically, I also strongly feel that TVA's river management system should continue an integrated approach toward accomplishing its mission. Transfer or privatization leaves too many important questions to be answered. Budget reductions will certainly result in a negative impact. Adequate federal funding for maintenance, operation, capital outlay projects, flood control and protection of the nation's inland waterway system and infrastructure must be continued now and well into the future. I urge you not to take chances on a region and a people who, for the first time in generations, are reaping the benefits of a better quality of life for themselves and their children.

In conclusion, I wholeheartedly and enthusiastically support the Tennessee River Valley Association's funding request for TVA and the CORPS for fiscal year 1999.

Sincerely,

DAVID C. COLE,
President.

LETTER FROM JAMES R. "KENNY" GILLUM

KENTUCKY-CUMBERLAND COAL COMPANY,
LaFollette, TN, February 20, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR CHAIRMAN DOMENICI: I am in full support for TVA's fiscal year 1999 Budget request for $76.8 million of which includes land and water management of $57.6 million and the Chickamauga Lock $6.8 million.

I feel that it is an absolute that TVA's river management system remain integrated. Privatization or any other reorganization would have a very negative result. The budget for corps is currently being cut and there isn't any provisions for assisting the Tennessee River.

Chairman, we need your full support for U.S. Corps of Engineers (Nashville District) fiscal year 1999 for funding of $55.167 million, plus support for the additional request of $11.5 million for the Kentucky Locks.

Also, my request is that you support federal funding for maintenance, operation, capital overlay projects, flood control, and for the protection of our nation's inland waterway system and infrastructure, now and for all future generations. We definitely need your support of TRVA's funding request for TVA and the corps for fiscal year 1999.

I also request that you support the Tennessee and Cumberland Waterway as a vital natural resource land, therefore, it's maintenance in our region as it pertains to all industry/municipality/interest in any number of the following ways; navigation, hydropower generation, recreation and tourism, fish and wildlife habitat, drinking water, ground, and surface water management, water quality, water supply, wet lands, drought management, and reservoir management.

Please understand the importance of my request and we are depending upon your support totally.

Sincerely,

JAMES R. "KENNY" GILLUM,
Executive Vice President.

LETTER FROM FRANK MCKEE

HERMITAGE, TN,
February 23, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: The Tennessee River and the Cumberland River are vital natural resources for this region of our nation. They provide for navigation, hydro-power, municipal water supplies, recreation, fish and wildlife habitat, irrigation, and other important services that cross local and state boundaries.

It is most respectfully requested that favorable consideration be given for:

1. TVA's fiscal year 1999 budget request of $76.8 million, which includes $57.6 million for Land and Water Management and $6.8 million for the Chickamauga Lock.

2. U.S. Army Corps of Engineers (Nashville District) fiscal year 1999 funding of $55.2 million with the addition of $11.5 million for the Kentucky Lock.

It is essential that federal funding continue to be provided for the operation, maintenance and improvement of the nation's inland waterway system to serve present and future generations.

You can be assured that the people of this region want the TVA river management system to remain as it now exists. It is an excellent operation with dedicated employees providing an exemplary service.

Sincerely,

FRANK MCKEE.

LETTER FROM ROBERT M. BREWER

CROUNSE CORPORATION,
Paducah, KY, February 25, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: As a member of the Tennessee River Valley Association, Crounse Corporation strongly asks for your support and influence on the following very important issues:

1. Support TVA's fiscal year 1999 budget request of $76.8 million, which includes $57.6 million for Land and Water Management and $6.8 million for Chickamauga Lock. The closing of Chickamauga Lock would devastate the upper Tennessee River system.

2. Support the fact that TVA's river management system must remain integrated. Transfer or privatization would have a drastic negative impact, and the Corps' budget is being drastically cut and there are not other provisions for taking care of the Tennessee River.

3. Support the Corps of Engineers (Nashville District) fiscal year 1999 funding of $55.167 million, and the $11.5 million for the Kentucky Lock Project.

4. Support federal funding for the maintenance, operation, capital outlay projects, flood control and protection of our nation's inland waterways system and infrastructure, now and for our future generations.

5. Support the Tennessee and Cumberland Waterway as a vital natural resource (that must be maintained) for our region's interests in any number of the following ways; recreation and tourism, fish and wildlife habitat, drinking water, water supply and quality, wetlands, flood and erosion control, agriculture, energy needs and demands, etc.

The Tennessee and Cumberland River System provides low-cost rates to domestic and world markets, and by comparison, river transportation is much safer and cleaner than other modes of transportation. This region of our country greatly needs your representation and support. We respectfully hope we can count on you.

Very truly yours,

ROBERT BREWER,
Port Captain.

LETTER FROM J. RICHARD HOMMRICH

VOLUNTEER BARGE & TRANSPORT, INC.,
Nashville, TN, February 27, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SENATOR DOMENICI: We are members of the Tennessee River Valley Association and are a regional barge transportation company serving the needs of shippers on the Tennessee, Cumberland, Tenn.-Tom. and other inland waterways.

Numerous of our shippers are directly located on water and many others use the system to move products with intermodal connections to states not on these waters—i.e. Georgia, North Carolina, Virginia, etc. Our rivers and waterways are a vital natural resource and are required for our markets worldwide and sources of supply to our agriculture and our industry.

Besides navigation, all other natural benefits of these waterways are highly beneficial and crucial to our people. Some of these benefits are hydropower, recreation, flood control, agriculture, recreation and tourism, fish and wildlife habitats, drinking water, and water for industry.

We support TVA's fiscal year 1999 budget request of $76.8 million, which includes $57.6 million for land and water management and $6.8 million for Chickamauga lock. TVA's river management system should remain in place and transfer or privatization would have drastic negative impact. The Tennessee River should not be treated as a poor step child because of recent differences because of TVA actions and proposals. These issues can and should be resolved.

The history of our country shows early and consistently strong support of federal funding for development and maintenance of all of our valuable waterways. The needs are so much greater now than ever due to the large volume of traffic transported which keeps these tonnages off our roads and highways.

We also support the U.S. Army Corps budget and urge that all of its maintenance and operation budgets be restored to adequate levels. The Kentucky Lock addition should be funded for $11.5 million as it is crucial to all of the Southeast including the Tenn.-Tom. Many other nations are recognizing the waterways as a valuable tool for survival in world competition and for development of their nations. We cannot afford to let our advantage escape us because of our failure to do likewise.

Sincerely,

J. RICHARD HOMMRICH,
President.

LETTER FROM BARRY E. PARKS, JR.

PHILIP SERVICES, CORP.,
Nashville, TN, February 24, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: I am a member of the Tennessee River Valley Association (TRVA). I am writing to convey a sincere concern in the upcoming budget requests for fiscal year 1999 regarding our inland waterways. Their management and maintenance is crucial to the economic growth and development of our country, more specific to the eastern half of the United States.

There are many projects that require funding on our inland waterway system. Of those projects, the Chickamauga Lock and the Kentucky Lock are of great importance to our recycling, sales, and shipping of ferrous metals. Without the use of these locks, much of the materials shipped by barge would then be transported by truck to market. You must agree, that the increase in truck traffic on our nations highways is already at a critical level. There is a labor shortage of drivers already and more would be needed to operate these trucks, and the drivers that are on the road have only a few short years of experience. This combination of a labor shortage and lack of experience adds up to only one thing, traffic accidents and/or fatalities. Who knows, it may be my wife and children or yours in the vehicle involved in that accident.

There are other modes of transportation available for use such as truck and rail, but none are as economical as by barge. I am sure you would agree that maintaining the lowest transportation cost on shipping our raw materials into the consumer market is most important to remain competitive as a country and to keep the Amer-

ican people and economy at a prosperous level. Without the use of our inland waterways, our most precious resource, we open ourselves for competition in foreign trade which usually results in poor quality raw materials and finished products.

It is vital that you support the projects that are being presented to you by the TRVA, Corps of Engineers, and the TVA. These projects not only serve to keep an economic balance of our country, they serve to protect our inland waterways for things such as recreation, agriculture, tourism, flood control, hydropower generation, drought and reservoir management, and the list goes on. The monies needed to facilitate the restoration and completion of these projects are minimal compared to the economic impact our country could see, and the increased loss of human lives on our nations highways, if help does not arrive soon.

I would be most appreciative of an opportunity to discuss this matter with you or individuals of your choice. Thank you for your time and assistance in this matter.

Respectfully,

BARRY E. PARKS, JR.,
Transportation Manager.

LETTER FROM GARY G. BROWN

VULCAN MATERIALS COMPANY,
Grand Rivers, KY, February 18, 1998.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. Senate, Washington, DC.

DEAR SIR: We at the Vulcan/Reed Quarry in Kentucky wish to express our support of TVA's budget request for fiscal year 1999 which includes funds for Land and Water Management and for the Chickamauga Lock.

We further ask that you support the budget requests for the rehabilitation of 50 year old Kentucky Lock for fiscal year 1999. Our company has utilized our nations inland waterway system since the mid years of this century. We have also functioned as a partner in our business relationships with TVA, the Corps of Engineers, and various other Federal and State agencies in the maintenance, preservation, supply, and construction on the rivers of our nations inland waterway system. We have the opportunity to utilize and witness the success of this great water system as it impacts all the lives of our citizens. We can also attest to the serious deficiency and irrevocable failures that can result from the lack of continued maintenance and upgrading of existing infrastructures.

We at Vulcan perform as one of the many stewards who work to preserve our valuable inland waterway system of transportation, water quality, navigation, and the maintenance of its infrastructure through our supply of construction materials and transportation relationships with the various State and Federal agencies. Our nations industry and world market participation depends on the well being this great national resource.

We ask that you support TVA's budget request for fiscal year 1999 and that in view of the large Corps of Engineer budget cuts for fiscal year 1999 that it is imperative we have a Federal Agency that can continue to maintain the Tennessee River and its infrastructure.

We ask that you support the integration of TVA's non-power river management of the Tennessee River through continued funding and support of the TVA program.

We at Vulcan Materials will always support your committee's efforts and will always be mindful of the struggle to fund all our nation's needs.

Sincerely,

GARY G. BROWN,
Mid River Division.

LOWER MISSISSIPPI RIVER VALLEY FLOOD CONTROL PROJECTS

PREPARED STATEMENT OF DONALD T. BOLLINGER, CHAIRMAN, LOUISIANA GOVERNOR'S TASK FORCE ON MARITIME INDUSTRY

PORTS ON THE LOWER MISSISSIPPI RIVER AND RED RIVER WATERWAY

Mississippi River ship channel, Gulf to Baton Rouge, LA. (construction general).—Recommend Corps be funded to full capability in fiscal year 1999 to perform required work on the saltwater intrusion mitigation plan and complete design studies for potential phase III 55-foot channel.

Mississippi River, Baton Rouge to the Gulf, maintenance dredging and GI funds for navigation study.—Recommend approval of President's fiscal year 1999 Budget of $46,220,000 under O&M General and $415,000 in GI funds.

Mississippi River-Gulf outlet (MR–GO), LA., maintenance dredging.—President's fiscal year 1999 Budget is $11,580,000 under O&M General. Recommend that Corps be funded increased capability for bank stabilization and maintenance dredging.

Inner harbor navigation canal (IHNC) lock, LA.—President's fiscal year 1999 Budget only includes $2,000,000 in construction funds for the IH–NC New Ship Lock. Recommend that Corps be funded to full capability to initiate lock construction and fully fund the community impact mitigation plan.

Mississippi River outlets at Venice, LA.—President's fiscal year 1999 Budget is $1,095,000 under O&M General. Recommend that Corps be funded increased capability for repair of jetty-breakwaters (Baptiste Collette Bayou and Grand and Tiger Passes).

Intracoastal waterway locks, LA.—Urge approval of GI funds for fiscal year 1999 to continue the feasibility study to address need for and timing of replacement of Bayou Sorrel Lock on the GIWW, Morgan City-to-Port Allen alternate route.

Gulf intracoastal waterway, LA, and TX.—President's fiscal year 1999 Budget is $19,561,000 under O&M General. Recommend that Corps be funded increased capability for dewatering and maintaining Leland Bowman Lock; new cranes at IHNC Lock; dredging Forked Island Wiggles (Bendway easing); and dredging Franklin Canal.

Red River waterway, Mississippi River to Shreveport, LA.—President's fiscal year 1999 Budget is $5,392,000 in Construction General and $8,337,000 for Operations and Maintenance. Recommend that Corps be funded to full capability to complete work already underway.

STATEMENT

As Chairman of the Louisiana Governor's Task Force on Maritime Industry, I hereby submit testimony to the Senate Subcommittee on Energy and Water Development on behalf of the ports on the lower Mississippi River and the maritime interests related thereto of the State of Louisiana relative to Congressional appropriations for fiscal year 1999 for ports on the lower Mississippi River and the Red River Waterway.

The U.S. Army Corps of Engineers reports that in 1996 a total of 421 million tons of foreign and domestic waterborne commerce moved through the consolidated deepwater ports of Louisiana situated on the lower Mississippi River between Baton Rouge and the Gulf of Mexico. The deepening of this 232-mile stretch of the River to 45 feet has been a major factor in tonnage growth at these ports. Thanks to the efforts of Congress and the New Orleans District of the Corps, Louisiana's ports and the domestic markets they serve can compete more effectively in an increasingly global marketplace. Ninety-one percent of America's foreign merchandise trade by volume (two-thirds by value) moves in ships, and more than 19 percent of the nation's foreign waterborne commerce passes through Louisiana's ports. Given the role foreign trade plays in sustaining our nation's growth, maintaining the competitive posture of Louisiana's ports is essential to our economic well-being.

In terms of transportation services and global access, Louisiana ports enjoy a distinct competitive advantage. Hundreds of barge lines accommodate America's waterborne commerce on the lower Mississippi River. The high level of barge traffic on the river is indicated by the passage of more than 246,000 barges through the Port of New Orleans annually. In 1996, 2,441 ocean-going vessels operated by more than 75 steamship lines serving U.S. trade with more than 150 countries called at the Port of New Orleans. The Port's trading partners include: Latin America (32.1 percent); Asia (31.2 percent); Europe (23.8 percent); Africa (11.3 percent) and North America (1.6 percent). During the same year, more than 6,200 vessels called at Louisiana's lower Mississippi River deepwater ports.

While the foreign markets of Louisiana's lower Mississippi River ports are worldwide, their domestic market consists primarily of mid-America. This heartland region currently produces 60 percent of the nation's agricultural products, one half of all of its manufactured goods and 90 percent of its machinery and transportation equipment.

The considerable transportation assets of Louisiana's lower Mississippi River ports enable them to play a vital role in the international commerce of this nation. In 1996, the region's ports and port facilities handled 187 million tons of foreign waterborne commerce. Valued at $37.9 billion, this cargo accounted for 16.6 percent of the nation's international waterborne trade and 24.9 percent of all U.S. exports. Bulk cargo, primarily consisting of tremendous grain and animal feed exports and

petroleum imports, made up approximately 86 percent of this volume. More than 51.4 million tons of grain from 17 states, representing 53.1 percent of all U.S. grain exports, accessed the world market via the 10 grain elevators and midstream transfer capabilities on the lower Mississippi River. This same port complex received 49.4 million short tons of petroleum and petroleum products, approximately 10.88 percent of the U.S. waterborne imports of petroleum products.

In 1996, public and private facilities located within the jurisdiction of the Board of Commissioners of the Port of New Orleans, the fourth largest port in the United States, handled a total of 70 million tons of international cargo worth $18.4 billion (included in lower Mississippi River statistics). General cargo totaled 10 million tons. Although statistically dwarfed by bulk cargo volumes, the movement of general cargo is of special significance to the local economy because it produces greater benefits. On a per ton basis, general cargo generates spending within the community more than three times higher than bulk cargo. Major general cargo commodities handled at the Port include: iron and steel products; coffee; forest products; copper; aluminum products; and natural rubber.

Fostering the continued growth of lower Mississippi River ports is essential to assure the competitiveness of our nation's exports in the global marketplace and, consequently, the health of our national economy. Assuring deep water access to ports has been a priority of our trading partners around the world. Moreover, an evolving maritime industry seeking greater economies of scale continues to support construction of larger vessels with increased draft requirements. Because it has facilitated the provision of deepwater port access, passage of the Water Resources Development Act of 1986, has played a most significant role in assuring the competitiveness of ports on the lower Mississippi river and throughout the U.S.

By December, 1994, the Corps completed dredging of the 45-foot channel from the Gulf of Mexico to Baton Rouge, LA (Mile 233 AHP). Unfortunately, mitigation features associated with the first phase of the channel deepening project, completed in 1988, have yet to be accomplished. It is very disappointing that funding for this vitally important project was not included in the President's fiscal year 1999 Budget. We urge the inclusion of funding and support for this effort in the budget, which will include part of approximately $15 million in payments to the State of Louisiana for construction of a pipeline and pumping stations to deliver potable fresh water to communities affected by saltwater intrusion. We further urge that the Corps be provided funding to proceed with design studies for Phase III which will allow deepening of the river to the 55-foot authorized depth.

The Port of South Louisiana, the nation's largest port with 189.8 million tons of foreign and domestic cargo in 1996, and the Port of Baton Rouge, the nation's fifth largest port with 81 million tons of foreign and domestic cargo in 1996, and other lower Mississippi River ports are dependent upon timely and adequate dredging of Southwest Pass to provide deep draft access to the Gulf of Mexico. Based on past experience—spring thaws bringing higher river stages and higher siltation rates—we strongly urge full funding of the President's fiscal year 1999 Budget amount of $46,220,000 under O&M General for maintenance of the 45-foot project channel. Funding includes monies for both dredging and repairs to foreshore dikes; repairs to lateral dikes; and jetty repairs. Revetment construction has reduced the number and size of deep draft anchorages. To mitigate this loss, we recommend that the Corps be authorized under the O&M General appropriation to construct new anchorages and maintain new and existing anchorages to accommodate increased ship traffic.

Approval is also recommended for the President's fiscal year 1999 Budget amount of $415,000 for the Corps to continue the reconnaissance study of the long-term navigational needs of the Mississippi River and its outlets, to include anchorage areas, between Baton Rouge, LA, and the Gulf of Mexico.

Maintenance of adequate depths and channel widths in the Mississippi River-Gulf Outlet Channel (MR–GO) is also of great concern. This channel provides deep draft access to the Port of New Orleans' principal container terminals and generates an annual economic impact of nearly $800 million. In 1996, 518 general cargo vessels calling on the MR–GO Tidewater facilities accounted for 30.8 percent of the general cargo tonnage handled over public facilities at the Port of New Orleans and 88.5 percent of Louisiana's containerized cargo.

Because of the MR–GO's demonstrated vulnerability to coastal storm activity, annual channel maintenance dredging and bank stabilization are essential to assure unimpeded vessel operations. In 1996, heavy shoaling related to Tropical Storm Josephine resulted in the imposition of a draft restriction from the project depth of 36 feet to 30 feet. The President's fiscal year 1999 Budget Amount is $11,580,000 under O&M General. We, however, strongly recommend that the Corps be funded

increased capability to carry out annual maintenance dredging and north and south bank stabilization projects.

The Inner Harbor Navigation Canal (IHNC) Lock is a critical link in the Gulf Intracoastal Waterway (GIWW) and provides a connection between the Port of New Orleans' Mississippi River and IHNC terminals. In 1998, the Corps approved a plan for replacement of this obsolete facility. The Corps estimates that the lock replacement project will have a cost-benefit ratio of 1.7 to 1 and will provide $110 million annually in transportation cost savings. In addition to minimizing adverse impacts to adjacent neighborhoods, a Community Impact Mitigation Program totaling $33 million is included. The President's fiscal year 1999 Budget amount of $2,000,000 for the IHNC New Ship Lock will pay for continued engineering and design work, but will not cover early construction activities such as clearing land or mitigation program initiation. We, therefore, recommend that the Corps be funded to full capability to enable the timely start of construction and mitigation program implementation. We particularly recommend that the mitigation program be fully funded at the start of project construction.

The operation and maintenance of the Mississippi River Outlets at Venice, LA are essential to providing safe offshore support access to energy-related industries. In 1996, these channels accommodated cargo movements exceeding 3.8 million tons. In addition to routine traffic, Baptiste Collette Bayou is used by shallow draft vessels as an alternate route between the MR–GO, GIWW and the Mississippi River. Because of a scheduled 60-day closure of the IHNC lock for dewatering and repair in June and July, 1998 (depending on River stages), maintaining Baptiste Collette Bayou's channel is especially critical. The President's fiscal year 1999 Budget amount is $1,095,000 under O&M General. We recommend that the Corps be funded increased capability for the repair of jetty breakwaters (Baptiste Collette Bayou and Grand and Tiger Passes).

More than 100 million tons of cargo transverse the GIWW in the New Orleans District annually. To assure the efficient flow of commerce on this key waterway, approval is urged for fiscal year 1999 GI funds to continue the feasibility study of the need for and the timing of replacement of Bayou Sorrel Lock on the GIWW, Morgan City-to-Port Allen alternate route. In addition, we recommend that the New Orleans District be funded an increased capability for continued maintenance of the Louisiana and Texas sections of the GIWW.

One additional project warrants consideration. The Red River Waterway, Mississippi River to Shreveport, LA Project provides 236 miles of navigation improvements, 225 miles of channel stabilization works and various recreational facilities. Project completion will stimulate economic growth along the Red River Basin and increase cargo flows through the Port of New Orleans. The President's fiscal year 1999 Budget is $5,392,000 in Construction General for substantial project completion and $8,337,000 for Operations and Maintenance. Work already underway on this project should be completed. We, therefore, recommend that the Corps be funded to full capability for this project.

The need and impetus to reduce the Federal budget is certainly acknowledged; however, reduced funding on any of the above projects will result in decreased maintenance levels which will escalate deterioration and, ultimately, prevent them from functioning at their full authorized purpose. Reduction in the serviceability of these projects will cause severe economic impacts not only to this region, but to the nation as a whole that will far outweigh savings from reduced maintenance expenditures. Therefore, we reiterate our strong recommendation that the above projects be funded to their full capability.

Supporting statements from Mr. J. Ron Brinson, President and CEO of the Port of New Orleans; Mr. Channing Hayden, President of the Steamship Association of Louisiana; Capt. John Levine, President of the Associated Bar Pilots and Capt. Mark Delesdernier, President of the Crescent River Port Pilots Association and others are attached. Please make these statements along with my statement part of the record. Supplemental graphics relating to my statement have been furnished separately for staff background use. Thank you for the opportunity to comment to the subcommittee on these vital projects.

Congressional Appropriations for Fiscal Year 1999 for Ports on the Lower Mississippi River and the Red River Waterway

Project	*Fiscal year 1999 budget* [1]
Mississippi River Ship Channel Gulf to Baton Rouge, LA. (Construction General)	.....
Mississippi River, Baton Rouge to the Gulf, Maintenance Dredging, and Stabilization (O&M General)	$46,220,000

Project	*Fiscal year 1999 budget* [1]
Mississippi River-Gulf Outlet (MR–GO), LA. (O&M General)	11,580,000
Inner Harbor Navigation Canal Lock LA., (Construction General)	2,000,000
Mississippi River Outlets at Venice, LA. (O&M General)	1,095,000
Intracoastal Waterway Locks, (GI Funds)	550,000
Gulf Intracoastal Waterway LA, and TX (O&M General)	19,561,000
Red River Waterway:	
Construction General	5,392,000
O&M General	8,337,000
Total Red River Waterway	13,729,000
Grand total	94,735,000

[1] Amount in President's fiscal year 1999 budget.

PREPARED STATEMENT OF CHANNING F. HAYDEN, JR., PRESIDENT, STEAMSHIP ASSOCIATION OF LOUISIANA

Summary of testimony of Channing F. Hayden, Jr., President of the Steamship Association of Louisiana (formerly known as the New Orleans Steamship Association), for the record of the Senate Energy and Water Development Subcommittee on Appropriations in reference to projects of public interest that affect Louisiana's deep-water ports.

Mississippi River ship channel, Gulf to Baton Rouge, Louisiana (construction general).—We recommend continuation of the work on the saltwater intrusion mitigation plan and the design studies for Phase III of the 55-foot channel. Funding to full capability in fiscal year 1999 is necessary for this required work.

Maintenance dredging of the Mississippi River from Baton Rouge to the Gulf of Mexico, plus GI funding for navigation improvement study.—We urge approval of the $46,220,000 in the President's fiscal year 1999 budget under O&M General, with GI funds of $415,000 in fiscal year 1999 for a reconnaissance study to improve navigation needs and to include ways to reduce long-term maintenance costs and the authorization to construct and maintain anchorages.

Mississippi River-Gulf outlet maintenance dredging and bank erosion.—In addition to the $11,580,000 in the President's fiscal year 1999 budget under O&M General, we urge that the Corps be funded an increased capability in fiscal year 1999 to maintain this channel, which should include bank stabilization on both banks and jetty maintenance.

New inner harbor navigation canal ship lock.—Recognizing that only $2,000,000 is included in the President's fiscal year 1999 budget for construction funds, we urge that the Corps be funded to full capability in fiscal year 1999 for this project, which is essential to begin construction and the community impact mitigation plan.

Red River waterway, Mississippi River to Shreveport, Louisiana.—Recognizing that $5,392,000 is in the President's fiscal year 1999 budget to substantially complete this vital project and $8,337,000 for O&M in fiscal year 1999, we urge that the Corps be funded to full capability for fiscal year 1999. This project will result in stimulating economic growth along the Red River Basin and increase cargo movements through Louisiana ports. Funding is essential to complete the work already underway.

To provide access to the harbor maintenance fund to address dredging emergencies.—To address dredging emergencies, Congress should provide the Corps limited access to the funds in the Harbor Maintenance Fund. Proper safeguards should be built in to restrict access to emergencies caused by floods, storms, and other natural disasters.

Calcasieu River and pass, Louisiana.—We urge approval of the $6,980,000 in President's fiscal year 1999 budget under O&M General and recommend that the Corps be funded an increased capability in fiscal year 1999 to maintain rock protection at Dugas Landing Embankment.

National waterways alliance initiative.—We support the National Waterways Alliance's initiative to realistically fund the Corps at $4,540,000,000.

STATEMENT

Testimony of Channing F. Hayden, Jr., President of the Steamship Association of Louisiana (formerly known as the New Orleans Steamship Association), for the record of the Senate Energy and Water Development Subcommittee on Appropriations in reference to projects of public interest affecting Louisiana's deep-water ports.

Mr. Chairman: I am President of the Steamship Association of Louisiana. Our Association represents ship owners, operators, agents, and stevedores that represent the majority of the 7,000+ deep-draft vessels in foreign commerce that call Louisiana's deep-water ports each year. We are dedicated to the safe and efficient movement of maritime commerce through the state's deep-water ports. We endorse the testimony of Mr. Donald T. Bollinger, Chairman of the Governor's Task Force on Maritime Industry and the statements of the other organizations attached to his testimony.

Channel stabilization and maintenance dredging in Southwest Pass are critical to keep project draft. Project draft ensures the Mississippi River's deep-water ports will handle the country's foreign waterborne commerce in the most cost-effective way possible.

For years we have urged this Committee to provide funds to maintain project draft at Southwest Pass. You have responded, and your wisdom has benefitted the entire American heartland served by the Mississippi River system. Southwest Pass was greatly restricted throughout the 1970's. From 1970 to 1975, the channel was at less than project draft 46 percent of the time. In 1973 and 1974, the channel was below the 40-foot project draft 70 percent of the time. During some periods, drafts were limited to 31 feet. Fortunately, those conditions have not recurred because of a combination of factors: Your help, and the constant vigilance of the Pilots, the Corps, and the maritime community. The years 1990 through 1997 show a tremendous improvement in channel stability. We have only been below project draft 3 percent of the time for vessels under 100,000 deadweight tons and 8 percent of the time for vessels 100,000 deadweight tons or greater. The funding you provided was money well spent. The repairs to the jetties and dikes and the Corps' ability to rapidly respond to shoaling have been instrumental in maintaining project dimensions.

To enhance the safe and efficient movement of ships and cargo, we recommend mining sediment from the Pilottown Anchorage to create and enhance wetlands. Each 800,000 cubic yards of dredged material creates 115 acres of wetlands and enhances 256 more. In the process, much-needed Pilottown Anchorage at fog-prone Head of Passes would be dredged to accommodate the increasing number of deeply-ladened ships attracted by the 45-foot channel. Dredging Pilottown Anchorage would also mitigate anchorage space lost in this area to the proposed West Bay Diversion Project.

The Pilots have taken advantage of tidal flows and other factors to recommend the maximum draft possible consistent with safe navigation. This stability represents additional sales and increased competitiveness for U.S. products on the world market. Industry's partnership with you has kept Mississippi River ports competitive. Stability is reflected in draft footage. Twelve inches to a large vessel with a loading capacity of 250 tons per inch is an additional 3,000 tons of cargo. As of this writing, freight rates for grain moving from the Mississippi River to the Far East and Europe are ranging from $22 per ton to $13 a ton. Using the average, $17.50, each foot of draft represents an additional $52,500 in vessel revenue, or $262,000 for additional feet over the old 40-foot project draft.

The funds we request for maintenance dredging and other works are essential for the Corps to maintain a reliable channel and respond rapidly to potential problems. This builds the confidence of the bulk trade in a reliable Mississippi River draft, which is critically important. Much of Louisiana's bulk trade is export agricultural products and coal. These commodities are neither captive to Louisiana nor the United States if they can be shipped from competing countries at a consistently lower cost.

The deeper the channel, the more important channel stabilization is. Adequate channel stabilization work minimizes the maintenance cost of the deeper channel—a cost-effective investment. The faster the project is stabilized, the faster and greater the benefits of reduced O&M costs will be realized. Also, we recommend that the Corps conduct research on prototype dredging techniques. Experimental dredging would not replace routine dredging but would permit, for example, testing dustpan dredges in Southwest Pass and Water Injection Dredge at the crossings above New Orleans.

Funds are also needed for dustpan dredges to work the crossings above New Orleans. These crossings control the draft to eight of our ten major grain elevators, plus many mid-stream loading facilities. This area caters to the bulk trade and must have a stable channel depth consistent with the depth at Southwest Pass. Only two dredges in the world are available to maintain the deep-draft crossings between New Orleans and Baton Rouge. There are times when a high river is followed by a rapid drop in the river's stage. In such cases, the dustpan dredges may not be available, or both dredges may not be capable of restoring the 12 crossings within

a reasonable time. When this happens, hopper dredges are used to assist in the work.

The Corps is studying the makeup of their "minimum fleet"—the number of dredges the Corps owns and operates. Corps-owned dredges working the lower Mississippi River are the hopper dredges WHEELER, MACFARLAND, and ESSAYONS, and the dustpan dredge JADWIN. The WHEELER and MACFARLAND, and from time to time the ESSAYONS, provide much-needed capacity and immediate response to keep Southwest Pass opened, especially when the river is abnormally high. The action by Congress to reduce the government hopper fleet will drastically diminish the Corps' ability to maintain reliable project dimensions and adversely affect our country's standing in world bulk markets. We urge Congress to reconsider its decision to place the WHEELER on stand-by status. Even when the WHEELER is available, the combined Corps/private fleet does not have enough Mississippi River-qualified hopper dredges to meet peak dredging requirements. The Corps' Minimum Dredge Fleet studies, we feel, neither justify a reduction in the fleet nor the lay-up/stand-by status of the WHEELER or any other Corps-owned dredge. The Army Corps of Engineers' records will show that for the 1997 high-water season there was a shortage of hopper dredges. Besides the Mississippi River ports, this shortage of dredges also impacts many of our nation's deep-draft ports and is particularly disruptive to the Port of Lake Charles, Louisiana, where dredging suffers practically every year.

For all of the above reasons, we request full funding for the mitigation features of the O&M General, 45-foot Mississippi River project.

In December 1994, the Corps completed the 45-foot deep channel to Baton Rouge. Proper maintenance now provides uniform drafts for all the ports on the lower Mississippi River. This makes U.S. exports through Louisiana more competitive, and adequate federal maintenance funds to keep the channel open must be available. In addition, the Corps needs authorization to construct and maintain anchorages to improve safety. Over the years, revetment work and changes in the river itself have caused serious negative impacts on our anchorages. Therefore, we encourage full funding capability in fiscal year 1999 to complete the reconnaissance study of navigation needs on the Mississippi River and its outlets between Baton Rouge and the Gulf.

We also support Phase III of the Mississippi River channel deepening project and urge that the Corps be funded to proceed with design studies for the 55-foot channel, Baton Rouge to the Gulf of Mexico.

The growth of the Port of New Orleans depends, in large measure, on the Port's container and other facilities on the Mississippi River-Gulf Outlet (MR–GO). The funds you provided in past fiscal years have allowed the Corps to improve the channel considerably. However, the channel width has remained limited primarily because of erosion. This seaway has a project depth of 36 feet. For safety reasons in this narrow channel, restrictions apply to vessels with a draft of 30 feet or more, causing delays to the tightly scheduled container traffic using the MR–GO. These specialty vessels serving the Port's facilities are becoming larger. This channel, with less than stable full project dimensions, causes problems for larger vessels, reducing our ability to grow with the trade. The highest wages under the International Longshoreman's Association's contract ($23 per straight-time hour) is paid for work at the MR–GO container facilities. Anything that threatens the MR–GO jeopardizes these high-paying jobs, which are held mostly by minority workers.

To improve safety on the MR–GO and protect Louisiana's container trade (and the well-paying, minority employment it produces), we request that the Corps be funded to an increased capability for the MR–GO in fiscal year 1999. This will allow annual maintenance dredging, north and south bank stabilization, and jetty maintenance.

With facilities located on both the MR–GO and the Mississippi River, an adequate route between the two is essential for efficient transit between these facilities. The shortest route is the inadequate, antiquated Inner Harbor Navigation Canal (IHNC) Lock built in the 1920's with a width of 75 feet and limited depth of 30 feet. Its maximum capacity has long been exceeded. The average waiting time for passage through the Lock has increased from 8½ hours in 1985 to about 12 hours at present; however, we understand that waiting time can be more than a day in some instances. A much larger ship lock is necessary to accommodate today's traffic.

The replacement project for the IHNC Lock is important to the ports on the lower Mississippi River and to the nation's commerce since it is on the corridor for east/west barge traffic. The President's fiscal year 1999 budget of $2,000,000 only covers continued engineering and design work. Without full funding, the project will be delayed and increase the overall cost of the project. We urge Congress to provide the Corps' full fiscal year 1999 capability for this important project to insure its completion. Delays are unthinkable since the new lock is long overdue.

The Red River Waterway, Mississippi River to Shreveport, Louisiana, Project is directly related to our deep-water ports. The continuation and completion of this work will stimulate the economy all along the Red River Basin with jobs and additional international trade. This stimulated trade will service the Port of Shreveport and the ports on the lower Mississippi River, providing needed growth and benefitting the states of Louisiana, Texas, Oklahoma, and Arkansas, which are served through the Shreveport distribution center. Therefore, we strongly recommend that the Corps be funded to full capability for fiscal year 1999.

The Port of Lake Charles, Louisiana, is served by the Calcasieu River, which is often below project depth and width. This is another of Louisiana's major deep-water ports that benefits the economy of the state and the nation. According to the Port's figures, 33.139 million tons of import cargo and 16.674 million tons of export cargo were handled in 1997. The Port and private facilities along this waterway provide thousands of jobs for the Lake Charles area. In 1997 there were 945 ships and 6,834 barges that used this waterway. The Port area's growth and continued success depends on a reliable and safe channel that should be at full project. This channel, because of its project deficiencies, requires one-way traffic for many ships, causing delays that disrupt cargo operations. This is costly and inefficient for industry. We request funding to the full capability of the Corps to maintain the channel.

We urge Congress to provide for emergency navigation dredging needs. An appropriate solution would be for Congress to take action that would provide the mechanics for the immediate release of Harbor Maintenance Funds to the Corps of Engineers. Such funding would be specifically for emergencies to prevent hazards to navigation and avoid impeding the flow of our nation's commerce.

In addition, we are concerned that the President's overall fiscal year 1999 budget for the Corps' Civil Works Program does not adequately fund the nation's waterways needs. The $3.2 billion for the Corps' civil works program is $800 million less than fiscal year 1998. The drop in Construction, General and O&M funding will result in added costs in later years. Slow downs in construction projects that are already underway, such as the IHNC Lock replacement in Louisiana, will incur cost increases because of the delay caused by the lack of funding. Further, any delay of maintenance work will impact the safe and efficient movement of our nation's waterborne commerce. For the above reasons, we support the National Waterways Alliance's initiative to fund the Corps' Civil Works Program at $4,540,000,000.

Thank you for allowing the Association to submit testimony on the Corps' funding needs.

PREPARED STATEMENT OF J. RON BRINSON, PRESIDENT AND CEO, PORT OF NEW ORLEANS, NEW ORLEANS, LA

The Port of New Orleans enjoys a location at the terminus of the 14,500 mile inland waterway system of the United States, the most extensively developed waterway system in the world. The Port, via the Mississippi River and the Mississippi River-Gulf Outlet, serves as the gateway between America's heartland and the global marketplace.

We fully support the March 13, 1998 testimony of the Louisiana Governor's Task Force on Maritime Industry on behalf of the ports on the lower Mississippi River and Louisiana's related maritime interests.

We greatly appreciate the outstanding support and cooperation received over many years from you and your Subcommittee.

PREPARED STATEMENT OF CLYDE A. GIORDANO, PARISH PRESIDENT, PLAQUEMINES PARISH GOVERNMENT, BELLE CHASSE, LA

In my official capacity as Parish President of Plaquemines Parish Louisiana, I am herein requesting the following appropriations be made for fiscal year 1999:

Mississippi River ship Channel, Gulf to Baton Rouge, Louisiana (construction general).—We recommend that the Corps be funded to full capacity in fiscal year 1999 to perform required work on the saltwater intrusion mitigation plan.

Mississippi River, Baton Rouge to the Gulf, maintenance dredging and GI funds for navigation study.—We recommend that approval of the fiscal year 1999 Budget of $46,220,000 under O&M General and $415,000 in GI funds.

Mississippi River outlets at Venice, Louisiana.—The President's fiscal year 1999 Budget is $1,095,000 under O&M General. Recommend that Corps be funded increased capably for repair of jetty-breakwater (Baptiste Collette and Grand and Tiger Pass).

We would certainly appreciate your consideration and the assistance you can give us in these projects.

PREPARED STATEMENT OF JOHN LEVINE, JR., PRESIDENT, ASSOCIATED BRANCH PILOTS

The Associated Branch Pilots is an Association of Pilots that have been guiding oceangoing vessels into the entrances the Mississippi River system for over 125 years. We are called Bar Pilots because we guide the ships past constantly shifting and shoaling sand bars in the area.

Southwest Pass of the Mississippi River is the main entrance for deep draft oceangoing vessels entering the Lower Mississippi River System. It is the shallowest stretch of the Lower Mississippi River System and the area that requires the greatest effort by the Corps of Engineers to maintain project depth.

In 1997, the Associated Branch Pilots made 11,893 transits on oceangoing vessels through Southwest Pass. Of these ships, 3,493 were of 50,000 deadweight tons or greater and 557 had a draft in excess of 40 feet.

This number of heavily laden vessels calling on the Lower Mississippi River System is a direct result of the completion by the Corps of Engineers of the deepening of the channel from 40 feet to 45 feet.

This first phase has proven to be extremely well designed and well maintained by the fact that the maximum draft recommended by my Association for vessels using Southwest Pass has been 45 feet or greater, except for periods of extremely high water that caused shoaling that overwhelmed the dredging efforts. This is in stark contrast to the late 1970's and early 80's when we often had to recommend drafts less than the project depth due to shoaling.

To the world shipping community, this means that calling at ports on the Mississippi River system will be more profitable because larger ships can enter and carry greater amounts cargo.

This is beneficial to the entire United States because it makes the large quantities of petroleum, Agricultural, and manufactured products shipped from the Mississippi Valley more desirable due to increased profitability.

I would also like to comment briefly on the East-West navigation channels near Venice, Louisiana. Tiger Pass and Baptiste Collette provide a shorter, more direct route to Breton Sound and the Gulf of Mexico for offshore supply boats and small tugs and barges. These channels not only represent a savings in time and money for these vessels, but reduce the traffic in the main shipping channel, the Mississippi River and its passes, which is one of the most congested waterways in the country.

The dredging and maintaining of South Pass would contribute to the safety of the overall waterway and, in my opinion, be of greater value than the much discussed Vessel Traffic System planned for the area.

The Associated Branch Pilots also pilot vessels in the Mississippi River Gulf Outlet, a man-made tidewater channel 75 miles long, stretching from the Gulf of Mexico to an intersection of the Intercoastal Waterway in New Orleans.

This channel leads to the Main Container Terminals for the Port of New Orleans, the Roll On, Roll Off Terminal, the Port of New Orleans Bulk Handling Plant, and additional General Cargo Docks. For the Port of New Orleans to remain competitive in the ever growing container trade, the continued maintenance of this channel is crucial. In 1997, 628 ships called on the part using the Mississippi River Gulf Outlet.

Much is being said pro and con concerning the Mississippi River Gulf Outlet. There is, admittedly, an erosion problem in the Mississippi River Gulf Outlet, but any curtailment of shipping traffic in the channel without regard to the long term effect upon the Port of New Orleans would be disastrous. I strongly support approval of funding for both the maintenance dredging/jetty repair project and the erosion/rip rap study for the Mississippi River Gulf Outlet.

I would also like to make a brief statement on behalf of the Mississippi Valley Coal Export Council. Over 62 million tons of coal have been exported using the Mississippi River System during the past five years. Coal miners, tugboat captains, barge owners, shippers and many other coal related workers have benefited by using the consistent and efficient Mississippi River System. This also represents a significant contribution towards the trade balance between the United States and other industrialized nations.

Funding of the Corps of Engineers' projects in the Lower Mississippi River System has proven to be money well spent. It has increased exports and imports that have benefited the entire United States. I urge your support of the funding requested to

enable the Corps to continue to maintain and improved the most efficient and productive waterway system in the country.

PREPARED STATEMENT OF CAPT. MARK DELESDERNIER, PRESIDENT, CRESCENT RIVER PORT PILOTS ASSOCIATION

I have served as President of the largest pilot association in the United States for the past sixteen years. The Crescent River Port Pilots furnish pilots for ships destined to the Port of Baton Rouge, Port of South Louisiana, Port of New Orleans, Port of St. Bernard, and the Port of Plaquemines.

The Crescent River Port Pilots piloted and shifted over 17,000 ships during 1997. We pilot deep draft vessels on more than 100 miles on the lower Mississippi River and 35 miles on the Mississippi River Gulf Outlet.

The lower end of our route on the Mississippi River has a shoaling problem starting with the high water season each year. The shoaling requires daily attention by the United States Army Corps of Engineers to maintain project depth.

Heavy laden vessels call on the lower Mississippi River system as a direct result of the completion by the Corps of Engineers of the deepening of the channel from 40 to 45 feet.

For several years now, we have had extraordinary success in keeping the river dredges to project depth. This success is a direct result of an experienced and vigilant Corps of Engineers that, through experience, is able to timely bid in dredges to avoid extra dredging cost by waiting too long to start maintenance dredging.

Channel stability sends a positive message to the world's shipping community that schedule cargo for deep draft vessels months in advance is reliable. This makes the port call on the Mississippi River very profitable since the ships can lift greater tonnage.

Keeping project depth is beneficial to twenty-seven states that are directly tied to the Mississippi River Port Complex.

Additionally I would like to comment on the east and west navigation channels near Venice, Louisiana. Baptiste Collette and Tiger Pass provide a shorter and more direct route to Breton Sound and West Delta in the Gulf of Mexico for oil field support vessels.

The Crescent River Port Pilots also pilot ships in the Mississippi River Gulf Outlet. A man-made channel approximately 75 miles long starting in Breton Sound in the Gulf of Mexico and ending in New Orleans where it intersects with the Intercoastal Waterway.

The Mississippi River Gulf Outlet feeds the main container terminals in the Port of New Orleans. Additional docks such as Bulk Terminal and general cargo facilities depend on this channel which handled approximately 700 ship calls last year.

The Mississippi River Gulf Outlet has been a controversial channel since its inception, but being an integral part of the Port of New Orleans, it would be disaster if it is not kept at project width and depth. The Crescent River Pilots strongly support approval of fueling for both the maintenance dredging, jetty repair projects.

Funding of the United States Army Corps of Engineers projects in the lower Mississippi River system which includes the Mississippi River Gulf Outlet, Tiger Pass, Baptiste Collette and Southwest Pass has proven to be money well spent.

I urge your support of the funding requested to allow the Corps of Engineers to continue to maintain and improve the most productive waterway system in the world.

Mr. Chairman, thanks for allowing me the opportunity to submit my comments to your subcommittee.

PREPARED STATEMENT OF GARY K. PRUITT, EXECUTIVE DIRECTOR, GREATER BATON ROUGE PORT COMMISSION

The Port of Greater Baton Rouge respectfully requests that your committee give favorable consideration to the following projects.

Mississippi River Ship Channel—Gulf to Baton Rough, Louisiana.—We support full funding in fiscal year 1998–99 to the Corps of Engineers General Construction Budget. This will allow for the completion of the saltwater intrusion mitigation plan and the design studies for the fifty-five foot channel.

Mississippi River—Baton Rouge to the Gulf—Maintenance Dredging and GI funds for navigation study.—We support maximum funding for maintenance dredging on this stretch of the river and for the navigation improvement study to reduce long-term maintenance cost.

As stated in previous correspondence, these two projects are vital not only to the Port of Greater Baton Rouge, but to the entire nation, The great Mississippi River is the premier national waterway, providing accessibility to and from foreign countries for the transportation of goods and services used by countless numbers of U.S. companies and individual citizens. The channel must be properly designed and maintained for the benefit of all.

We also earnestly request your support for funding of the other projects included in testimony prepared and submitted by Mr. Lawrence T. Bollinger. There projects are also extremely important to the overall viability of the Mississippi River system and its tributaries. We must properly maintain our waterway infrastructure if we are to increase trade and have the confidence of our trading partners around the world.

Your cooperation in these matters is greatly appreciated.

PREPARED STATEMENT OF GARY P. LAGRANGE, EXECUTIVE DIRECTOR, PORT OF SOUTH LOUISIANA, LAPLACE, LA

The South Louisiana Port Commission very much appreciates being given the opportunity to submit this statement and supportive material to signify its endorsement of the statement of Mr. Donald T. Bollinger, Chairman of the Louisiana Governor's Task Force on Maritime Industry.

The Port of South Louisiana is comprised of nearly 54 miles of Mississippi River north of New Orleans and south of Baton Rouge, with more than fifty private and public docks and wharves. The Port of South Louisiana is the largest tonnage port in the United States and fourth largest in the world, handling more than 220 million short tons of cargo during 1997. Of this total tonnage, more than 100 million tons are shipped in international trade by deep water vessel and 120 million tons are shipped in domestic trade by vessels and barges. Each year more than 100,000 barges transport cargo at the Port of South Louisiana and more than 4,000 ships call at the public and private wharves of our Port.

A recent study by Dr. Tim Ryan of the University of New Orleans indicates that nearly 20 per cent of the domestic gross product of the State of Louisiana is dependent upon the maritime industry and one of twelve jobs is created frown the economic activity of the maritime industry. Attached you will find statistics which have been developed from the records of the South Louisiana Port Commission.

The Port of South Louisiana strongly urges the Congress to fund all of the following projects.

—Mississippi River Ship Channel, Gulf to Baton Rouge, LA (Construction General)
—Mississippi River, Baton Rouge to the Gulf, Maintenance Dredging and GI Funds For Navigation Study
—Mississippi River-Gulf Outlet (MR–GO), I-A., Maintenance Dredging
—Inner Harbor Navigation Canal (IHNC) Lock, LA
—Mississippi River Outlets at Venice, LA
—Intracoastal Waterway Locks, LA
—Gulf Intracoastal Waterway, LA and TX
—Red River Waterway, Mississippi River to Shreveport, LA

The Port of South Louisiana strongly believes that the funding and completion of the above maritime projects will enhance the ability of the ports in the region to be competitive in the global economy and will enhance the ability of domestic industry and agriculture to compete in the export of its products.

If we can provide any further information, please feel free to call upon me.

EXHIBIT A

Summary of Trade—Year Ending December 31, 1997

[Short tons]

Exports	63,427,557
Imports	34,881,460
Domestic receipts	89,435,110
Domestic shipments	32,350,670
Total	220,094,797

World Port Tonnage Comparison

[Year ending December 31, 1997]

Port of Singapore	327,500,000
Port of Rotterdam	307,300,000
Port of Kaohsiung	(1)
Port of South Louisiana	220,094,797
Port of Houston	(1)

[1] Unavailable at printing.

Source: Finance Division, Business Development Division, Port of South Louisiana.

EXHIBIT B

Exports—Year Ending December 31, 1997

[Short tons]

Commodity	*Shipped*
Animal feed	9,488,615
Barley	19,953
Chemicals or fertilizer	2,067,700
Crude oil	36,687
Edible oils	1,340,941
Maize	24,721,960
Milo	1,969,310
Ores	16,000
Petroleum Products	2,559,924
Rice	581,779
Soybeans	15,554,336
Wheat	4,424,749
Wood/wood chips	645,603
Total exports	63,427,557

Source: Finance Division, Business Development Division, Port of South Louisiana.

EXHIBIT C

Imports—Year Ending December 31, 1997

[Short tons]

Commodity	*Received*
Chemicals or fertilizer	1,695,269
Coal, lignite, coke	6,569
Crude oil	14,783,704
Edible oils	579,898
Grain	22,826
Ores	3,399,154
Petroleum Products	10,661,594
Rice	22,000
Steel, iron, metals	1,605,599
Sugar, molasses, honey	101,639
Stone, earth, or concrete	2,003,208
Total imports	34,881,460

Source: Finance Division, Business Development Division, Port of South Louisiana.

EXHIBIT D

DOMESTIC TRADE—YEAR ENDING DECEMBER 31, 1997

[Short tons]

Commodity	Received	Shipped
Animal feed	4,485,887	405,079
Barley	18,068	.....
Chemicals or fertilizer	2,672,382	5,921,968

DOMESTIC TRADE—YEAR ENDING DECEMBER 31, 1997—Continued

[Short tons]

Commodity	Received	Shipped
Coal, lignite, coke	15,000	
Crude oil	4,610,323	2,729,885
Edible oils	559,004	215,235
Maize	24,375,854	
Milo	649,240	
Ores	4,307,258	1,015,382
Petroleum products	23,303,370	21,567,298
Rice	530,057	27,795
Soybeans	18,978,475	1,100
Steel, iron, or metals	513,032	266,116
Stone or concrete	125,095	65,618
Sugar, molasses, honey	95,786	2,959
Wheat	3,586,062	9,241
Wood/wood chips	610,217	122,994
Total domestic trade	89,435,110	32,350,670

Source: Finance Division, Business Development Division, Port of South Louisiana.

PREPARED STATEMENT OF GOV. MURPHY J. "MIKE" FOSTER ON BEHALF OF THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, PUBLIC WORKS AND FLOOD CONTROL DIRECTORATE

The Louisiana Department of Transportation and Development, Public Works and Flood Control Directorate, is the agency designated to represent the State of Louisiana in the planning and orderly development of its water resources. This statement is presented on behalf of the State of Louisiana and contains recommendations for fiscal year 1999 appropriations for work in Louisiana under the Mississippi River and Tributaries Project.

Louisiana contains the terminus of the Mississippi River, which has the third largest drainage basin in the world, exceeded only by the watersheds of the Amazon and Congo Rivers. The Mississippi River drains 41 percent, or 1¼ million square miles, of the contiguous United States and parts of two Canadian provinces. All of the runoff from major river basins, such as the Missouri and Upper Mississippi, the Ohio including the Tennessee and others, and the Arkansas and White, flow into the Lower Mississippi, which empties into the Gulf of Mexico through Louisiana.

The jurisdiction of levee boards in Louisiana includes one-third of the State's total area. However, the importance of this one-third of the State can be seen by the fact that it contains nearly 75 percent of the State's population and about 97 percent of the State's disposable personal income. Traditionally, the levee district areas are water rich and have fallen heir to industrial development that ranks high in the nation. It has been estimated that about 60 percent of the State's agricultural products come from levee district areas. So you can see why Louisiana and its twenty levee districts are so interested in seeing the completion of the Mississippi River and Tributaries Project.

In making the following recommendations regarding construction, studies, and some selected operation and maintenance items, the State of Louisiana understands the Administration's need to reduce the Federal deficit, but would hope that Congress and the Administration will honor their prior commitments to infrastructure development and fund our requests.

The following Louisiana projects are those for which we are requesting an increase to the President's budget request. For those Louisiana projects not listed we agree with the President's budget request. See the attached "Summary of Recommended Appropriations" for a complete listing.

Operation and maintenance

	Request
Atchafalaya Basin	$16,246,000

	Request
Old River	12,485,000
Bonnet Carre	2,357,000

The operation and maintenance of completed works are essential to achieving the full benefits of the projects. In times of budget constraints it is essential that operation and maintenance not be delayed which would hamper the effectiveness of the projects and cause more expensive maintenance at a later date. The above listed projects have reached a point where delayed maintenance is now essential and we urge you to fund these projects in the amounts requested.

Bayou rapides drainage structure and pumping plant

	Request
Lower Red River, South Bank Levees	$2,773,000

The Bayou Rapides Drainage Structure and Pumping Plant Project is authorized under the Lower Red River, South Bank Levees of the Mississippi River and Tributaries Project. An additional $1 million is requested to complete plans and specifications and to begin construction. These additional funds will maintain the scheduled 18 months allowed for major maintenance projects. We urge your support for funding and request that specific language be included in the appropriations bill to direct the Secretary of the Army to construct this project.

Mississippi River levees (LA only)—Request: $15,200,000

The Mississippi River and Tributaries Project above Louisiana is about 90 percent complete, but in Louisiana to a much lesser extent. Because of the improvements upstream, increased flows are a major problem in Louisiana where the project is lagging behind the construction in the upper valley. We request funds for levee enlargement work within the Fifth Louisiana Levee District where there is a deficiency of 4 to 7 feet on mainline Mississippi River levees. It is also requested that Federal funds be provided to purchase rights-of-way for this critical work as the Levee District is in an economically depressed area and does not have a tax base capably of producing the funds necessary for both maintenance and rights-of-way.

Louisiana State Penitentiary levee—Request: $10,000,000

The Louisiana State Penitentiary Levee is the only section of Mississippi River levee in Louisiana that is not currently constructed to Federal standards. It was authorized under the Mississippi River and Tributaries Project in 1986 and re-authorized in 1990. We urge your support in funding this project and request that specific language be included in the appropriations bill to direct the Secretary of the Army to construct this project before an emergency situation arises during a major river flood and also to authorize credit for work accomplished by non-Federal interests.

Atchafalaya basin—Request: $24,600,000

This project is a main stem component of the flood control plan for the Mississippi River and Tributaries Project. The Mississippi River can safely carry only one-half of the project flood, or 1,500,000 cubic feet per second, below Old River; the other 1,500,000 cubic feet per second must be discharged through the Atchafalaya Basin. The levees which must confine this flow to the basin are now deficient because they have settled below original design grade due to consolidation of the underlying soils, and the design has been revised upward. This places the lives and welfare of approximately 650,000 people and their property and improvements in 13 parishes in the immediate vicinity of the Atchafalaya Floodway in jeopardy each flood year. The tax assessment records indicate the value of potential flood losses to be approximately $8 billion, not including public improvements. Over the past half century, we have supported the Mississippi River and Tributaries Project and have agreed that construction of flood protection works should start upstream and progress downstream. As a result, the Mississippi River and Tributaries Project is now more than 90 percent complete in sites upstream from Louisiana, while the levees in the Atchafalaya Basin can contain approximately only 90 percent of the project flood. Work on this project has been underway since 1928 and isn't scheduled for completion until the year 2031—a date that continually keeps moving further into the future. With the reduced budgets being enacted, Louisiana could possibly never realize the full benefits of this project before the dreaded project flood occurs. We urge your support for funding this effort to the full capability of the Corps. In addition, authorization is needed to provide Federal funds toward the construction of a replacement facility for the Bayou Yokely Pump Station in St. Mary Parish.

Channel improvement (LA only)—Request: $16,120,000

Channel improvements and stabilization provide protection of the levees and the development behind them, as well as preventing unsatisfactory alignment where the river's bank is unstable. We are requesting an additional $3,620,000 ($2 million New Orleans District and $1.62 million for the Vicksburg District) for fiscal year 1999 to keep the program moving forward. The funds we are requesting will provide for the dredging and revetment work necessary to accommodate increased flows caused by upstream improvements.

Tensas basin, Red River backwater area (Sicily Island Area Levee Project)—Request: $11,400,000

The funds for fiscal year 1999 are to be used to continue construction of levee Items 1E and 2A, the HaHa Pumping Plant and to complete relocations for levee Item 2A and construction of levee Item 3B. An additional $1.3 million is requested to advance the award of Item 2B.

Morganza, LA to the Gulf of Mexico—Request: $755,000

This study area of approximately 4,000 square miles lies in the corridor between the Mississippi and the East Atchafalaya Basin Levees and is part of the alluvial floodplain of the Mississippi River. These levees intercepted the drainage which now must flow approximately 125 miles to the Gulf of Mexico. The area is affected by backwater flooding from the Atchafalaya Basin and is also affected by tides. This is a very important project to the State and we urge your continued support.

Atchafalaya basin floodway system—Request: $10,000,000

The project consists of acquiring real estate interests, excluding minerals, in the lower floodway for flood control, environmental protection, and public access purposes. The timing of the acquisition of land necessitates the increased funding request.

Donaldsonville to the Gulf of Mexico—Request: $1,000,000

This is a new reconnaissance study for the area between Bayou Lafourche and the Mississippi River to determine solutions to the flooding and environmental degradation caused in part by the leveeing of the Mississippi River. Flooding caused by hurricane storm surge would also be investigated. The size of the area that the study will encompass and the complexity of the flooding problems therein will require a greater effort by the Corps in the reconnaissance phase. We, therefore, request your support to direct the Secretary of the Army to conduct a 24-month reconnaissance study at a $1,000,000 appropriation in lieu of the Corps' normal 6-month $100,000 limitation.

Mississippi delta region project, Davis Pond—Request: $16,000,000

Davis Pond Freshwater Diversion Project is necessary to aid in the fight against coastal erosion and land loss. The State of Louisiana's commitment to this project is demonstrated by our agreement to provide 25 percent of the cost of construction, operation and maintenance of the Davis Pond structure despite Congressional project authorization at 100 percent Federal cost.

Local contributions for flood control improvements

Historically, Louisiana has always done its part in cooperation with the Federal agencies concerned with flood control. The Louisiana State Board of Engineers, the forerunner of the Department of Transportation and Development, Public Works and Flood Control Directorate, was created in 1879, the same year as the Mississippi River Commission, to coordinate the planning and construction of the required flood control facilities to protect the State. Since that time, local expenditures for flood control have exceeded $730,000,000. This amount adjusted to 1979 dollars represents expenditures in excess of $5.3 billion. Nearly one-half of the potential flooded area of the Lower Mississippi River Valley lies in Louisiana. Local expenditures for flood control have increased with the growth of the valley. This record not only meets, but exceeds any National Water Policy local participation requirement ever put into practice.

CONCLUSION

The President's budget for civil works projects again proposes a transition from annual incremental funding of all project construction requirements to full funding of those requirements. Once again we feel this is fool hardy. Federal dollars would be tied up for future work instead of constructing much needed projects which have already been committed to by the Federal government and the local sponsor. In many cases the local sponsor has sold bonds to come up with their share of the

funds. These advance appropriations are being requested for only a few selected projects. The unlucky remainder will have to wait, having their projects dragged out indefinitely, or stopped altogether because there is no money to continue them. This budget also does not allow for any new contracts to be let in fiscal year 1999, not "new construction starts," but contracts to continue projects already under construction. This is truly not fiscally responsible.

The Mississippi River and Tributaries Project has been underway since 1928 and isn't scheduled for completion until the year 2031—a date that continually keeps moving further into the future. We understand the need for budget constraints, but the President's budget request of $280,000,000 for the total MR&T Project is not adequate. We endorse the recommendation of the Lower Mississippi Valley Flood Control Association in their request for a minimum of $325,000,000 MR&T budget for funding to the full capability of the Corps.

The State of Louisiana, Department of Transportation and Development, Public Works and Flood Control Directorate, in particular, wishes to commend the Appropriations Subcommittees on Energy and Water Development, and express our appreciation for the foresight and understanding exhibited for water resources projects which are vital to the national interest. We solicit your further consideration of the recommendations presented herein.

MISSISSIPPI RIVER AND TRIBUTARIES SUMMARY OF RECOMMENDED APPROPRIATIONS

Louisiana projects	Budget request	Louisiana request
Operation and Maintenance:		
Mississippi River Levees (total MR&T)	$6,271,000	$6,271,000
Atchafalaya Basin	9,425,000	16,246,000
Channel Improvement (total MR&T)	53,329,000	53,329,000
Old River Control Structure	4,100,000	12,485,000
Lower Red River—South Bank Levees, Bayou Rapides Drainage Structure and Pumping Plant	1,773,000	2,773,000
Tensas Basin:		
Boeuf and Tensas Rivers, AR, LA	2,374,000	2,374,000
Red River Backwater Area	2,820,000	2,820,000
Bonnet Carre Spillway	975,000	2,357,000
Atchafalaya Basin, Floodway System, LA	613,000	613,000
Baton Rouge Harbor—Devil Swamp, LA	146,000	146,000
Bayou Cocodrie and Tributaries	90,000	90,000
Mississippi Delta Region, Caernarvon, LA	402,000	402,000
Construction:		
Mississippi River Levees (LA only)	8,600,000	15,200,000
Louisiana State Penitentiary Levee	400,000	10,000,000
Atchafalaya Basin	21,023,000	24,600,000
Channel Improvements (LA only)	12,500,000	16,120,000
Tensas Basin, Red River Backwater Area	10,100,000	11,400,000
Atchafalaya Basin, Floodway System	7,500,000	10,000,000
Mississippi Delta Region, Davis Pond	14,000,000	16,000,000
Mississippi and Louisiana Estuarine Area (Bonnet Carre)	250,000	250,000
General Investigations:		
Morganza to the Gulf of Mexico	755,000	755,000
Alexandria to the Gulf of Mexico	500,000	500,000
Donaldsonville to the Gulf of Mexico	.....	1,000,000

Note: The projects listed above are only those in Louisiana and directly affecting the State. We realize that there are other projects in these areas. We endorse the recommendations of the Lower Mississippi Valley Flood Control Association.

PREPARED STATEMENT OF JAMES E. WANAMAKER, CHIEF ENGINEER, BOARD OF MISSISSIPPI LEVEE COMMISSIONERS

Mr. Chairman and members of the committee: I am James E. Wanamaker, Chief Engineer for the Board of Mississippi Levee Commissioners, Greenville, Mississippi, and I have the privilege of presenting this statement on behalf of this Board and the citizens of the Levee District. This District consists of the counties of Bolivar,

Issaquena, Sharkey, Washington, and parts of Humphreys and Warren in the Lower Yazoo Basin in Mississippi.

As in past years, we remind you that the Mississippi River and Tributaries Project is one of if not the most cost-effective projects ever under taken by the U.S. The foresight used by the Congress in their authorization of the many features of this project is exemplary. Annual funding for this project needs to be $350,000,000 for construction to stay on schedule. We are all aware of the desire of the Congress to balance the Federal budget and we appreciate the effort made by the Congress to provide the maximum funding available for this work. The Lower Mississippi Valley Flood Control Association will be submitting a general statement in support of the appropriation of $325,000,000 for fiscal year 1999 for the construction, surveys, advanced engineering and the operation and maintenance of the Mississippi River and Tributaries Project. As many areas of our Nation are experiencing the devastation of floods from the El Niño weather system, we are reminded that without the comprehensive Mississippi River and Tributaries Project, our areas could be experiencing the same devastation. The Lower Mississippi River receives flood water from 41 percent of the continental United States, with the Lower Mississippi River having experienced water levels above flood stage for the past 5 years.

Last year the Congress rejected the concept of full funding of flood control projects, yet again the administration's budget includes advanced appropriation of $530,992,000 for a number of projects scheduled for completion by the year 2003. This policy, if adopted will hold back money needed for the construction of many flood control, navigation, and environmental restoration projects that are under funded in this year's Budget. The current policy of continuing authority has worked for decades to assure that the country's economic and environmental status remains the envy of the World.

The President's Budget request falls far short of the needs and capabilities of the Corps of Engineers for the Mississippi River and Tributaries Project that includes work on the Mainline Mississippi River Levees and the Yazoo Basin Projects. The following table outlines what the Congress appropriated last year, the President's Budget request and our request for your consideration while deliberating the appropriation for this year.

Project	Fiscal year 1998 appropriations	Fiscal year 1999 President's budget request	Fiscal year 1999 levee board (local sponsor)
Construction:			
Yazoo Backwater	$520,000	.....	$500,000
Upper Steele Bayou	3,862,000	$3,450,000	6,000,000
Demonstration Erosion Control	15,000,000	3,900,000	18,000,000
Tributaries	200,000	200,000	200,000
Upper Yazoo Project	11,000,000	9,250,000	12,500,000
Maintenance:			
Big Sunflower	2,237,000	.....	4,500,000
Arkabutla	3,514,000	3,193,000	4,600,000
Enid	3,556,000	3,272,000	4,500,000
Grenada	4,662,000	4,330,000	6,200,000
Sardis	6,666,000	4,320,000	8,100,000
Tributaries	1,343,000	1,238,000	1,300,000
Total [1]	52,560,000	33,153,000	66,400,000
Mississippi River levees:			
Construction:			
Vicksburg District [1]	13,100,000	7,850,000	19,000,000
Lower MS River Valley Division [2]	28,143,000	23,750,000	40,900,000
Maintenance:			
Vicksburg District [1]	2,136,000	2,200,000	2,600,000
Lower MS River Valley Division [2]	6,818,000	6,271,000	6,800,000

[1] Vicksburg District includes portions of the states of Mississippi, Arkansas, and Louisiana.

[2] Lower MS Valley Division includes portions of the states of Illinois, Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana.

It is imperative that the work on the Mainline Mississippi River Levee Enlargement Project move forward as fast as funding will allow. We are requesting an appropriation for this item of $40.9 Million, which will allow the continuation of ongoing construction contracts, and is critical for the award of the contract on our most deficient section of levee in Mississippi. We are also requesting additional funding for maintenance on the Mainline Mississippi River Levees. An additional $598,000 is required for maintenance gravel on the levee roadways in the Vicksburg District to allow access for inspection and flood fighting during high water. Several reaches of our levee are becoming difficult to travel during wet weather conditions.

The Reformulation of all remaining work in the Yazoo Basin has delayed construction for as much as 5 years on the Upper Steele Bayou and Upper Yazoo Projects. Our request includes $6.0 Million for the Upper Steele Bayou Project needed to insure that the contracts leading into the City of Greenville continue on schedule. An appropriation of $12.5 Million for the Upper Yazoo Project is needed to allow this work to proceed upstream toward Greenwood. Our request also is made in support of Yazoo Backwater Project, Demonstration Erosion Control and Tributaries features of the Yazoo Basin Appropriation as outlined in the preceding table.

With the funding that you have so generously provided over the last several years, we find that the President's Budget did not include any funding for the continuation of contracts to be awarded this year on the Big Sunflower River-Bogue Phalia Operation and Maintenance Project. The need for this maintenance was identified in 1989, and the residents of south Washington County continue year after year to wait for the restoration of the protection provided in the 1960's when construction was completed on the work authorized by the Congress. We ask that $4.5 Million be include in this year's appropriation for the Big Sunflower River Maintenance Project to allow the Corps of Engineers to fulfill the Federal responsibility for this work. Additional funds outlined in the above table are also needed over those included in the President's Budget for the Reservoirs that hold back flood water from ravaging Greenwood, Marks, Lambert and many other Mississippi Cities.

We are grateful for the consideration given to us each year by the Committee and appreciate the opportunity to present our requests to you at this time.

PREPARED STATEMENT OF M.V. WILLIAMS, PRESIDENT, WEST TENNESSEE TRIBUTARIES ASSOCIATION

My name is M.V. Williams and my home is in Friendship, Tennessee between the Middle and South Forks of the Forked Deer River. I am the President of the West Tennessee Tributaries Association. It is also my pleasure to serve as Chairman of the Executive Committee of the Lower Mississippi Valley Flood Control Association with headquarters in Memphis, Tennessee. This statement on behalf of the Association presents their views on fiscal year 1999 Budget for the Mississippi River and Tributaries Project. I will present several items of general interest to all our Membership. Other Members of the Association will present statements that will concern specific items of interest.

I will briefly discuss the Lower Mississippi Valley Flood Control Association which is an Agency composed almost entirely of public bodies having local responsibility for flood control, drainage, bank stabilization and navigation improvements in parts of Illinois, Kentucky, Mississippi, Tennessee, Arkansas, Missouri and Louisiana. Our members are public officials who for the most part are elected by the people. The Association represents practically all of the levee and drainage districts, municipalities, port and harbor commissions and other state agencies in the Lower Mississippi Valley, extending from Cape Girardeau, Missouri to the Gulf of Mexico. These organizations and agencies are political subdivisions of the various states in which they are organized and function. We provide an agency through which the people of the Lower Mississippi Valley may speak and act jointly on all flood control, navigation, bank stabilization and major drainage problems. We have appeared before the Sub-Committee and served the people in the Lower Mississippi Valley for well over sixty years.

The value of flood control and economic reality of the need for navigation is well known by the Congress therefore I shall not go into details but for the sake of confirming what is already known let me tell you that for every federal dollar invested in the Mississippi River and Tributaries project twenty-four dollars have been returned in damages prevented. In addition river navigation has produced annual benefits of almost nine hundred million dollars. What a wonderful investment of tax-payer's dollars.

Fortunately for us and the other citizens of this great Nation, the Congress in it's wisdom has always recognized the value of such an investment and has consequently, with only very, very rare exceptions, appropriated more dollars for the Mississippi River and Tributaries Project that has been requested by the Executive Department.

The Office of Management and Budget has for many years been our greatest problem and concern. Each year they reduce, cut and manipulate the Corps of Engineers' Budget that only serves to slow or stop construction and/or delay vitally needed maintenance work. This forces the extension of the completion date further into the future and endangers the integrity of the in-place flood control structures and the navigation channel. This is very expensive and reflects poor management of the assets of this Nation plus it endangers the life and property of the citizens of this Nation, especially the eight and a half million living in the Lower Mississippi Valley.

This year the President's Budget request is no different. Without an increase of funds by the Congress, there is a very strong probability that on-going contracts will have to be stopped and required maintenance work will be postponed.

As we have done for over 60 years, this Association has carefully reviewed the budget submission and find not only inadequate funds but we also note that the Executive Department has again this year attempted to initiate the concept of "Full Funding" even though the Congress strongly rejected that ill-advised and un-wise policy last year. We urge you to take similar actions this year.

For several years this Association has been steadfast in it's position that a minimum annual Appropriation of Four Hundred Million Dollars for the Mississippi River and Tributaries Project is required in order that the Project may be completed in the most economically and engineeringly feasible manner. Since the Mississippi River and Tributaries Appropriation includes funding for maintenance, these funds would permit orderly repairs and improvements required to insure the integrity of our levee system and the assurance of the authorized navigation channel on the Lower Mississippi River as well as the protection and enhancement of the environment.

We note that the Corps of Engineers capabilities for the Mississippi River Tributaries Project in fiscal year 1999 exceeds the Four Hundred Million Dollars.

We are all involved in the Country's business in some manner and we are fully aware of the limitation of funds and the need to balance the federal budget, but investing in capital improvements has made this Country great and if we allow those capital investments to lag we will surely pay a dear price in the future. In order merely to keep the Mississippi River and Tributaries Project on schedule and protect our past investments will require a minimum commitment from the Congress of Three Hundred Fifty Million Dollars.

It appears that our request for funding continues to decrease so let me put the bottom line on the absolute minimum Appropriations for the Mississippi River and Tributaries Project for fiscal year 1999.

In order to merely preserve the integrity of our flood control and navigation systems, protect the natural environment of the Lower Mississippi River and to continue the work that is underway, the minimum Appropriation we will request is Three Hundred Twenty-Five Million Dollars.

What price are we willing to pay? Do we ignore our infrastructure that we have invested so much time and money in? Do we have a balanced budget but no real wealth? Do we have a zero deficit but no good highways and bridges, no dependable navigation systems, no safe flood control projects, no real wealth? Do we continue to reduce the Appropriations for capital improvements to the point that the barge loaded with heating oil cannot get to Chicago so that our citizens can be warm in wintertime or the barge loaded with grain cannot get to New Orleans so that our farmers can be competitive in the world market or our citizens must live in fear of floods that will destroy their property or worse yet take their lives?

Only Congress can answer these questions.

The Mississippi River and Tributaries Project more than paid for itself in reduced monetary losses in only one flood, but this is not the complete story. The real benefits of this project are the reduction in human suffering, the improved health and the well being of the citizens. All of the approved methods known to us for making economic and environmental project analysis fall far short of fully evaluating these human needs. Since the productivity of the millions of acres of low lying lands adjacent to the main stem of the Lower Mississippi River are totally dependent upon the integrity of the flood control works, any major slow down in the completion of this project will represent economic strangulation to this productive portion of our nation. We are aware of the ever increasing demand on the federal dollar and the many complex problems that the Congress is confronted with, but we believe that

this project is economically sound, environmentally necessary, and we urge its completion with all deliberate haste.

The ultimate goal to be accomplished with the passage of the Act of 1928 was that the lower valley would never again be destroyed by a flood such as that of the fateful year of 1927. When completed, our project will afford adequate protection to the people and lands of the alluvial valley against a "project flood" that is, the maximum flood which meteorologists estimate may occur. The project would also insure the permanency of location for harbor facilities and industrial sites and to obtain deeper and more reliable navigation channels. With the help of the Congress we have made progress in the Lower Mississippi Valley but the job has not been completed. The people of the valley will not feel or be safe until the job is completed.

PREPARED STATEMENT OF LYNN LOWE, PRESIDENT, RED RIVER VALLEY ASSOCIATION

INTRODUCTION

The Red River Valley Association is a voluntary group of citizens banded together to advance the economic development and future well-being of the citizens of the four state Red River Basin area in Arkansas, Louisiana, Oklahoma and Texas.

For the past 73 years, the Association has done notable work in the support and advancement of programs to develop the land and water resources of the Valley to the beneficial use of all the people. To this end, the Red River Valley Association offers its full support and assistance to the various Port Authorities, Chambers of Commerce, Economic Development Districts and other local governmental entities in developing the area along the Red River.

The Resolutions contained herein were adopted by the Association during its 73rd Annual Meeting in Shreveport, Louisiana on February 19, 1998, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association, specifically: Economic and Community Development; Flood Control; Bank Stabilization; A Clean Water Supply for Residential, Commercial, Industrial and Agriculture Uses; Solar and Hydroelectric Power Generation; Recreation; Navigation; and Environment.

The Red River Valley Association is aware of the constraints on the federal budget, and has kept those restraints in mind as these Resolutions were adopted. Therefore, and because of the far-reaching regional and national benefits addressed by the various projects covered in these Resolutions, we urge the members of Congress to review the materials contained herein and give serious consideration to funding the projects at the levels requested.

RRVA STATEMENT

Mr. Chairman and members of the Committee. I am Lynn Lowe, and I am pleased to represent the Red River Valley Association as its President. Our organization was founded in 1925 with the express purpose of uniting the citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin.

The civil works budget has been drastically cut by the Administration for fiscal year 1999. The overall reduction is 21 percent; however, most disturbing is the 47 percent cut in general construction. Civil works projects are the backbone to our nation's infrastructure for waterways, flood control and water supply. We remind you that these projects are a true 'jobs program' in that 100 percent of the construction is contracted to the private sector as is much of the architect and engineer work. Not only do these funds provide jobs, but provide economic development opportunities for our communities to grow and provide permanent jobs.

The civil works program is a catalyst that is responsible for the great economy we now experience. It would be irresponsible to allow our nation's infrastructure to deteriorate, or worse, stop its growth in a time when America must be the leader in the world market. Our inland waterways is the key to our dominance in world trade. This is a pivotal budget year where critical decisions must be made which will determine our future economic strength.

The Administration has clearly made the wrong decision. We ask you to correct this and to fund the Corps of Engineers at a realistic level as you did in fiscal year 1998. We also request you place in your budget language that recognizes the importance of our nation's waterways and the positive economic impact civil work activities have to our citizens.

I would like to comment on our requests for the future economic well-being of the citizens residing in the four state Red River Basin area.

Navigation.—The J. Bennett Johnston Waterway is living up to the expectations of the benefits projected. The average tonnage moved in 1995 and 1996 was 3,279,000 tons and the projected tonnage to justify the project was 3,327,000 tons. We are extremely proud of our public ports, municipalities and state agencies who have created this success. An international ship building company has moved into the Shreveport-Bossier City Port hiring a work force of 400 with an annual salary base of $25 million. This is just an example of one of the many companies now operating on the Waterway. You are reminded that the Waterway is not complete. In order to keep the waterway safe and reliable we must continue at a funding level higher than the President's Budget. We can not sacrifice what has been accomplished by inadequate funding levels.

In fiscal year 1999 you provided funds to initiate the feasibility study to extend navigation from Shreveport-Bossier City, Louisiana into the State of Arkansas. It is imperative that you continue funding this important study. Many areas continue to suffer major unemployment, and the navigation project, although not the total solution, will help revitalize the economy in this region. The U.S. Fish and Wildlife Service Planning Aid Report indicated minimal impact and most probably an enhancement to environmental value. Last summer colonies of least terns (an endangered species) were found on stabilized sandbars in the completed waterway as well as increased migratory birds due to the newly formed pools. I want to stress that the local sponsor, the Red River Commission of Arkansas, has available their 50 percent cost share for the complete feasibility study. Few local sponsors have funds 'in the bank' and are also willing to fund additional studies to insure a complete analysis is made.

Bank Stabilization.—One of the most important continuing programs on the Red River is bank stabilization. We must stop the loss of valuable farmland that erodes down stream and interferes with the navigation channel. In addition to the loss of farmland is the threat to public utilities such as roads, electric power lines and bridges; as well as increased dredging cost in the navigation part of the river.

These revetment projects are compatible with subsequent navigation and we urge that they be continued in those locations designated by the Corps of Engineers to be the areas of the worst erosion.

It is essential to protect the banks from caving and erosion along the Red River below Denison Dam to Index, Arkansas. The Federal Government constantly encourages its farmers to protect their lands against all forms of erosion, so it only makes sense to be consistent. An authorized project exists; 'Red River Waterway, Index, AR to Denison Dam, TX, Bank Stabilization', so the issue lies with the benefit/cost ratio. We believe that the authorized, on going 'Sediment Transport Study' will identify benefits due to reduced dredging cost to the Navigation Waterway in Louisiana.

There is a new technique for bank stabilization which could be tested as a demonstration project under this authorization. This new technique, underwater bendway weirs, has proven to be less expensive than conventional methods and more efficient in controlling the energy of the river as well as providing environmental benefits. Much prime farmland in Oklahoma and Texas is lost each year to river erosion and we must investigate all avenues to correct this problem.

Flood Control.—You will recall that in 1990 major areas of northeast Texas, Southwest Arkansas and the entire length of the Red River in Louisiana were ravaged by the worst flooding to hit the region since 1945 and 1957. More than 700,000 acres were flooded with total damages estimated at $20.4 million. However, it could have been much worse. The Corps of Engineers estimates that without the flood control measure authorized by Congress over the past several decades an additional 1.3 million acres would have been flooded with an estimated $330 million in additional flood damage to agricultural and urban developments. We continue to consider flood control a major objective and request you continue funding the levee rehabilitation projects ongoing in Arkansas and Texas.

Clean Water.—Nearly 3,500 tons of natural salts, primarily sodium chloride, enter the upper reaches of the Red River each day, rendering downstream waters unusable for most purposes. The Truscott Brine Lake project, which is located on the South Fork of the Wichita River in King and Knox Counties, Texas became operational in 1987. An independent panel of experts found that the project not only continues to perform beyond design expectations in providing cleaner water, but has an exceptionally favorable cost benefit ratio. Sixteen million dollars was appropriated in fiscal year 1995, by the Administration, to accelerate engineering design, real estate acquisition and initiate construction of the Crowell Brine Dam, Area VII and Area IX. Due to a conflict over environmental issues, raised by the U.S. Fish and Wildlife Service, completion of the SFEIS was delayed pending further study to determine the extent of possible impacts to fish and wildlife, their habitats and

biological communities along the Red River and Lake Texoma. In an effort to resolve these issues and insure that no harmful impact to the environment or ecosystems would result, a comprehensive environmental and ecological monitoring program was implemented. It evaluates the actual impacts of reducing chloride concentrations within the Red River watershed. This base line date is crucial to understanding the ecosystem of the Red River basin west of Lake Texoma and funding for this must continue.

The Supplement to the Final Environmental Impact Statement was completed in August 1996; however, has yet to be released. The Assistant Secretary of the Army (Civil Works) directed that a Supplemental Assessment Report (SAR) be conducted and completed by February 1997. In November 1997 the ASA(CW) agreed to support the continuation of the Wichita River Basin features of the project to reclaim Lake Kemp. This would provide a great water source for a large region in need of usable water.

The Association urges Congress to continue supporting the Chloride Control Project in order to assure a clean water supply for residential, commercial, industrial and agricultural uses. This requires a Federal project; as the benefits affect all four states in the Red River basin.

Operation and Maintenance.—We appreciate the support of your subcommittee to support the completion of navigation to Shreveport/Bossier City which is now providing an increase to our industrial base, creating jobs and providing economic growth. We request that O&M funding levels remain at full Corps capability to maintain a safe, reliable and efficient transportation system.

Full O&M funding levels is not only important for the Waterway Project but for all our Corps projects and flood control lakes.

We are sincerely grateful to you for the past support you have given our various projects. We hope that we can count on you again to fund our needs and complete the projects started that will help us diversify our economy and create the jobs so badly needed by our citizens.

Thank you for the opportunity to present this testimony and project details of the Red River Valley Association on behalf of the industries, organizations and citizens we represent throughout the four state Red River Valley region. We believe that any federal monies spent on civil work projects are truly investments in our future and will return several times the original investment in benefits that will accrue back to the federal government.

I am always available to provide you and your staff additional information or clarification on any issue presented.

GRANT DISCLOSURE

The Red River Valley Association has not received any federal grant, subgrant or contract during the current fiscal year or either of the two previous fiscal years.

SUMMARY OF FISCAL YEAR 1999 REQUESTS

NOTE: Projects are not in any order of priority. Project number correspond to the backup information in Section IV.

A. Studies (General Investigations)

1. Navigation on the Red River in Southwest Arkansas: WRDA 96 authorized a feasibility study for this project. Funding was reprogrammed in fiscal year 1998 to initiate the study. The Project Study Plan (PSP) will be completed and the Feasibility Cost Sharing Agreement (FCSA) will be signed in fiscal year 1998. The study will commence with full participation from the communities in the project area which includes counties and parishes of Arkansas, Louisiana, Texas and Oklahoma. It is imperative that this study continue to be funded.

NOTE: The local sponsor is prepared to cost share the study, 50 percent and has funds available.

Total Funds Required	$1,400,000
Fiscal Year 1999 Federal Share	700,000
Local Sponsor Share	700,000

2. Cypress Valley Watershed Ecosystem Restoration, TX: Request a feasibility study be initiated. A local sponsor has been identified and willing to participate.

This study will demonstrate the benefits in flood damage reduction, environmental restoration, recreation and water supply to the Cypress Valley Watershed system. The total feasibility cost is estimated to be $2.2 million; cost shared 50/50 with the local sponsor.

Total Funds Required	$600,000

Fiscal Year 1999 Federal Share (President's Budget	300,000
Local Sponsor Share	300,000

3. Grassy Lake, AR: Project Modifications for Improvement of the Environment (Section 1135). The Secretary of the Army acting through the Chief of Engineers is requested to expend, within the funds provided for the Section 1135 Program; $200,000 for planning and design of modifications to restore the environmental quality of Grassy Lake, Hempstead County, Arkansas, degraded by the construction of Millwood Lake, Arkansas.

Fiscal Year 1999 Funds Required	$200,000

4. Southwest Arkansas, Arkansas: Provided further, that the Secretary of the Army is directed to initiate a reconnaissance study in Southwest Arkansas utilizing $300,000 appropriated herein to develop an ecosystem restoration plan that integrates flood control, water supply, releases for navigation and wildlife habitat. The study will investigate adverse results caused by construction of Millwood, DeQueen, Dierks, and Gilham Lakes. Navigation has been extended to Shreveport/Bossier City, Louisiana, on the Red River, flooding remains a problem and the lakes' water supply is not being used.

Fiscal Year 1999 Funds Required	$300,000

5. Wallace Lake Flood Plain Study: Support the flood plain study, for Wallace Lake, Caddo Parish, Louisiana as included in the President's Budget.

B. Construction

6. Red River Waterway Project, LA:

a. We support the $5,392,000 included in the President's budget and items of work proposed by the Corps.

b. In addition, we request additional funding, to insure the integrity and safety of the Red River navigation channel is maintained for reliable barge transportation as well as continuing with recreation features. Complete construction on Ben Routh/Dupree and Saline Reinforcement ($3,600,000), Cotton Reinforcement ($1,200,000), Ille Au Vaches Dikes ($700,000), Lower Campti Dikes ($1,600,000), Cognac ACS ($500,000), Poisson ACS ($800,000) and Eagle Bend Capout PH II ($1,000,000). Construction management cost are $600,000.

Fiscal Year 1999 Funds Required	$10,000,000

c. Design Federal Recreation Sites at Locks and Dams 3, 4 & 5 are required for additional access for safety. Local sponsor funds are available to cost share.

Total Funds Required	$300,000
Fiscal Year 1999 Federal Share	150,000
Local Sponsor Share	150,000

d. Mitigation: We support all efforts to meet this obligation of the project. Existing funds must be carried forth to continue land purchase actions.

e. Request the Corps cost share in the design and construction of boat launch facilities in Pool 3; one at Natchitoches, LA and one at Colfax, LA. There is limited access to the Red River in Pool 3 and as commercial traffic increases it is imperative that there be access for safety. These sites will be cost shared 50/50 with the Red River Waterway Commission who is prepared to design and construct these sites.

Total Funds Required	$1,700,000
Fiscal Year 1999 Federal Share	850,000
Local Sponsor Share	850,000

f. Following is the total requirement for the Red River Waterway Project (a thru e above):

President's Budget	$5,392,000
Navigation Construction Adds	10,000,000
Federal Recreation Sites	150,000
Public Recreation Sites	850,000
Mitigation	
Total Required for Fiscal Year 1999	16,392,000

7. Red River Chloride Control Project:

a. In November 1997 the Assistant Secretary of the Army (Civil Works) agreed to support a thorough re-evaluation of the Wichita River Basin features. Three out of four options have a positive benefit to cost ratio.

b. Most of the features in the Wichita River basin have been completed and completion of this system would reclaim Lake Kemp which would become a major water source for the region.

c. It is extremely important that the ongoing water quality and environmental monitoring continue. This is critical to establishing a baseline in which to evaluate the effects of the project.

Fiscal Year 1999 Funds Required $2,000,000

8. Red River Below Denison Dam, Red River; Arkansas Levees: Continue funding levels for fully funded construction and restoration of Levee Item #5 (Miller County Levee District) and design Levee Item #6 (Garland Levee District).

Fiscal Year 1999 Funds Required $3,000,000

9. Red River Emergency; Bank Protection; AR and LA: Fully Fund Construction of Finn Phase II ($3.9 mil) revetment. Complete design and fully fund construction on Black Lake ($3.5 mil). Canale Revetment ($650,000) and Hurricane Revetment ($2,500,000) have been constructed; however, adjustments are required to eliminate unanticipated bank erosion problems.

Fiscal Year 1999 Funds Required $10,550,000

10. Red River Emergency; Bank Stabilization between Denison Dam and Index, AR: We request the following two items:

a. Investigate incorporating an environmental restoration corridor in conjunction with bank stabilization.

b. To design and initiate construction for a 'demonstration project' at two sites to analyze the effectiveness of a new technique, bendway weirs.

Fiscal Year 1999 Funds Required for a and b $1,600,000

11. Aloha-Rigolette Project, LA: Construction is underway and the funding should continue at full Corps capability to complete the project in fiscal year 1999.

President's Budget	$320,000
To Complete the Project	1,010,000
Total Required for Fiscal Year 1999	1,330,000

12. McKinney Bayou, AR: The reconnaissance study was completed and determined to be economically feasible. This project will go directly into PED and cost shared with the local sponsor (Federal 75 percent; local sponsor 25 percent) over a three year period. There are adequate carry over funds for fiscal year 1999.

13. Bowie County Levee, TX: The plans and specifications have been completed. We request construction funding for the 'locally preferred' option under the Flood Control Act of 1946 with assurances of support and maintenance from the local sponsor.

Fiscal Year 1999 Funds Required $900,000

14. McGrath Creek, TX: Continue construction funding at the level of full Corps capability. This is supported by the Administration.

15. Ogden Levee, Little River County, AR: This levee was authorized to be incorporated into the Federal Levee System by the Flood Control Act of 1946. The levee is in need of rehabilitation and has yet to be incorporated into the Federal Levee System. The Secretary of the Army acting through the Chief of Engineers is directed to design and initiate construction of the Ogden Levee along the Red River. Request that the Corps conduct PED at a cost share of 75 percent Federal and 25 percent local sponsor. A sponsor has been identified and is prepared with its share. The Ogden Levee is to be designed to the same specifications as the opposite bank levees in Bowie and Miller Counties.

Total Funds Required	$253,000
Fiscal Year 1999 Federal Share	190,000
Local Sponsor Share	63,000

16. Bossier Levee System, LA: Have the Corps clear and grub the channel of Loggy Bayou from its confluence of the Red River for 7.8 miles. This channel has a serious impact on flooding in the upstream reaches.

Funds Requested $500,000

C. Operation and Maintenance

17. Red River Waterway, O&M:

a. The President's budget included $8.337 million for the O&M of this project which falls short of capability and needs. As a new waterway it is important to allow commerce to move to encourage industry to develop and maintaining existing navigation structures is crucial to the safety of the system.

b. WRDA 96 authorized the Corps to insure the oxbows remain accessible to the Red River for environmental purposes. The oxbow study report is completed and approved. Work should commence immediately. The O&M funding level must be adequate to address this issue.

c. $2.5 million is required for revetment repairs to maintain the integrity and safety of the channel. Again, this new waterway must be given the full opportunity to develop.

Fiscal Year 1999 President's Budget	$8,337,000
Revetment Repair	2,500,000
Total Fiscal Year 1999 O&M Funds Requested	10,837,000

18. Operations and Maintenance at Corps Projects: Request that all O&M funded projects remain at the level of Full Corps Capability.

BACKUP INFORMATION FOR REQUESTS

Following is backup information and a historical perspective on each project request. They are numbered to correspond to each numbered project in the Summary of Request, Section III.

1. *Navigation on the Red River in Southwest Arkansas*.—Twenty-one years ago the Arkansas General Assembly created the Red River Commission upon the recommendation of Governor Dale Bumpers, now the Senior United States Senator for the State of Arkansas. The Commission was vested with the authority to furnish the local cooperation necessary for the construction and study of projects and to coordinate with the Corps of Engineers and the Congress to develop the water resources of the Red River in Arkansas. With navigation now a reality to Shreveport, Louisiana, we are prepared to extend water transportation into Arkansas. Southwest Arkansas and East Texas are economic depressed regions. This project would provide multi-purpose opportunities for industries and increased employment. A regional impact study would clearly demonstrate the great benefits not realized to date. The local sponsor, Red River Commission of Arkansas, has initiated and will fully fund a Regional Economic Impact Study.

There is no doubt that this project is feasible and only a full feasibility study will prove that. Most importantly, the local cost share, 50 percent, is available now for this study. The feasibility study was funded to start in fiscal year 1998 and has been initiated. It is imperative to continue that funding.

2. *No additional information.*

3. *No additional information.*

4. *No additional information.*

5. *No additional information.*

6. *Red River waterway project navigation to Shreveport-Bossier City*.—The Red River Valley Association and Louisiana delegation are appreciative for the completion of Locks and Dams 4 and 5. Navigation to Shreveport-Bossier City has significantly boosted the economy throughout the river basin.

There is still work ahead of us to maintain and develop the navigation channel. It is also imperative that funds be appropriated to continue construction on navigation structures for this waterway to insure reliable, safe commercial navigation.

The Red River Valley Association encourages and supports the continuation of the Loggy Bayou mitigation project and the mitigation commitment for the whole project. These are important environmental projects for the overall system of the Red River.

Recognizing that recreation is an integral component of the Red River Waterway Project, the Red River Valley Association supports the development of recreational facilities as a part of the overall project construction. The Master Plan for Recreation has been submitted to the Mississippi Valley Division for final review and approval. We support approval of this re-evaluation and funding to construct the recommended sites.

7. *Red River basin chloride control project*.—Natural mineral pollutants in the upper reaches of the Red River Basin are rendering downstream waters unusable for most purposes. The primary pollutants are chlorides and sulfates.

The U.S. Public Health Service initiated a study in 1957 to locate the natural pollution areas and determine the contribution of pollutants from the individual areas to the Red River. It was determined that 10 natural salt source areas located in the basin contribute a daily average of about 3,600 tons of salt (as NaC1) to the Red

River. The U.S. Army Corps of Engineers, Tulsa District, entered the study in 1959 to recommend measures to control the natural pollution. Structural measures were recommended for 8 of the 10 salt source areas.

An experimental project at Area V near Estelline, Texas was authorized by the Flood Control Act of 1962. The project consists of a 9-foot-high by 340 foot diameter earthen dike encompassing a brine spring and a 4-foot-wide concrete outlet flume with stoplogs to control flow. With the project in operation since January 1964, surface flow from the spring has been suppressed, thus preventing over 240 tons of chlorides per day from entering Prairie Dog Town Fork of the Red River.

Structural measures for chloride control at Areas VII, VIII, and X in the Wichita River Basin above Lake Kemp were authorized by the Flood Control Act of 1966 (Public Law 89–789), and structural measures for Areas VI, IX, XIII, and XIV were authorized by the Flood Control Act of 1970 (Public Law 91–611). Actual construction, however, was not to be initiated until approved by the Secretary of the Army and the President. The Flood Control Act of 1970 was amended by the Water Resources Development Act of 1976 to eliminate the required approval of the President to initiate construction.

The Water Resources Development Act of 1974 (Public Law 93–251), specifically authorized construction of chloride control measures at Area VIII, located on the South Fork of the Wichita River in King and Knox Counties, Texas. The project includes a low-flow dam with a deflatable weir to collect brine flows emitting from the area, Truscott Brine Reservoir, located near Truscott, Texas, for brine storage, and a pump station and pipeline to deliver the brine to the impoundment. Construction began in the fall of 1976 and the project was placed in operation in May 1987. Area VIII continues to exceed design specifications and currently controls over 168 tons of chlorides daily. The Water Resources Development Act of 1986 (Public Law 99–662) required that a special panel evaluate the improvement in water quality downstream of Area VIII to determine its consistency with the water quality assumed in the development of project benefits. A favorable report was submitted to the Assistance Secretary of the Army (Civil Works) and the Committee on Environment and Public Works of the Senate and the Committee on Public Works and Transportation of the House of Representatives in August of 1988. Public Law 99–662 authorizes 100 percent federal funding and construction of the remaining control features contingent upon the favorable evaluation of the panel.

Congress appropriated $5 million in fiscal year 1991, $3 million in fiscal year 1992, $6 million in fiscal year 1993, $4 million in fiscal year 1994 and $16 million in fiscal year 1995 which was in the President's Budget for the first time ever. These funds were to continue design and construction of Areas VI, VII, IX and X and the Crowell Brine Reservoir. Construction of part of the brine collection facilities (pump station and low flow dam) at Area X was initiated in September 1991 and is complete. Accelerated design of the remaining chloride control features was approved in fiscal year 1994 to permit construction as additional funds become available.

Real estate acquisition for Area VI, VII, IX, and the Crowell Brine Reservoir was scheduled to begin in fiscal year 1993, but was postponed pending the outcome of the economic re-evaluation report ordered by the Assistant Secretary of the Army for Civil Works which was subsequently approved in November 1993 and further instructed the Corps of Engineers to complete all remaining areas of the project.

As part of the process to complete a Supplemental Environmental Impact Statement (SEIS) USFWS objected to the project in August 1994. This was unexpected by the Corps of Engineers since they had been coordinating with USFWS since 1991 and there was no indication they would deliver a negative opinion. This has stopped all construction work and effectively delayed the project.

The SFEIS was completed in August 1996; however, the ASA(CW) directed that a Supplement Assessment Report (SAR) be completed by February 1997. The ASA(CW) in November 1997, directed the Corps to proceed with the Wichita River Basin features of the project. The SFEIS will be modified and approved in fiscal year 1998. Continued funding is needed to maintain the environmental monitoring program in place and to initiate work on the Wichita River.

8. *Red River below Denison Dam*.—Red River Levees and Bank Stabilization Below Denison Dam is the authorization for constructing levees, flood control structures and bank stabilization below Denison Dam. The facilities constructed under this authorization are the first lines of flood protection for the Red River Valley and its citizens. Accelerated and new caving of the river banks of the Red River continue to endanger existing flood control structures and levees as well as valuable agricultural lands, highways, railroads, utilities, home and other valuable resources and improvements within the Red River Valley.

A systematic program of bank stabilization and other flood control measures can prevent these disastrous losses that are presently occurring.

Because of the construction of the Red River Waterway Project, a dangerous tendency has developed to de-emphasize construction of flood control and bank stabilization works under the Red River Levees and Bank Stabilization program. This tendency should be halted and reversed least the impression be created that the program is no longer needed or has been completed. Following the disastrous flood of May 1990, there can be no doubt of the importance of properly maintained levees and of bank stabilization. All areas not protected by properly maintained levees were flooded and the only protection from enormous bank caving was where revetment projects have been constructed by the Corps.

The Red River Levees and Bank Stabilization Below Denison Dam Project is the only comprehensive flood control program on the Red River containing authorization for construction of a variety of flood control measures, levees and other flood control works. Some of the projects planned in the original authorization project have not been completed and these must be constructed in order for the citizens of the Red River to derive necessary flood protection.

Only minimal funds have been appropriated by Congress for the Red River Levees and Stabilization Below Denison Dam in recent years. Bank caving on Red River has progressed in several locations to a critical state. Railroads, major public highways, levees and other flood control works are threatened, and unless action is taken in the near future, these facilities will be destroyed, endangering lives and property of the citizens of the Red River Valley.

Another example of flood control work needed is levee reshaping along the main stem of Red River in the state of Arkansas. Many of these levee sections were severely tested by the May 1990 flood, and it is apparent that reshaping is needed to increase their integrity, substantially reduce maintenance costs, and provide additional structural strength at appropriate elevations needed to protect citizens, agricultural land and transportation systems. The Corps has completed an engineering study of the Levees on the Red River from Index, AR to the Louisiana State Line to establish and prioritize levee locations that have deficient grades, slopes and crown. This report included the recommendations with construction costs for all identified area. Any funds not expended for the engineering study should be applied to the highest priority area to develop contracts and construction plans and drawings. The first phase of construction at the Miller County Levee System was completed in 1995 and a follow on phase will be completed in fiscal year 1998. In summary, it is imperative that Red River Levees and Bank Stabilization Below Denison Dam continue as authorized by Congress and that adequate funding be appropriated to accomplish the construction of this needed protection.

9. *Emergency bank protection*.—Although Federal projects have been authorized for flood control and navigation, many active caving banks cannot be stabilized because they are not yet sufficiently advanced or not included in earlier authorizations. The result is continuing, rampant destruction of valuable lands, threatening vital flood control facilities and endangering high-cost improvements such as bridges, pipelines, highways, railroads, utilities, cities and towns.

It is urgent that adequate funding of the item "Emergency Bank Protection" be continued to construct bank stabilization work as early as possible in the most critical locations instead of waiting several more years and experiencing the loss of millions of dollars due to damages. Further, continued neglect of these caving banks will substantially worsen alignment of the River, making future navigation realignment and stabilization much more costly and difficult. Many presently caving banks have an existing alignment that is usable for the navigation channel and should be preserved now.

10. *Bank stabilization—Index, Arkansas to Denison Dam*.—Widely fluctuating stages and high flows during the past several years have caused sharp increases in bank caving along the Red River from Index, AR to Denison Dam. This accelerated bank caving has caused the loss of valuable, vital improvements and non-replaceable prime agricultural lands. Flood control structures and levees which protect the Valley from disastrous floods are also endangered. These disastrous losses can be stopped by a systematic program of bank stabilization. Progressive construction of such a program is absolutely essential to the safety growth and well-being of the Red River Valley. To further delay this vitally needed protection would be shortsighted.

In view of the fact that construction of bank stabilization is so important to the citizens along the Red River boundary of Oklahoma and Texas we strongly recommend allowing the Corps of Engineers to proceed with a "demonstration project." There are new techniques which we believe are less expensive with better results than the traditional methods. One new technique is the underwater bendway weir.

This demonstration project will be evaluated along with the ongoing 'sediment transport' study to determine the potential for a large scale bank stabilization project.

11. *Aloha-Rigolette project*.—This project, initially authorized in 1941 and constructed during the 1948–54 period, provides for the protection during high stages of the Red River of some 58,000 acres of alluvial land. Drainage from 340,000 acres that must flow through protected areas during lower river stages is disposed of by gravity flow through two 10 foot by 10 foot gated concrete drainage structures in the levee at the lower end of the project. This protected area has continued to develop agriculturally since construction of the project and now additional gates are needed to allow adequate gravity drainage during low river stages. As a result, local interests requested that additional studies be made of the project, paying particular attention to the adequacy of the flood gate which has now been determined to be significantly inadequate for current conditions.

A feasibility study was completed by the New Orleans District, Corps of Engineers in June 1989. The Red River Valley Association urges that Congress appropriate the full capability of the Corps fiscal year 1999 budget to complete construction activities for the project on the Bayou Darrow flood gate, clearing and snagging of channels, the low flow structure and mitigation.

12. *McKinney Bayou project, AR*.—The Corps of Engineers completed a reconnaissance study of drainage in Miller County, Arkansas. The project is known as the McKinney Bayou Project as it is the principal drainage ditch in the County. Due to the thousand of acres of land cleared in Miller County during the past 25 years, the ditch is grossly inadequate to handle the drainage after heavy rains. The Reconnaissance study had a high B/C ratio and therefore was recommended to go directly to Planning, engineering and design (PED). A local sponsor has been identified to cost share PED; Federal 75 percent/local sponsor 25 percent.

13. *Bowie County levee, TX*.—Major flooding along the Red River in May 1990 severely tested the integrity of the Bowie County Levee located along the right bank of the Red River north of Texarkana, Texas. Had it not been for emergency measures taken by the U.S. Army Corps of Engineers and local interests, the levee would have been destroyed during the flood. It is the opinion of the Corps that the levee would fail if subjected to another flood of the magnitude encountered in May 1990. Replacement or restoration of the levee is necessary to protect approximately 7,000 acres of prime agricultural land as well as residential and farm structures.

Additionally, this levee system protects the land side of the Miller County levees in Arkansas. The Arkansas levees are being rehabilitated at full federal expense; therefore, a case has been made that the Bowie County levee should be funded the same as these levees. Again, the Arkansas levees would not be of any value should the Bowie County levee fail. In fiscal year 1997 Congress directed the Corps to complete designs and specifications for two options; federally preferred and locally preferred options. It is our intention to have a fully funded federal project for the locally preferred option.

14. *McGrath Creek project*.—McGrath Creek is a tributary stream to Holliday Creek, and has a highly urbanized 5.6 square mile drainage area located in the heart of the City of Wichita Falls. On May 12 and 13 of 1982, a flood occurred which resulted in flood damage in the amount of 21.5 million dollars. Floods have reoccurred on the average of twice per year with annualized damage of approximately 1.6 million dollars each and every year. In 1986, floods in the Wichita Falls region resulted in two fatalities, one being at the juncture of Holliday Creek and McGrath Creek.

The City of Wichita Falls supports the construction of the $12,100,000 McGrath Creek Flood Control facility, and entered into a cost-sharing agreement with the federal government for the local match of 25 percent. Final plans and specifications have been completed by the Corps of Engineers. Construction has commenced and is a project supported by the Administration.

15. *Little River County, Ogden levee, AR*.—The Congress appropriated $150,000 in fiscal year 1992 and $237,000 and $400,000 in the ensuring fiscal years to conduct in Little River County a feasibility study. The feasibility study is to explore the modification of existing levees and the construction of new levees to avoid a possible repeat of the devastating flood in May of 1990. The PED cost will be 100 percent federally funded. We request funding and direction for the Corps to initiate and complete plans, engineering and design (PED).

16. *Bossier levee district, Bossier Parish, LA*.—There is a drainage channel issue which should be the responsibility of the Corps of Engineers to maintain. This is Loggy Bayou with its confluence on the Red River, river mile 194.1, with the channel in question extending approximately 8 miles upstream into Loggy Bayou.

Loggy Bayou is the final and only channel that drains a vast area of Northwest Louisiana and part of Arkansas water into the Red River. The headwaters start in Columbia County, Arkansas and the drainage area includes large parts of Webster, Beinville and Bossier Parishes in Louisiana. There are no other diversions for these waters to the Red River except through Loggy Bayou. In 1943 the Bossier Levee District agreed to maintain the last 7.8 miles of Loggy Bayou before it enters the Red River. Conditions have changed drastically since 1943, to include: the diversion of Coushatta Bayou into the Loggy Bayou; the channel is now approximately 20 feet deeper due to increased drainage flows and the Red River Waterway Project has pooled the water into this section of Loggy Bayou permanently raising the water level. The Bossier Levee District does not have the equipment, expertise or funding to keep the channel maintained so there is now a real threat for increased flooding upstream. Since there have been considerable changes to the Loggy Bayou Watershed, beyond the control of the Bossier Levee District, and the waters drained are multi-state it is requested that the Corps of Engineers be directed to maintain the channel in Loggy Bayou, under the 'Red River Waterway Project', Operations and Maintenance, from its confluence with the Red River upstream for approximately 8 miles.

17. *No additional information.*

18. No additional information.

SUPPORT RESOLUTION: SHREVEPORT CHAMBER OF COMMERCE

TRANSPORTATION-WATER—PORT OF SHREVEPORT-BOSSIER

Issue.—Development of the Port of Shreveport-Bossier complex to access usage of the $1.8 billion Red River Waterway Project and to take advantage of the $68,000,000 annual transportation savings projected by the U.S. Army Corps of Engineers. Public investment is now at $70,000,000 and private investment continues to grow. Operational status on a regular basis was achieved in 1997 as some 148 barges carried 208,684 tons of cargo handled at the Port's two terminals.

Why important.—

—Create 5,000 direct jobs, coupled with up to 15,000 indirect jobs in our communities over a 20 year period.

—To complete in a global economy.

—Lower transportation costs (annual savings $68,831,000).

—Private investment potential. The first companies to locate at the Port are successfully operating and showcasing that potential. The most recent addition, Shreveport Fabricators, is an expansion of Edison Chouest Offshore's shipbuilding companies based in South Louisiana. They began operation at the Port in February, 1998. Red River Terminals, a joint project of Pennzoil Products Company and Hollywood Marine, began successful operation at the Port in April, 1997.

—A multi-transportation network is now in place with I–49, I–20, proposed I–69, Shreveport Regional Airport, two railroads and barge transportation.

Our position.—Support the continuation of adequate funding for Red River Waterway maintenance in order to insure navigation to the Port of Shreveport-Bossier.

TRANSPORTATION-WATER—RED RIVER WATERWAY PROJECT

Issue.—The Red River Waterway Project has been completed from the Mississippi River to Shreveport/Bossier City, Louisiana. Over the next few years the navigation structures (Dykes and Revetments) need to be adjusted and some may be added. In addition, it will take approximately $11 million per year to operate and maintain the system.

Why important.—For economic development to be fully realized we must operate the Red River in a reliable manner for industry to use it as a major transportation system. The navigation channel must be maintained at a 9-foot draft for safe use. If the channel is not properly maintained, industry will be reluctant to use the Red River.

The project Recreational Master Plan has been completed and it is important to execute the plan as soon as possible. There is limited access to the Red River and these sites are necessary for safety as well as the economic benefits of recreation.

Our position.—We thank you for the funds which completed the Red River Waterway Project and we request funding for continuing on projects for navigation and recreation.

It is imperative that $11 million be appropriated for Operation and Maintenance functions for a safe, reliable waterway. This is $2,500,000 above the President's budget.

We support the recreation development of the waterway and request a commitment of $1,200,000 for federal recreation sites at Locks and Dams 3, 4 and 5.

To continue with completion of the channel improvement structures we support an additional $11,200,000 to the President's budget for "Construction General" projects.

TRANSPORTATION-WATER—RED RIVER BASIN CHLORIDE CONTROL PROJECT

Issue.—The first comprehensive study of the water quality of the Red River basin was initiated in 1957 by the U.S. Public Health Service under the authorization of the Federal Water Pollution Control Act. It was determined that ten natural salt source areas contribute a daily average of 3,600 tons of salt per day to the river. This renders downstream waters unusable for most purposes. Structural measures to help control the chloride pollution at 8 of the 10 sites were developed by the Tulsa District, Corps of Engineers. These plans led to Congressional authorization in the Flood Control Acts of 1962, 1966 and 1970. The first structure was completed in January 1964 and the second in May 1987. The Water Resources Development Act of 1986 authorized the construction of the remaining sites.

Approximately one-third of the project cost has been expended. The total project is expected to cost $303 million.

The Tulsa District Corps of Engineers has completed the Supplement to the Environmental Impact Statement (SEIS). The Assistant Secretary of the Army (CW) directed the District to submit a Supplemental Assessment Report on alternatives by January 31, 1997.

Why important.—Natural mineral pollutants (primarily chlorides and sulfates) in the upper reaches of the Red River Basin are rendering downstream waters unusable for most purposes; therefore, the Red River Chloride Project is imperative in order to realize full utilization of the surface water supplies in Louisiana (as well as Texas, Oklahoma and Arkansas). More than 1,000 miles of streams in the river system are severely contaminated by naturally occurring brine and is not suitable for municipal, industrial or agricultural purposes.

The benefits of the Red River Basin Chloride Control Project will be improvements in water quality that will allow use for municipal, industrial, agricultural and recreational purposes. The added benefit will be the jobs created resulting from the implementation of the Chloride project.

Our position.—We support this project in its present form and request the release of the SEIS for public review and comment. We support and encourage funding at the levels necessary to complete the remaining costs of the project by the year 2003. Construction must resume in 1999. It is imperative the Wichita River position be completed to reclaim Lake Kemp as a fresh water lake.

TRANSPORTATION—WATER—INLAND WATERWAY FUEL TAX

Issue.—The inland waterways of this country move vast quantities of commodities at low rates. For almost two centuries, the federal government improved navigation channels at public expense to expedite the exchange of commerce at the lowest possible cost, relying competition to guarantee that producers and consumers would share in the benefits of the channel improvements. In 1980 a fuel tax on inland waterway commerce was established and it has been raised many times since. Efforts to dramatically escalate this tax in recent years have been made, but so far Congress has rejected them.

Why important.—Proposals to greatly increase the tax would be self-defeating, not only for the Port of Shreveport-Bossier and the entire waterway transportation system, but for the economies of these interior regions. The availability of low-cost water transportation helps to maintain these economies. The impact on American industry and agriculture must be carefully studied, for economic growth and prosperity has always been the impetus for water development programs through the years. With world markets now within reach by these regions, we can not afford to severely disadvantage our ability to compete.

Our position.—The Inland Waterway Fuel Tax should remain status quo.

SUPPORT RESOLUTION: SHREVEPORT/BOSSIER PORT

On behalf of the citizens of Northwest Louisiana, the Caddo-Bossier Parishes Port Commission strongly urges the Congress of the United States to allocate the necessary monies for the Red River Waterway Project for fiscal year 1999 so the Red River can be operated in a reliable manner for industry to use it and in order to ensure the viability of the $1.8 billion investment made over the last twenty years by the taxpayers of this country.

The Port of Shreveport-Bossier began regular operations at the Port complex site in 1997. It stands today as a longtime dream with a potential proving to exceed even the most optimistic projections. With local taxpayer investment guaranteed by a 1993 property tax in the two parishes of Bossier and Caddo, the Port's infrastructure is growing to meet the demands of a rapidly expanding customer base. Public investment in the Port complex today stands at more than $65,000,000. Businesses located at the complex are Olin Chemical, Re-Claim Environmental, Red River Terminals and Shreveport Fabricators.

Progress toward our goal of becoming a premier multi-modal transportation system is excellent. Attached for your information is Port background information, highlights of 1997 accomplishments and the Board of Commissioner's 1998 program of work.

Results of these efforts should provide a sense of pride to all members of Congress who believed in the Red River Navigation Project. You recognized the possible benefits, the job-generating capabilities, the advantageous cost benefit ratios. And these are now becoming reality at The Port of Shreveport-Bossier.

MISSION

The mission of the Caddo-Bossier Parishes Port Commission is to provide water transportation and economic development for the region through the Port of Shreveport-Bossier.

LOCATION/SIZE OF THE PORT

The Port of Shreveport-Bossier owns (1) 2,000 acres located just south of Shreveport's city limits, bordered on the east side by the Red River and on the west side by Louisiana Highway 1 and the Union Pacific main line, and (2) a 10-acre site in southwest Shreveport, the Ark-La-Tex Intermodal Center.

RIVER PORT SITE CHARACTERISTICS AND FACILITIES

Shallow draft navigation channel 9 feet deep by 200 feet wide.
Union Pacific main line rail, connection with KCS.
19,500 linear feet rail spur Pack and on-dock rail.
Rapid access to I–20 and I–49.
Two 24 feet wide access roads off of LA Highway 1, both of which exceed state highway load limits.
General cargo wharf assigned to Logistic Services, Inc./SSA.
30 ton overhead cantilevered bridge crane with magnet and clamshell.
2.5 acre concrete open storage.
Coal pile/open storage.
Truck/rail certified weigh scales.
300 feet water frontage liquids wharf, services 2 standard river barges simultaneously; manifolds, pumps and pipe customer owned/operated.
Two additional liquids wharfs.
Stevedoring, fleeting and rail switching services.
Full utilities, economical rates.
Security on site.
Land available for lease; suitable for industrial development.
Businesses in operation at the Port: Olin Chemical Corporation, Re-Claim.
Environmental Louisiana, Red River Terminals and Shreveport Fabricators.

Thank you for your interest in the Port of Shreveport-Bossier. If you have any questions about Your Port, please call or write.

BOARD OF COMMISSIONERS 1998 PLAN OF ACTION

The Caddo-Bossier Parishes Port Commission was established and exists to provide water transportation and economic development for the region through the Port of Shreveport-Bossier.

—The Port will provide cost effective and efficient facilities for its users.
—The Port shall operate in a fiscally-responsible manner.
—The Port will maximize utilization of the public assets entrusted to it for the economic benefit of the citizens of Caddo and Bossier parishes and partners of interest.

1. Continue to develop necessary infrastructure and facilities, noting customers needs and financial situation.
(a) Close out rail extension south, transit warehouse, Quaker State dock.
(b) Facilitate development of customer-driven infrastructure demands.
(c) Consider environmental enhancements.

(d) Develop sufficient infrastructure to support minimal initial physical security.
(e) Negotiate 200+ acre land purchase.
(f) Continue to maximize use of grant program funding to support infrastructure.
2. Attract users for Port multimodal transportation services and business/industries for Port complex location.
(a) Continue to work closely with local and Ark-La-Tex Port users and potential Port users.
(b) Forge an alliance with one or two logistics firms.
(c) Evaluate a Port Development Program.
(d) Investigate establishing the port complex as a rail reload center.
(e) Update promotional materials, printed and video.
(f) Continue to work with other economic development agencies.
(g) Participate in regional/national business promotions of Shreveport-Bossier.
(h) Facilitate foreign investment/international industrial recruitment.
3. Monitor Port operations, emphasizing the transfer from construction activities to full operation.
(a) Fill operating equipment needs; specifically fleet boat, locomotives, safety boat, tractor/bushhog, POL spill equipment and fire station rolling stock.
(b) Make appropriate staffing arrangements.
(c) Confirm operating procedures/parameters/tariffs in concert with Port Safety Council/Logistic Services.
(d) Monitor FTZ #145, FTZ #145 subzone, and oversight and interaction of U.S. Customs Port of Entry.
4. Maximize available financial resources, continuing to leverage local tax dollars to maximize taxpayer investment.
5. Communicate activities to all citizens of Caddo and Bossier Parishes; (1) continuing minutes and "Port Report" mail-outs, tours, speaking engagements, and Internet information; and (2) initiate grade school Port tours for school year 1998–1999.
6. Continue interaction with city, parish, state, and federal authorities/agencies on legislative issues of importance.
7. Continue participation in industry seminars, programs and events.

1997 ACCOMPLISHMENTS

1. Operational status on a regular basis achieved as cargo began moving in April. Unusually heavy spring rains/high river conditions prohibited barge traffic before April. Some 148 barges carried 208,684 tons of cargo handled at the Port's two terminals. Commodities included liquid petroleum products, aggregate, scrap steel and pressure vessels manufactured at Shreveport's Beaird Industries.
2. Lease signed with Edison Chouest Offshore (ECO), a Louisiana company involved in marine vessel operations. Expansion of ECO's shipbuilding operations to the Port announced by U.S. Senator John Breaux and Congressman Jim McCrery at a press conference December 15. This lease will mean up to 400 skilled jobs with an annual payroll of $24 million; annual economic impact to our area will be more than $85 million. The Red River Waterway Commission agreed to assist with $2.25 million in funding of improvements to the transit shed/dock areas.
3. Progress on Port complex infrastructure and facilities continued.
A. Construction essentially completed in 1997: (1) 7,500 If rail track extension south; (2) 30,000 sf general cargo transit warehouse; (3) 2.5 acres open storage; (4) fire booster station on south side.
B. Under construction: (1) liquid dock (for Quaker State and other users); (2) road (3,000 If) and rail (3,000 If) north extension.
C. In design: (1) road (3,200 If) and rail (7,800 If) extension further north; (2) fleeting dolphins; (3) tank farm/unload facility; (4) 4 acre hard stand; (5) road (1,850 If) and rail (4,142 If) extension further south.
4. Horseshoe Casino's "King of the Red" riverboat arrived April 26 at the Port. During the six months the boat was under construction, more than 200 employees worked 16–24 hours per day in order to move the completed boat upriver on November 2.
5. City of Shreveport Fire Station #20, which will serve the Port Complex and southeast Shreveport, began operation in temporary facilities at Flournoy Lucas Road and Highway 1, site of the permanent station, on October 1. Fire Station #20 is truly an example of government cooperation at its finest. In an unprecedented cooperative endeavor agreement, the City and Port will share 50–50 operational funding. The Red River Waterway Commission will pay for station construction, a fire truck and medic unit—at a cost of $1.6 million.

6. Received fiscal year 1997–98 Capital Outlay approval for $500,000/$500,000 local match for land acquisition and $6.3 million for a tank and storage facility. Fiscal year 1997–98 Port Priority Program funding approval was received for $2,845,000 for further northern road and rail extensions ($4,080,000 total project) and $594,000 for fleeting dolphins ($725,000 total project).

7. Applications turned in for 1998–99 Port Priority consideration: south road and rail extension and concrete hardstand addition. Pre-application to U.S. Department of Commerce E.D.A. submitted for $1 million for a vessel launch pad.

8. The Strategic Master Planning process continued throughout the year. In January the BYL consultant team was selected by the Board to write a new Strategic Master Plan. The three team members immediately began work on Phase I; it was presented in March. Phase II, the actual master plan document, was presented to the Board of Commissioners in September. Master Plan recommendation implementation was considered by the Board during the fall's annual goal-setting and budget meetings.

9. The U.S. Department of Commerce E.D.A. granted The Port $25,000 for Strategic Master Plan funding assistance.

SUPPORT RESOLUTION: RED RIVER WATERWAY COMMISSION

On behalf of the citizens of the Red River Waterway District of Louisiana, the Red River Waterway Commission strongly urges the Congress of the United States to allocate the funds necessary for fiscal year 1999 for Red River Waterway Project to continue construction toward actual completion and also allow totally reliable operation for continued industrial and recreational development. The infrastructure investment of $1.8 billion can only be justified if industry and recreation interests can rely on an efficient, functional and user friendly river system.

Construction on Red River is approximately 89 percent complete, however, it is vitally important that we understand the importance of steady progress toward project completion with full knowledge of the financial constraints this country, the President and the Congress are wrestling with during the budget process.

AREAS OF CONCERN WITH THE RED RIVER WATERWAY PROJECT

Recreation Development.—Design and Construction in Pools 3, 4 and 5 needs to begin immediately, resolution of the Project Cooperation Agreement is first step.

Aids to Navigation.—Coast Guard needs increased presence and resources to adequately maintain the buoy system on the Red River.

Construction/Maintenance Program.—The Corps of Engineers needs resources available to react quickly to landowner bank caving complaints that are a result of the project and are fully justified.

Channel maintenance on the Red River.—Corps of Engineers needs sufficient resources to adequately maintain a 200 ft. by 9 ft. navigation channel to provide dependable and reliable transportation for industries locating on Red River.

Mitigation and Bendway Dredging.—Continue with land acquisition and developmental cost analysis associated with the mitigation portion of the project and as soon as practical begin the bendway dredging operations to reestablish the connection to the channel of Red River.

PREPARED STATEMENT OF AUBREY J. LAPLACE, PRESIDENT, BOARD OF COMMISSIONERS, PONTCHARTRAIN LEVEE DISTRICT

MISSISSIPPI RIVER AND TRIBUTARIES FLOOD CONTROL PROJECT

FISCAL YEAR 1999 RECOMMENDATIONS FOR APPROPRIATIONS

These three items are of indispensable importance to the State of Louisiana. There are serious project deficiencies in the Pontchartrain Levee District. Federal appropriations must continue at adequate levels to move forward.

$41,518,000 for Mississippi River levees (Budget contains $23,750,000)

In the Pontchartrain Levee District several reaches of main line levee must be enlarged and slope paved to advance from the current status of partial flood protection. During the 1997 high water an emergency levee cap was constructed at Marchand to prevent overtopping and a possible crevasse. Currently the reach Marchand to Darrow is being constructed to finish emergency work of last year, and two other reaches are also under construction, Romeville to Remy and Remy to Garyville. The fiscal year 1999 schedule calls for Carville to Marchand to be contracted.

Future levee enlargements and slope paving are required in the Levee District. The Board of Commissioners, Pontchartrain Levee District, urges the Subcommittees to appropriate $41,518,000 in fiscal year 1999 for Mississippi River levees.

$49,299,000 for channel improvement (Budget contain $44,599,000)

Main line levees must be protected from caving banks throughout this lower river reach where extremely narrow battures are the last line of defense against levee crevasses and failures. If caving banks are not controlled the only answer is "setback". Simply stated there is no room remaining for levee setbacks in the Pontchartrain Levee District. Revetment construction must be annually funded to prevent levee failures, land losses and relocations. This item also benefits the 55-foot depth navigation channel. The Pontchartrain Levee District recommends at least $49,299,000 be appropriated for fiscal year 1999.

$10,000,000 for Louisiana State Penitentiary (Budget contains $400,000)

Angola, Louisiana's State Penitentiary, has been under River attack for more than ten years, lost its front line levee and hundreds of acres agricultural areas to caving banks. The Setback levee is extremely unstable, likely to fail under stress of the next high water. Warden Burl Cain describes the situation as an acute emergency. Inside the prison the City of Angola does exist, has its own Post Office, a population of 627 tax paying citizens, and 138 residences. With a levee failure potential damages amount to $500,000,000. Currently, the only alternative is to move 5,000 maximum security inmates into tents on higher ground. It is urgently recommended that $10,000,000 be appropriated for fiscal year 1999.

THE LEVEE DISTRICT

The Pontchartrain Levee District extends downstream from the City of Baton Rouge to the New Orleans area, a distance of 115 river miles, includes the east (left descending) bank of the Mississippi River, and is comprised of portions of East Baton Rouge, Iberville, Ascension, St. James, St. John the Baptist and St. Charles Parishes. The Mississippi River east bank levee is continuous throughout the Levee District, including the Bonnet Carre Floodway. We serve as the local sponsor for the St. Charles Parish Hurricane Protection Levee, now in the fifth year of construction, designed to protect the Parish, a portion of New Orleans and its International Airport from hurricane tides.

Extensive development of major industries has taken place in the Pontchartrain Levee District and is continuing. Along with industrial growth, our Levee District is experiencing dramatic increase in residential and urban expansions. Substantial portions of the Levee District area are used for agriculture. Three nationally ranked deep-water ports are companions to the Pontchartrain Levee District—the Baton Rouge Port, South Louisiana Port, and New Orleans Port. The New Orleans International Airport is also located within the district.

All these features and many other improvements along with more than one million residents are protected by the Mississippi River and Tributaries Flood Control Project in this Levee District. Only through continuous, effective flood control improvements and maintenance can this area and the Lower River Valley meet requirements to serve national needs for its economy and continued growth.

COMMENTS

The Pontchartrain Levee District has full realization of the necessity of keeping this Subcommittee advised of current and future needs for federal monetary support on vital items of the MR&T Flood Control Project. In 1995, 1996 and 1997 the Subcommittees refused to give audience to the Lower Mississippi Valley Flood Control Association seven state delegation. This year we have been advised that no oral testimony will be heard. Again, this is a great travesty of justice. Such actions seriously erode the partnership that has been built between the Corps of Engineers and local sponsors. We trust that this pattern will revert back to the sixty-three year practice of hearing our delegation. Three representatives from the Pontchartrain Levee District are present today desiring to present views to the Subcommittees—they are Commissioner Joseph Gautreau, Vice President; Commissioner Michael Reames; and Gerald Dyson, Executive Assistant.

NEAR FUTURE IS UNCERTAIN—ITS UP TO CONGRESS

In the search for new ways to accomplish required flood control and other water resources projects, Congress must remain mindful not to jerk the rug out from under its own feet and our own. Without protection there will be few jobs, farms, industries, businesses, voters and related activities. Congress should know that we

in the Lower Mississippi Valley do not have the option to say "No". Also it stands that Congress should not have the option to reduce, remove or stop federal responsibility for controlling national water, whether in flood or drought. With respect to Louisiana most of its runoff is generated outside the State area for all its main carrier rivers, including Mississippi, Red, Ouachita, Black, Atchafalaya Floodway, Pearl and Sabine Rivers. In Louisiana we have a comprehensive flood control plan sponsored, operated and maintained by some 23 Levee Districts to handle and provide for safe passage of almost one half the nation's waters. This invokes federal involvement, don't mess up the system.

CONCLUSION

The Board of Commissioners, Pontchartrain Levee District, compliments the Subcommittee on Energy and Water Development for its keen understanding of real needs for the MR&T Flood Control Project and efficient, alert actions taken to appropriate funds for its many complex requirements. We endorse recommendations presented by the Association of Levee Boards of Louisiana, Louisiana Department of Transportation and Development, Lower Mississippi Valley Flood Control Association and Red River Valley Association.

NEW JERSEY AND NEW YORK WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF VERNON A. NOBLE, CHAIRMAN, GREEN BROOK FLOOD CONTROL COMMISSION

Mr. Chairman and Members of the Subcommittee: My name is Vernon A. Noble, and I am the Chairman of the Green Brook Flood Control Commission. I submit this testimony in support of the Raritan River Basin—Green Brook Sub-Basin project, which we request be budgeted in fiscal year 1999 for $12,000,000 in construction general funds.

The Commission was established in 1971, pursuant to an Act of the New Jersey Legislature, following disastrous flooding which took place in the Green Brook Basin in the late Summer of 1971. That flood caused $304,000,000 in damages (April 1996 price level) and disrupted the lives of thousands of persons.

In the late Summer of 1973, another very severe storm struck the area, and once again thousands of persons were displaced from their homes. $482,000,000 damage was done (April 1996 price level) and six persons lost their lives.

Thanks to the efforts of New Jersey's Representatives and Senators in Congress, the Corps of Engineers was authorized by Congress in 1986 to design a solution to this problem of flooding. The floods of 1971 and 1973 were only the most recent in a long series of severe floods. Flooding in this Sub-Basin dates back to the late 1800's when they were first recorded, and has become more damaging as the population of the area has grown.

The Green Brook Flood Control Commission is made up of appointed representatives from Middlesex, Somerset and Union Counties in New Jersey, and from the 13 municipalities within the Basin. This represents a combined population of almost one-quarter of a million (248,084) people.

The Members of the Commission are all volunteers, and for 27 years have served, without pay, to advance the cause of flood protection for the Basin. Throughout this time, the Corps of Engineers, New York District, has kept us informed of the progress of the project, and a representative from the Corps has been a regular part of our monthly public meetings.

Thanks to the vigorous support of New Jersey's Congressional Delegation, the Congress in 1986 authorized a comprehensive flood control project for the protection of the entire Green Brook Basin at a then established estimated cost, in 1985 dollars, of $203,000,000.

In the Energy and Water Appropriations Act of 1988, Congress included a provision making it clear to the Corps of Engineers that protection is to be designed for the entire Green Brook Basin, rather than only the lower portion of the Basin, as had at one time been studied by the Corps of Engineers. During 1997, the Congress, with the agreement of the President, appropriated $3,100,000 to initiate construction of the project. Final preparations are now underway, and it is expected that actual construction will begin in Bound Brook Borough and in western Middlesex Borough this year.

We believe that it is essential that the Green Brook Flood Control Project be carried forward, and pursued vigorously to achieve protection at the earliest possible date. This project is needed to prevent loss of life and property, as well as the trau-

ma caused every time there is a heavy storm. The General Reevaluation Report of the Corps of Engineers dated 1997 points out some sobering facts. It shows that the damages which would occur in a repetition of the flood experienced here in 1973, measured in today's dollars, would be $582,700,000.

New Jersey has programed budget money for its share of the project for fiscal year 1999.

Actual construction will begin this year. We believe that your decision of last year to authorize the initiation of construction was a wise and prudent decision. It is essential that construction be continued in fiscal year 1999.

We urgently request an appropriation for the project in fiscal year 1999 of $12,000,000.

The more quickly the construction of this project is completed, the less will be the total cost, and the sooner the project will provide protection.

Economics and costs are of course important, but personal human tragedy, and the loss of life, is more important.

As you may know, an independent Task Force has been formed, consisting of representatives of the affected municipalities and counties, to examine the options for providing flood protection in the upper portion of the Basin. We are optimistic that this Task Force will reach conclusions which will enable the Corps of Engineers to modify its plans for protection in the upper portion of the Basin in ways it will be found acceptable to the preponderant majority of the elected leaders of the area, as well as Federal and State environmental regulators, and public interest groups.

Actual construction work in the upper-most portion of the Basin does not need to begin for a number of years, and accordingly we are confident that acceptable and workable project plans can be developed in ample time to meet the approximate ten year construction schedule.

Thank you, Mr. Chairman, and Members of the Subcommittee, for your vitally important past support for the Green Brook Flood Control Project; and we thank you for the opportunity to submit this testimony to you.

GREEN BROOK FLOOD CONTROL

GREEN BROOK SUB-BASIN, RARITAN RIVER BASIN, NEW JERSEY

GREEN BROOK FLOOD CONTROL PROJECT FUNDING

FEDERAL FISCAL YEAR	FEDERAL ADMINISTRATION BUDGET REQUEST	CONGRESSIONAL APPROPRIATION (NOMINAL)	SAVINGS AND SLIPPAGES	EFFECTIVE NET APPROPRIATION TO CORPS OF ENGINEERS	TRANSFER BY CORPS TO (-) FROM (+) OTHER PROJECTS	NET MONEY AVAILABLE FOR WORK ON PROJECT (WORK ALLOWANCE)	CUMULATIVE MONEY RECEIVED BY CORPS SINCE AUTHORIZATION IN 1986
1986	$ 445,000	$ 445,000	$ -19,000	$ 426,000	$ - - -	$ 426,000	$ 426,000
1987	1,370,000	1,370,000	- - -	1,370,000	- - -	1,370,000	1,796,000
1988	1,400,000	1,400,000	- - -	1,400,000	- - -	1,400,000	3,196,000
1989	1,500,000	1,500,000	-68,000	1,432,000	- - -	1,432,000	4,628,000
1990	1,200,000	1,200,000	-73,000	1,127,000	-20,000	1,107,000	5,735,000
1991	2,000,000	2,000,000	-496,000	1,504,000	-73,000	1,406,000	7,141,000
1992	2,600,000	3,169,000	-364,000	2,805,000	- - -	2,805,000	9,946,000
1993	- - -	3,500,000	- - -	3,500,000	- - -	3,500,000	13,446,000
1994	- - -	2,800,000	-594,000	2,206,000	+571,000	2,777,000	16,223,000
1995	2,000,000	2,000,000	- - -	2,000,000	+135,000	2,135,000	18,358,000
1996	3,600,000	3,600,000	-932,000	2,668,000	+193,000	2,861,000	21,219,000
1997	2,781,000	2,781,000	-299,000	2,482,000	+299,000	2,781,000	24,000,000
1998	- - -	3,100,000	-189,000	2,911,000	- - -	2,911,000	26,911,000
1999	- - -	$12,000,000	RECOMMENDATION OF THE GREEN BROOK FLOOD CONTROL COMMISSION FOR FY1999 TO CONTINUE CONSTRUCTION				

REFERENCE:
THIS SUMMARY OF FUNDING FOR THE GREEN BROOK FLOOD CONTROL PROJECT HAS BEEN ASSEMBLED BASED UPON PUBLICLY AVAILABLE INFORMATION.

PRESENTED BY:
GREEN BROOK FLOOD CONTROL COMMISSION
GREEN BROOK, NEW JERSEY 08812

PREPARED STATEMENT OF GLENN A. GRANT, ESQ., BUSINESS ADMINISTRATOR, CITY OF NEWARK, NJ

Mr. Chairman and members of the Subcommittee, thank you for giving me the opportunity to submit testimony about a project under your jurisdiction which is very important to the people of Newark, New Jersey and the surrounding region.

The Passaic River Streambank Restoration Project, known as the Joseph G. Minish Passaic River Waterfront Park and Historic Area, is an important part of the overall economic and transportation development plan of the City of Newark.

The project was authorized at a level of $75 million in the 1996 Water Resource Development Act, and has been fully planned by the Army Corps of Engineers. The streambank restoration and bulkhead replacement, which is the first phase of the overall project, is set to begin within two months utilizing last year's appropriation of $3,000,000. A supplemental appropriation of $15 million is requested so that this integral element in Newark's revitalization can move from partial construction to the beginning of full project build-out.

This investment in Newark's future will help us to improve the economic status of our nation's third oldest major city. The development of the riverfront now is a critical element in the overall plan for Newark's downtown revitalization. This linear park will serve as a visual and physical linkage among several key and exciting development projects. It is adjacent to one of the oldest highways in the nation, Route 21, which is undergoing a multi-million dollar realignment. The planned Newark-Elizabeth Rail Link, which will connect Newark's two train stations, and ultimately, Newark International Airport and the neighboring City of Elizabeth, will provide users with access to mass transportation. The riverfront development will complement and provide a visual and physical connection with the new, $170 million New Jersey Performing Arts Center, which opened in the Fall of 1997 and has been incredibly successful. Further north along the riverfront, the City of Newark and Essex County are moving ahead with plans to construct a minor league baseball facility along Route 21, at Riverbank Park, along with an enhanced replacement playground facility, also accessible from the riverfront walkway.

The riverfront will be the nexus of these activities, creating a vibrant downtown center that will provide economic development opportunities for the citizens of Newark and our region. Visitors from throughout the nation are expected to come to visit our revitalized city, and participate in the exciting growth and development taking place. There is tremendous potential for Newark's riverfront to mirror the success of other riverfront developments throughout the country, and Newark stands ready to accept the challenges such developments present.

We have a once-in-a-lifetime opportunity to coordinate several major development activities into a virtually seamless development plan. The appropriation of $10 million which I am requesting will serve to incorporate the Army Corps of Engineers' construction into our overall economic development plan to reinvigorate Newark. I urge you to support this appropriation request.

In closing, I would like to extend my thanks to the entire New Jersey delegation for its ongoing support. The time and attention of this subcommittee are deeply appreciated.

DEPARTMENT OF ENERGY RESEARCH AND DEVELOPMENT PROGRAMS

PREPARED STATEMENT OF ROBERT L. MCCRORY, PROFESSOR AND DIRECTOR, LABORATORY FOR LASER ENERGETICS, UNIVERSITY OF ROCHESTER

SUMMARY AND REQUESTED ACTION

The inertial confinement fusion (ICF) program is a key element in the Department of Energy's (DOE) Stockpile Stewardship Program (SSP) to ensure the reliability and credibility of the U.S. nuclear weapons stockpile. The ICF program provides access to high-energy-density physics data important in nuclear weapon design and understanding. The program is focused on the use of available unique laboratory facilities: Nova at Lawrence Livermore National Laboratory (LLNL), Z at Sandia National Laboratories (SNL), OMEGA at the University of Rochester's Laboratory for Laser Energetics (LLE), and the Nike laser at the Naval Research Laboratory (NRL). Experiments on these facilities support the demonstration of thermonuclear ignition and gain on the National Ignition Facility (NIF) now under construction. They also provide data in support of the nuclear weapons science-based stewardship activities of the Nation.

LLE has been a participant in ICF research since the 1970's. It is the only ICF program that has been jointly supported by the Federal government, State government, industry, utilities, and a university. At relatively small comparative cost, LLE makes fundamental scientific contributions to the National program and the Laboratory transfers technology to the public and private sectors through the training of graduate students and interactions with industry and other Federal laboratories. The Laboratory serves as a National laser users' facility benefiting scientists

throughout the country. The OMEGA laser, the highest power ultraviolet fusion laser in the world, will be the principal laser facility for SSP activities when Nova operations are terminated in 1999.

The Laboratory's primary ICF mission is to validate the direct-drive option for ICF. There is a close collaboration among LLE, LLNL, LANL, and NRL to support the demonstration of ignition and gain in the laboratory, the objective of the NIF program. OMEGA with its 60 beams has also been used for indirect-drive experiments in collaboration with the National laboratories. During fiscal year 1998, OMEGA is being used for SSP experiments in preparation for the transition from Nova to OMEGA in fiscal year 1999. Some of the experiments to be conducted by LLNL and LANL on OMEGA during the current year will be classified experiments.

OMEGA is the only facility that can demonstrate the scientific potential of direct drive to provide a modest- to high-gain energy option for the Nation. ICFAC[1] emphasized the priority of conducting cryogenic experiments on OMEGA beginning in fiscal year 1999. Further, OMEGA will be the principal ICF facility in the National program for ICF-based stockpile stewardship experiments until the NIF is completed at the end of 2003.

To provide the operations support for program deliverables and operation of OMEGA (for both cryogenic experiments and SSP experiments), and maintain the training programs at Rochester, a total authorization and appropriation of $29,000,000 is requested for the University of Rochester for fiscal year 1999, as contained in the Administration's budget request for DOE.

BACKGROUND

Thermonuclear fusion is the process by which nuclei of low atomic weights, such as hydrogen, combine to form higher atomic weight nuclei such as helium. In this process some of the mass of the original nuclei is lost and transformed to energy in the form of high-energy particles. Energy from fusion reactions is the most basic form of energy in the universe; our sun and all other stars produce energy by thermonuclear fusion reactions occurring in their interior. Fusion is also the process that provides the vast destructive power of thermonuclear weapons.

To initiate fusion reactions, the fuel must be heated to tens of millions of degrees. In stellar bodies, containment is possible because of the large gravitational force. On earth, ICF involves the heating and compression of fusion fuel by the action of intense laser or particle beam drivers. There are two approaches to ICF, direct and indirect drive: indirect drive involves the conversion of beam energy to x rays to compress a fuel capsule in an enclosure called a hohlraum; direct drive involves the direct irradiation of a spherical fuel capsule by energy from a laser and may be more efficient energetically than indirect drive. For either approach, if very extreme density and temperature conditions are produced, it is possible to produce many times more energy in these fusion reactions than the energy provided by the drivers.

INERTIAL CONFINEMENT FUSION PROGRAM FOCUS

Numerous reviews of the ICF program have identified the glass laser program as the best path to demonstrate ignition (initiation of a thermonuclear reaction that can be self-sustaining) and propagating thermonuclear burn. A recent independent review completed by the JASONS[2] stated "The inertial fusion program represents the closest approach we know of to a number of critical parameters in the weapon environment * * *. Naturally we expect continued progress in further evaluating ignition prospects from experiments on Nova and on OMEGA Upgrade, a direct-drive laser facility at the University of Rochester * * *."

DOE has accepted the recommendations of the reviews and construction of the NIF is in progress. The purpose of the NIF, in its SSP mission, includes the demonstration of ignition, propagating burn, and modest gain in the laboratory. The NIF project completion is projected to be 2003. While NIF is under construction, OMEGA will be the principal ICF facility that will be used for nuclear weapons stewardship experiments by LLNL and LANL, and for direct- and indirect-drive ICF experiments when NOVA ceases operation in fiscal year 1999. Furthermore, under the DOE bilateral agreement with the French Atomic Energy Commission, OMEGA will be used to support experiments under the agreement as approved by DOE.

LLE is the primary focus in the U.S. for the direct-drive approach to ICF. Direct drive may ultimately prove to be the best approach to ICF and provide the most

[1] Inertial Confinement Fusion Advisory Committee Report to Assistant Secretary Reis (February 21, 1996).

[2] "Science Based Stockpile Stewardship", JASON Report JSR–94–345 (The MITRE Corporation, McLean, Va, November 1994).

efficient path to a laboratory-scale thermonuclear capability for both energy research and defense technology needs. OMEGA is the only facility that can demonstrate the scientific potential of direct drive to provide modest- to high-gain on the NIF.

An extensive collaborative program between LLNL, LANL, and LLE has provided data on basic physics, beam smoothing, and unstable hydrodynamics using available lasers. This collaboration on OMEGA includes both nuclear weapons physics experiments (including classified experiments to prepare for the transition from Nova to OMEGA in fiscal year 1999 that are being conducted by LLNL and LANL during fiscal year 1998) and ICF experiments. Physics issues for both ICF and weapons issues for the SSP fall into five broad categories: irradiation uniformity, laser energy coupling and transport, laser-plasma interaction physics, hydrodynamic stability, and hot-spot and main-fuel-layer physics. The OMEGA and NIF programs are complementary. Figure 1 illustrates the schedule for the glass laser facilities to be used in the National program plan for inertial fusion, and shows the phased availability plan for the NIF.

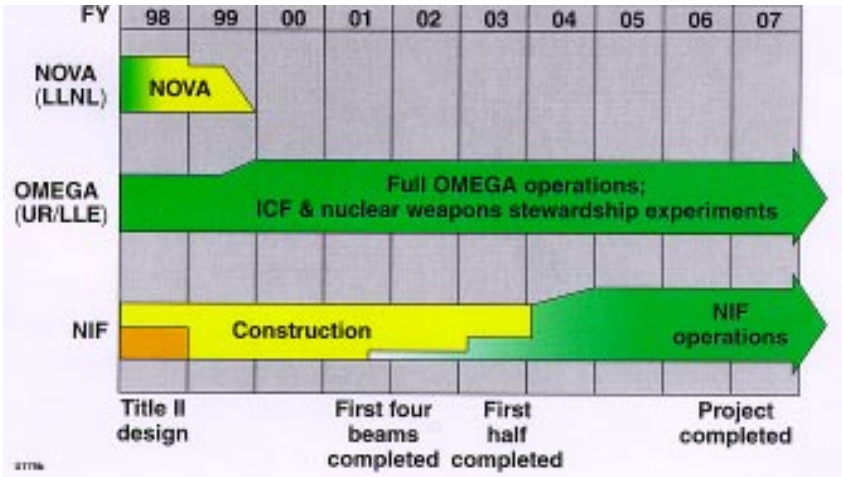


Fig. 1 Schedule for the operation of NOVA, OMEGA, and the NIF.

The figure illustrates how the National program has been structured to provide a full complement of mature experimental facilities from the present to the future. With a shut down of the Nova laser in fiscal year 1999, OMEGA is the Nation's principal facility to continue experimental work during NIF construction. Although the LLE program is focused on direct drive, OMEGA is capable of indirect-drive (hohlraum) experiments that were first conducted by LANL and LLNL in fiscal year 1996. Both LANL and LLNL will continue to use OMEGA for indirect-drive experiments for ICF and SSP experiments for the foreseeable future. It is because of termination of Nova operations and the high interest in the use of the OMEGA facility by the weapons laboratories, that DOE's budget request includes funds for extended operations on OMEGA for SSP experiments. Because the per-shot cost of OMEGA is considerably less than the cost of a shot on NIF, OMEGA will be a very important supporting facility for proof-of-principal experiments and further diagnostic development for the NIF after it is complete in 2003 (see Fig. 1).

THE LLE DIRECT-DRIVE PROGRAM FOR FISCAL YEAR 1999

The goal of the glass laser direct-drive target physics program is to evaluate the performance of fuel capsules near ignition conditions. In addition to providing data for the NIF, these experiments can validate the direct-drive configuration on the NIF that could result in two to three times higher fusion gains (gain > 50) than those available with the baseline (indirect drive) NIF design.

An important element of the direct-drive program on OMEGA is to demonstrate beam smoothing techniques that ultimately will produce on-target irradiation nonuniformity of 1 percent to 2 percent. The achievement of this goal is a principal objective for fiscal year 1999. OMEGA will also be used to develop advanced diagnostics for NIF. The implementation of cryogenic fueling will begin in fiscal year

1999. This capability is necessary for hydrodynamically equivalent target experiments to be conducted on OMEGA to demonstrate the likelihood of success of the direct-drive option of NIF. In collaboration with LANL and General Atomics, a cryogenic capability will be completed in fiscal year 1999 for OMEGA. The first fully cryogenic capsule experiments are planned for OMEGA in fiscal year 2000. The ICFAC[1] recommended in their final report: "The committee believes that experiments are essential to assessing real target performance and benchmarking code calculations. The first opportunity to do such experiments on cryogenic targets approaching NIF size will be on OMEGA* * *. It is very important that this effort be kept on track with proper priority and not delayed further[1]." Cryogenic capability, advanced diagnostics development, and beam smoothing are all required for the NIF. LLE will be the principal National facility to develop these technologies for the program.

LLE attaches a high priority to providing education and training in the field of ICF and related area, thereby providing a source of personnel and expertise in areas of critical National needs. These include theoretical and experimental plasma physics, laser-matter interaction physics, high-energy-density physics, x-ray and atomic physics, ultrafast optoelectronics, high-power laser development and applications, nonlinear optics, optical materials, and optical fabrication technology. A total of 44 graduate students and 14 faculty members of the University of Rochester are currently involved in the unique research environment provided at LLE and represent many departments within the University, including Mechanical Engineering, the Institute of Optics, Physics and Astronomy, Electrical Engineering, and Chemical Engineering. Beyond this, more than 50 undergraduate students receive research experience annually at LLE. Additionally, a high-school summer science program exposes ten talented students each year to the research environment and encourages them to consider careers in science and engineering. Many LLE graduates have made important scientific contributions in National laboratories, universities, and industrial research centers.

PREPARED STATEMENT OF FATHER WILLIAM L. GEORGE, S.J. AND FATHER T. BYRON COLLINS, S.J., SPECIAL ASSISTANTS TO THE PRESIDENT OF GEORGETOWN UNIVERSITY

Mr. Chairman and Members of the Committee: We are Father William L. George, S.J. and Father T. Byron Collins, S.J., Special Assistants to the President of Georgetown University, the Father Leo J. O'Donovan, S.J. We appreciate this opportunity to testify before your Subcommittee.

Currently, the Senate has passed Bill S. 965 which amends Section 202 of the Hydrogen Future Act of 1996 (Public Law 104–271) as follows: Section 202 of the Hydrogen Future Act of 996 (public Law 104–271) is amended by striking "1997 and 1998, to remain available until September 30, 1999" and inserting "1998, 1999, 2000, and 2001, to remain available until September 30, 2002".

We believe that this Bill will be similarly passed by the House in appropriate time. Through this authorization extension, we will now be requesting the necessary appropriations.

We are requesting funds to be appropriated for a cost-shared fuel cell demonstration program entitled the National Exemplar Renewable Energy System (NERES). The funds appear to be available for this program as stated on page 360 of the President's Budget Report Appendix Fiscal Year 1999, which describes Site/project completion and Post 2006 completion. These program activities are allocated $1,047M and $2,674M, respectively.

Likewise, the Budget of the United States Government provides $1,060M in fiscal year 1999, an increase of $331M from the $729M provided in fiscal year 1998, for: "the deployment of new technologies in the industrial sector to capture waste heat and convert it into electricity; and R&D spending and incentives for renewable energy sources like biomass, wind, photovoltaics, and fuel cells (See Tables 6–2 and 6–3), [Budget of the United States Government, fiscal year 1999] [Page 93–103] [DOCID: f:1999—bud.bud06.wais] [From the Budget of the U.S., fiscal year 1999 Online via GPO Access [wais.access.gpo.gov] as noted in Section 6, Promoting Research, within Energy & Water Development".

The attached letter to Congress explains in detail the participation of the consortium sites within NERES. We are requesting $40M out of $50M in fiscal year 1999 in order to get the various programs substantially underway. We will be requesting the final funds in subsequent appropriations. The allocation will be divided as fol-

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[1] Inertial Confinement Fusion Advisory Committee Report to Assistant Secretary Reis (February 21, 1996).

lows: the central site will receive $28M, and each of the other participating sites at Albuquerque, NM, Billings, MT, and the University of Fairbanks, Alaska would each receive $4M.

The Department of Energy organizational chart has designated that NERES should be under the jurisdiction of the Director of the Federal Energy Technology Center, located in Morgantown, WV. The consortium would place an application under the requirements of S. 965 in accordance with its extension of time.

Title II of Public Law 104–271 authorizes a project that processes solid waste through existing devices to create hydrogen as a fuel cell energy source. Fuel cells, in turn, will produce heat and electricity. This solid waste reduction process results in the production of hydrogen and water. The national benefit is the development of the fuel cell industry to where the cost per kW is competitive in the power industry. Moreover, this project leads to the commercialization of U.S. advanced technology.

In accordance with Public Law 104–271, which states that "the Secretary shall give preference, in making an award under this section, to proposals that are submitted jointly from consortia including academic institutions, industry, State or local governments and Federal laboratories," a consortium of four sites is ready to develop this project. The central, exemplar site will be at Georgetown University. $35 million of the proposed $50 million appropriation will be allocated to the central site.

One participating site will be at the City of Albuquerque, New Mexico. The city of Albuquerque's planners are considering numerous projects. Albuquerque has a vast solid waste, sewage and water treatment system that could be used to produce electricity and water. This process would be an exemplar for other cities where the water table is shrinking. In addition to its ecological benefits, the project could bring new manufacturing business entities into the Albuquerque area that will create jobs and utilize local raw materials. The project proposes to use $5 million in federal funds for planning. Non-federal funds will purchase a large number of fuel cells.

Another site is at the Institute of Northern Engineering at the University of Alaska, Fairbanks. It is also the only institute able to provide the research and demonstration necessary for smaller applications of the system for villages in Alaska. $5 million of federal funds is also proposed for this section of the program.

The final site is at the Montana Tradeport Authority in Billings, Montana. Billings is an essential site since it is the sole site in the U.S. that has an ample source of platinum, palladium, copper and carbon block to produce fuel cells at a manufacturing plant economically without federal funds. The governor's office is planning a major site(s) using the solid waste-to-total energy solar regeneration power system. Once again, $5 million in federal funds will be used for planning only. Non-federal funds will be used to purchase two to four hundred fuel cells at the Billings site.

The project at Billings plans to develop this regeneration power system along with a Science and Technology Park. This technology mitigates and utilizes carbon dioxide in such a way that alleviates global warming caused by such emissions. The project could also address commercial, industrial, and municipal wastes.

As far as we know, our project is the sole program ready to be launched into operation. The program was validated as final proof-of-concept on August 14, 1996 at Edwards Air Force Base in California under the sponsorship of various institutions including JPL and NASA.

Unfortunately, the Energy Appropriations Subcommittee was not able to provide any funding for the project in fiscal year 1997. However, S. 965 recently passed in the Senate. This bill extends the authorization of funds to this project until September 2002. Currently, we are seeking the support of Congressman Calvert's committee to ensure its passage in the House.

We also believe that there was a misunderstanding on behalf of the Deputy Secretary of Energy, Allan Hoffman. Secretary Hoffman thought that the $50 million would have to be taken from the Hydrogen Research Account. However, we did not seek the funds from the Hydrogen Research Account, but proposed instead to have the funds taken from the Waste Management Account, thereby leaving the account for other hydrogen research programs intact. It is our contention that the Waste Management Account is the more appropriate source for funds since our program converts waste to energy.

We are prayerfully grateful for your time and consideration.

PREPARED STATEMENT OF THE AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association (APPA) is the national service organization representing the interests of over 2,000 municipal and other state and locally owned utilities throughout the United States. Collectively, public power utilities deliver electric energy to one of every seven U.S. electric consumers (about 35 million people), serving some of the nation's largest cities. The majority of APPA's member systems are located in small and medium-sized communities in every state except Hawaii.

APPA looks forward to working with you during the second session of the 105th Congress. We appreciate the opportunity to submit this testimony outlining our fiscal year 1999 appropriations priorities within your Subcommittee's jurisdiction.

RENEWABLE ENERGY PROGRAMS

APPA believes it is important to continue development and commercialization of clean, renewable energy resources as we face the prospect of increased competition in the electricity marketplace. Two of the most significant barriers to greater renewable energy use are cost and lack of demonstrated experience. Because of the requirement to supply electricity to customers on demand, with high reliability at a reasonable cost, electric utilities often are conservative when evaluating new technologies. Evolving deregulation, coupled with stable fuel prices, now adds a further challenge to greater adoption of relatively unproved renewable technologies.

We applaud the Administration's emphasis on DOE energy efficiency and renewable programs and ask that this Subcommittee work to ensure that renewable energy remains part of the full range of resource options available to our nation's electric utilities. APPA supports a minimum of $372.3 million for renewable energy technologies in fiscal year 1999. This funding level will go a long way in furthering the call for significant expansion of renewable energy R&D programs in order to meet the energy challenges and opportunities of the 21st century.

RENEWABLE ENERGY PRODUCTION INCENTIVE PROGRAM (REPI)

APPA urges this subcommittee's continued support for REPI, authorized by the Energy Policy Act of 1992, in Section 1212, at $8 million. Although twice the level requested by the Administration for fiscal year 1999, it is considerably less than the $20 million level DOE identifies as needed for full funding in fiscal year 1999 of all electricity generated by qualified facilities. REPI permits DOE to make direct payments to publicly and cooperatively owned electric utilities at the rate of up to 1.5 cents/kWh of electricity generated from solar, wind, certain geothermal and biomass electric projects. Because projects of this nature often require a long lead time for planning and construction it is imperative that stable and predictable funding be provided.

REPI was established to ensure equity between investor-owned utilities that utilize renewable energy tax credit and production payments and publicly and cooperatively owned electric utilities that are unable to do so. Several electric utility restructuring bills introduced in the 105th Congress as well as in the state legislatures mandate use of renewable energy sources. REPI payments provide the singular financial incentive for publicly and cooperatively owned utilities to meet these increasing demands. In addition, production payments to utilities are an excellent market-based method to spur greater interest in renewables. They fit well with DOE's emphasis on market-led commercialization.

STORAGE FOR HIGH-LEVEL NUCLEAR WASTE

We support the Administration's budget request of $380 million for DOE's Office of Civilian Radioactive Waste Management. These funds will enable DOE to continue preparations to accept used fuel as well as to continue scientific studies at Yucca Mountain leading to a viability assessment in late 1998.

ADVANCED HYDROPOWER TURBINE PROGRAM

The Advanced Hydropower Turbine Program is a joint industry/government cost-share effort to develop a new, improved hydroelectric turbine superior in its ability to protect fish and aquatic habitat and operate efficiently over a wide range of flow levels. We support funding this program at $4 million in fiscal year 1999.

During the next decade over 100 hydroelectric projects will seek new licenses from the Federal Energy Regulatory Commission (FERC). Many of these projects were originally licensed over 50 years ago. Newly imposed licensing conditions can cost hydro projects 10 to 15 percent of power generation. A new, improved turbine could help assure any environmental conditions imposed at relicensing in the form of new

conditioning, fish passages or reduced flows are not accomplished at the expense of energy production. This is particularly important due to the increasingly competitive electric market in which utilities operate today. Flow levels will affect the economics of each of these projects and many will be unable to compete if the current trend toward flow reductions continues.

The Advanced Hydropower Turbine Program is planned in three phases: (1) design development; (2) model design and testing, and (3) development of the final prototype. It is important that the prototype be in place in order to accommodate the many hydroelectric projects that will be up for relicensing after the year 2000.

FEDERAL POWER MARKETING ADMINISTRATIONS (PMA'S)

We appreciate this subcommittee's continued support of the federal power program.

APPA favors increased efficiency in PMA operations. However, we believe Congress also must recognize that federal power sales cover all PMA operating expenses plus all Corps of Engineers and Bureau of Reclamation operations, maintenance, replacement and rehabilitation expenses for hydropower and repayment of the federal investment in the construction of the projects. Power sales also support many nonpower-related expenses associated with these projects. Budget "scoring" rules aside, because the PMA's charge cost-based rates, reducing discretionary appropriations to PMA's actually saves the government nothing. As appropriations are lowered, power rates fall accordingly thus reducing mandatory receipts on the other side of the ledger. APPA supports the Department of Energy's request of $234 million in fiscal year 1999 for the PMA's; this funding excludes BPA because it does not require appropriations to finance its day to day operations. Of this, the Western Area Power Administration would get $223 million; Southwestern Power, $26 million; and Southeastern, $10 million.

BPA, the biggest of the PMA's and the leading power producer in the Pacific Northwest, operates on a self-financed revolving fund basis. BPA uses borrowing authority for its capital investment activities. BPA's fiscal year 1999 budget request includes $258 million in borrowing authority for capital investment. Nearly half of the investment is for transmission services ($136 million); the proposed funding for fish and wildlife activities is $27 million and for conservation programs the request is $9 million. APPA urges the Subcommittee to support BPA's funding request.

CORPS OF ENGINEERS AND BUREAU OF RECLAMATION

More than 500 public power systems purchase power generated at U.S. Army Corps of Engineers and Bureau of Reclamation dams and marketed by the five PMA's. APPA asks this subcommittee's support in assuring adequate appropriations are provided to the Corps and Bureau for operation, maintenance, major rehabilitation, upgrading and replacement of the equipment needed at the powerhouses. The Administration has requested reductions in several of these accounts for fiscal year 1999. Unfortunately, budget realities in the past often have required the Corps and Bureau to defer upgrades and maintenance resulting in efficiency losses affecting hydropower production.

Discussions are continuing in various project areas between customers and the operating agencies seeking alternatives to relieve the stress caused by the spiraling effects of deferred maintenance. We will keep this subcommittee apprised of our progress in this regard and look forward to working with you and the authorizing committees in seeking remedies to increase efficiencies and deal with ongoing maintenance problems.

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

APPA supports the Administration's budget request of $168.9 million in fiscal year 1999 for FERC, an increase of four percent over last year. Adequate funding for the agency is particularly necessary at this time in order to provide the resources needed to continue implementation of electric utility industry restructuring and to address major issues such as open-access and stranded costs.

PREPARED STATEMENT OF JOE L. MAUDERLY, SENIOR SCIENTIST AND DIRECTOR OF EXTERNAL AFFAIRS, LOVELACE RESPIRATORY RESEARCH INSTITUTE

It is proposed that the U.S. Department of Energy participate in the National Environmental Respiratory Center. It is also proposed that the Department support development of a novel plasma-based hazardous waste treatment technology and other

research activities at the Lovelace Respiratory Research Institute important to the mission of the Department.

PARTICIPATION IN THE NATIONAL ENVIRONMENTAL RESPIRATORY CENTER

Purpose and Status of the Center

The National Environmental Respiratory Center was established through the fiscal year 1998 EPA appropriation. The mission of the Center is to catalyze, facilitate, and participate in a long-range national initiative to understand respiratory health risks from combinations of inhaled airborne environmental pollutants and occupational air contaminants. The Center's goal is to place the respiratory health risks from combined exposures to multiple pollutants in their appropriate context as a basis for regulatory and technological decision making. The Center is operated by the Lovelace Respiratory Research Institute in Albuquerque, New Mexico, and is located in the DOE-owned, now privatized, Inhalation Toxicology Research Institute (ITRI) facility, which is leased by Lovelace.

The establishment of the Center is well underway at the midpoint of its first year. The infrastructure of the Center has been developed, and the information resources are under development. Agencies, health advocacy organizations, industry stakeholders and their trade associations are being briefed on the Center and their support is being enlisted to fulfill the Center's intent as an interagency, government-industry initiative. Selection of the initial series of specific research projects is underway, and research will be initiated in this fiscal year. The goals of the Center and its research resources are being communicated to the scientific community, and collaborative projects are under development. A budget and plan of work has been prepared for the second year, the core funding for which is being requested in the EPA appropriation. The level of funding requested will maintain the core infrastructure of the Center, but will support very little research. It is expected that research funding will largely be obtained from other agencies and non-federal stakeholders.

The Department has Important Health Concerns that the Center is Ideally Suited to Addressing

Inhalation exposures occur as combined exposures to multiple agents. Concerns for the health effects of exposure to hazardous agents should be viewed as concerns for combined exposures to multiple hazardous agents. Over the years, some workers in the DOE complex have been inadvertently exposed by inhalation to hazardous radionuclides, metals, and chemicals in development, production, waste handling, and cleanup activities. Most exposures occur as combined exposures to multiple agents, rather than to single hazardous species. Further, many of these individuals received exposures to multiple hazardous agents at different times. Finally, many of these individuals have lifestyle risk factors for disease, such as tobacco and alcohol use. There is also concern for public inhalation exposures to hazardous agents as a result of DOE activities. It may be presumed that to the extent that such exposures have occurred, they have also occurred as exposures to mixtures, exposures in sequence with contact with other hazardous agents, and exposures of individual with other risk factors. The DOE workplace, for example, has involved potential for inhalation exposures to radionuclides of several types, solvents and other chemicals, smoke (during accidents involving pyrolysis or combustion), beryllium, machining fluid aerosols, and other gases, vapors, dusts, and fibers.

We know that combined exposures are an important health issue. We know that multiple agents can cause common effects, such as inflammation or cancer. We often assume that these common effects are additive, but we know that this is not necessarily the case. We know that some agents amplify the effects of others, but have little ability to predict the magnitude of amplification or to understand the amplification processes. We can presume that exposure to a mixture of hazardous agents, each within its acceptable limit, can present an unacceptable aggregate health risk, but do not know how to predict or control the aggregate risk. We continually face the possibility that an agent encountered in combination with others might be wrongly assigned sole responsibility for an adverse health effect that, in fact, resulted from the mixture or an unrecognized co-pollutant or cofactor that varied in concert with the accused agent.

Combined exposures present difficulties in estimating risk and assigning causality. Although it is broadly recognized that most exposures to hazardous agents in the workplace, general environment, and home occur as mixtures or in sequences, there has been very little research or standard-setting based on the influence of combinations of exposures on health risks. The design, conduct, and interpretation of studies of the health outcomes of combined exposures are potentially as complex as the possible range of combinations of agents and individuals. Most research in-

volves stretching investigative technologies to their limit of interpretation for even single agents; thus, there are few attempts to extend efforts to mixed exposures. Because of the limitations of the scientific and medical information, environmental and occupational pollutant concentration limits and exposure limits deal almost exclusively with single agents and are based on known or presumed health risks from the intake of each agent alone. Radiation exposure limits are one of the few notable exceptions in which the proximal agent, radiation energy, is addressed rather than the physical-chemical source of the radiation. However, exposures to radiation also occur most often in the presence of other exposures or risk factors.

The Department has poor ability to assess risk, set limits, or assign causality in cases of combined exposures. This creates two key problems: (1) protective standards may not be adequate in the face of combined exposures; and (2) agencies and the courts have little ability apportion causality of health effects among exposures occurring within and outside of the workplace, from different sources, or including exposures of personal choice. A readily-recognized example of his dilemma is the fact that health effects of occupational inhalation exposures, such as cancer from asbestos or radon, most often occur in smokers; so much so, in fact, that the existence and magnitude of significant risk in the absence of smoking is often uncertain. Following this example as a further illustration, we can predict that, of the more than 1 million "radiation workers" in DOE operations over the years, 25 percent (250 thousand) will die from cancer regardless of their workplace exposure, lung cancer will be the most prevalent type, and a significant number of cases will result in claims which will be paid, negotiated, or litigated.

The Department Should Support the Work of the Center

Lovelace has demonstrated its ability to address DOE combined exposure issues. The Institute began researching DOE combined exposures issues in 1986, funded by the Office of Defense Programs through the Albuquerque Operations Office, and has produced a number of important findings. This program focused on lung cancer risk from combined exposures to pairs of agents significant in the DOE workplace. Five studies have addressed the combination of a single simulated accidental inhalation exposure to plutonium dioxide particles and: (1) repeated external irradiation (X ray); (2) long-term cigarette smoking; (3) repeated intake of a chemical carcinogen by a non-inhalation route; (4) single inhalation of beryllium; and (5) repeated inhalation of carbon tetrachloride (chemical solvent). A study of repeated external radiation and long-term cigarette smoking is underway.

Several key findings have already been produced. Findings which have direct bearing on the estimation of risks from combined exposures and apportionment of causality include: (1) cigarette smoking markedly increases the lung cancer risk from inhaled plutonium; (2) external irradiation does not increase the lung cancer risk from inhaled plutonium; (3) a common class of chemical carcinogen (nitrosamine) taken up by a non-inhalation route does not increase the lung cancer risk from inhaled plutonium; (4) exposure to inhaled beryllium metal particles is highly carcinogenic in the rat, and increases the lung cancer risk from inhaled plutonium; and (5) liver damage from inhaled carbon tetrachloride can alter the radiation dose to liver and bone from translocation of inhaled plutonium particles, but has no interactive effect at the current exposure standard.

Through the new Center, which was intended as an interagency initiative, research to resolve the Department's combined exposure concerns can continue. The DOE combined exposures program at Lovelace served to demonstrate that such issues could be addressed successfully in the laboratory, thereby setting the stage for the formation of the National Environmental Respiratory Center. The Center was intended as an interagency effort, acknowledging that multiple agencies share concerns and responsibilities for combined exposure issues. The Department continues to have unresolved combined exposures issues, and can thus benefit by the success of the Center. It is proposed that the Department support the Center through: (1) funding combined exposures research specific to its needs; (2) contributing to the core support of the Center; (3) enlisting the Center's personnel and information resources in meeting its interagency working group obligations; and (4) waiving ITRI facility use fees for Center operations funded by other federal agencies.

INNOVATIVE PLASMA TECHNOLOGY FOR WASTE DESTRUCTION

Environmental Remediation and Waste Disposal are Important DOE Issues

The Department's Strategic Plan give high priority to environmental remediation and reduction of hazardous wastes. In addition to radioactive wastes, DOE sites contain volatile and heavy organic compounds, chlorinated hydrocarbons, contaminated materials, and mixed wastes. The Department is committed to supporting research

to "validate performance of thermal and nonthermal technologies in fiscal year 2000 for the treatment of more than 90 percent of the DOE mixed waste inventory". Reviews by the Department reveal that all current technologies have flaws and limitations which must be overcome by refinements and identification of alternate technologies.

Plasma Technology is Recognized as Having High Potential for Advancement, but Past Approaches Have Not Resolved Key Problems

Of all the thermal treatment strategies, high-temperature plasma technology has been recognized as potentially the most promising for waste destruction. Plasma arc devices have been used for generating super-high temperatures that degrade toxic wastes into atoms and ions, thus completely destroying the composition of the agent without generating toxic intermediate molecules. If this process is complete, only harmless materials remain as residues. If the waste contains radionuclides, the radioactivity is not destroyed, but the volume of the material is reduced markedly, requiring transport or storage of only a fraction of the original volume of waste.

Existing plasma technologies have some key shortcomings that have not yet been overcome. Temperatures are often unstable because the high electrical power necessary to sustain the arc is sensitive to voltage drops. The arc electrodes require considerable maintenance. Chemicals precipitate and collect on the electrodes, and the double chambers used to correct this increase the contamination factor. Finally, the electrodes are prone to burning out.

Lovelace and its Collaborators Propose that DOE Support Development of a New Plasma Technology Which Will Resolve the Present Shortcomings

Through its interests in technology transfer and the reduction of respiratory health risks from airborne pollutants resulting from waste combustion, Lovelace has joined with a small start-up technology company proposing an approach to plasma destruction of waste which resolves existing roadblocks. This technology employs plasma formation and control by radio frequency/laser coupling. Three years of research and simulation on a Cray computer have confirmed the theory for a new confined high-temperature plasma technology, and preliminary laboratory experiments have supported the practicality of developing a bench-scale trial of the device. Compared to previous approaches, higher temperatures can be developed with greater power efficiency, without high pressures, and in a volume capable of containing an entire 55 gallon drum and its contents. A new plasma confinement design will eliminate the need for a second chamber, and no toxic substances (other than residual radioactivity) will be precipitated in the device or released to the atmosphere.

Lovelace and its collaborators seek funding from DOE to design and develop the bench-scale device necessary to prove and refine the technology, which theory and preliminary work indicate will be successful. The testing of this approach is entirely consistent with the Department's mission and Strategic Plan.

NATIONAL DEFENSE RESEARCH: IMPROVED CHEMICAL AND BIOLOGICAL DEFENSES

Technology development and transfer activities supported by the Department at the Inhalation Toxicology Research Institute, operated by Lovelace, and at Sandia National Laboratories have resulted in opportunities to make significant gains in the ability to defend against chemical and biological threats. The Department a stakeholder in this issue because of threats to DOE laboratory, production, and holding and waste facilities, threats to nuclear power, and nuclear defense facilities, and the Department's national security and technology development and transfer roles.

A key problem in the development of new technology to deal with chemical and biological threats is the basic multi disciplinary nature of the required research. Detection, mitigation, and countermeasures inevitably require new microelectronic devices, laser technology, software, analytical chemistry, aerosol science, microbiological expertise, respiratory physiology, inhaled drug delivery, and infectious disease management. No single institution is expert in all of these fields.

Recognizing the importance of the chemical/biological threat, not only on distant battlefields, but also for internal national security, three New Mexico research organizations have proposed to pool their laboratory resources, technical experience, and intellectual capabilities to develop new measures to deal with these threats. LRRI, Sandia National Laboratories, and the University of New Mexico Health Sciences Center have pooled their remarkable and complementary resources to partner successfully on other issues, and are confident that their synergy can help the Department meet its security mission in the chemical/biological defense arena. All have previous experience in addressing issues key to this field.

The functions of this collaborative research team would be to evaluate threats, develop new technologies, and improve existing technologies to identify and mitigate chemical/biological threats. Key themes would be remote detection of specific agents, personnel protection, threat elimination, and treatment of affected individuals. Although not yet formalized, a consortium of these research organizations would offer significant resources to the Department.

It is proposed that the Department support the formation and activities of this unique research team.

PREPARED STATEMENT OF DAVID K. WEHE, PROFESSOR, UNIVERSITY OF MICHIGAN

The U.S. Department of Energy (DOE) has provided support to the DOE University Research Program in Robotics during the period fiscal year 1987–98 to pursue long range research leading to the: "development and deployment of advanced robotic systems capable of reducing human exposure to hazardous environments, and of performing a broad spectrum of tasks more efficiently and effectively than utilizing humans."

The DOE University Research Program in Robotics (URPR) has proven highly effective in technology innovation, education, and DOE mission support. The URPR incorporates mission-oriented university research into DOE EM's Office of Science and Technology (OST) and, through close collaboration with the DOE national laboratories, provides an avenue for applying novel solutions to problems of vital importance to DOE.

The URPR would like to thank the Committee members for their historically strong support of this successful program and are pleased that the URPR is included in the DOE Budget Request for fiscal year 1999. To ensure the continuation of this support, we respectfully request the Committee to explicitly include language endorsing the DOE request.

Request for the Committee

We request the Committee endorse DOE's request for $4 million of ER&WM (EM–50) research funds to continue the University Research Program in Robotics (URPR) progress in developing safer, less expensive, and more efficient robotic technology for environmental restoration and waste management.

DEVELOPING ADVANCED ROBOTICS FOR DOE AND THE NATION

Develop robotic solutions for work in hazardous environments and facilitate cleanup operations

The goal of this program is to advance and utilize state-of-the-art robotic technology in order to remove humans from potentially hazardous environments and expedite remediation efforts now considered essential. Established by DOE in fiscal year 1987 to support advanced nuclear reactor concepts, the project was moved to EM to support the higher priority needs in environmental restoration. The project has produced an impressive array of technological innovations which have been incorporated into robotic solutions being employed across federal and commercial sectors. This successful program demonstrates efficient technology innovation while educating tomorrow's technologists, inventing our country's intelligent machine systems technology of the next century, and meeting today's technology needs for DOE.

Robotics: Cited as strategic national technology

R&D funding is the most effective use of federal funds to promote the nation's well-being according to a 1997 published poll of respected academic economists. And, as documented in previous testimonies, key national studies (by the Council on Competitiveness, DOD, and former OTA technology assessment reports) consistently list robotics and advanced manufacturing among the five most vital strategic technologies for government support. The national need for an investment in the development of intelligent machines which can interact with their environment has been universally recognized.

Intelligent Machines: Grand Challenge for the Next Millennium

Significant advances in computing power, sensor development and platform architectures (including unmanned airborne vehicles) have opened new opportunities in intelligent machine technology. The long-range implications of intelligent mobile machines which can assist humans to perform life tasks are clearly significant and represent one of technology's Grand Challenges for the next millennium. We can expect to see intelligent prosthetic devices, smart transport vehicles, and mobile de-

vices capable of assisting or replacing the human, not only in potentially hazardous situations, but in daily life.

URPR: INNOVATION, EDUCATION, AND DOE MISSION SUPPORT

URPR Paradigm: NSB Recommendations to OSTP

In a response to a request from White House Office of Science and Technology Policy (OSTP) director Jack Gibbons, the National Science Board (NSB) released on 3/6/98 a policy paper entitled, "The Federal Role in Science and Engineering Graduate and Postdoctoral Education." The paper reaffirms the basic principle of a government-university partnership in graduate and postdoctoral education, but voices concern that the government "tends to emphasize short-term research 'products' and to de-emphasize benefits to graduate education." The Board recommends better integration of research and education, which has been the paradigm of the URPR for providing DOE mission support. A detailed summary is available on the National Science Foundation's World Wide Web site at: http://www.nsf.gov/od/pa/news/press/pr9814.htm.

URPR: Refining the Right Paradigm

The URPR instantiates the paradigm that NSB recommends for Federal investment in national S&T. The URPR's strategic mission is to make significant advances in our nation's robotic and manufacturing technology base while emphasizing: education, technology innovation through basic R&D, and DOE mission support. While accomplishments in each of these areas for DOE are detailed below, a new organizational structure being embraced by DOE EM–50 will give the URPR greater freedom to make more substantial contributions to technology areas of importance to DOE and the nation. Over the past few years, the URPR had been used largely as a collection of universities providing short-term deliverables to augment national laboratory RTDP projects. Under the new vision, the Consortium of Universities (Universities of Florida, Michigan, Tennessee, Texas, and New Mexico) are united as a powerful technology team, governed by a national Board of Directors, advised by a Technical Advisory Committee, and managed by a DOE HQ officer.

The URPR has demonstrated in earlier years that the advantages of operating as a consortium are significant: The institutions of the URPR partitioned the technical development into manageable sections which allows each to concentrate within their area of expertise (efficiently maintaining world-class levels of excellence) while relying on their partners to supply supporting concentrations. With full cooperation of the host universities, this effort naturally generated the in-depth human and equipment capital required by the EM community. Practically, the long-term distributed interaction and planning among these universities in concert with the DOE labs and associated industry allows for effective technology development (with software and equipment compatibility and portability), for a vigorous and full response to application requirements (component technologies, system technologies, deployment issues, etc.), and for the supported application of the technology.

DOE's reorganization of the URPR to its previous structure as an operating consortium will enable more substantial contributions than have been possible under its recent operating structure. Considering the remarkable achievements of URPR over its history and the enlightened commitment of EM–50 to this technology development, the URPR will be in a position to enhance its role in education, technology innovation, and DOE mission support.

Educating 21st Century Technologists

The URPR has already educated about 400 advanced degree students in the critical engineering fields, including many with earned doctoral degrees. These students have entered the work force, and help lead the industrial resurgence based on intelligent machines, advanced manufacturing technology, and related fields. Graduates from this project have built successful startup companies and made industrial technology transfers in computer vision and robotic technology (MI, TN) and medical imaging (MI), video databases (CA), and intelligent manufacturing (MI, FL, TX). We have seen a consistently strong demand for graduates educated through this project, even during past lean times.

DOE Mission Contribution—Environmental Cleanup

Since its inception, EM has recognized robotics as an essential technology to accomplish its mission. The motives for undertaking a comprehensive R&D effort in the application of advanced robotics to EM tasks in hazardous environments reflect both economic considerations, efficiency, and health and safety concerns. The RTDP is a national laboratory program which primarily applies existing technology (often commercially available) to current problems. In contrast, the URPR supports needs-

driven applied research to develop innovative and synergistic technologies in support of EM thrust areas.

URPR progress is routinely evaluated by a thorough review of technical accomplishments, and the anticipated DOE technology needs are used to set the program's directions. The URPR has consistently received high rankings for providing both outstanding technical contributions and value. Future success of this program is expected to continue based upon the Consortium's productive history.

Over the past few years, the URPR projects successfully supported the:

1. Deployment and testing of SWAMI, an autonomous inspection robot for Fernald stored waste drums,
2. Design, construction and testing of a robot to precisely map large DOE facilities, such as K–25 and K–27 in Oak Ridge, in preparation for decontamination and decommissioning (D&D),
3. Delivery of a robotic handling system for an automated chemical and radiological analysis system to Los Alamos, and
4. Remote radiation mapping of the MSRE facility at ORNL prior to D&D.

During fiscal year 1998, the URPR achievements have included:

—a system (RADDS) for remote cleanup and remediation of hazardous waste sites to reduce the time between a site-defined need and a site-delivered implementation of the robotic and/or automation hardware. The system uses simulation of robots, grippers, sensors, controllers, conveyors and other components to meet the requirements of the application, followed by direct conversion to actual controllers,

—a portable radiation imager with high efficiency and wide energy range for EM cleanup applications,

—sensors and navigation algorithms invented, built, and delivered to ORNL's D&D mapping robot to permit autonomous operation,

—a program for design, fabrication, and testing of intelligent actuators for environmental robot systems.

As shown above, these efforts are directly linked to cleanup operations in the DOE complex. During fiscal year 1999, the URPR plans to continue its focussed efforts on DOE field cleanup applications, while maintaining our commitment to research and education.

Innovation—the seed of future technology

The URPR has produced prodigious levels of innovation in research and development. While recent demonstrations reveal next-generation technologies, even more advanced capabilities are emerging from the laboratories. These include new types of locomotion, navigation techniques, sensing modalities (radiation cameras and laser imaging devices), environmentally hardened components, and dextrous open architecture manipulators. These new machines will have an unparalleled man-machine interface and inherent intelligence, with the capability of being able to integrate many diverse sensors simultaneously. These devices will evolve and inspire the intelligent machines of the future, including smart automobiles, obstacle avoidance aids for the disabled, and advanced manufacturing cells assembled on demand.

This level of innovation can also be seen in the following statistics:

—Approximately 15 patents awarded or pending.

—Over 650 technical papers published in technical journals and conferences.

—The standard technical books for vision, radiation detection and imaging, and mobile robots are authored by researchers who have worked with this project. Faculty and senior scientists dedicated to this project are internationally renowned technologists of their fields.

—A suite of world-class robots (including CARMEL, winner of the AAAI Mobile Robot Competition) serve as the research testbeds for this project. (Cousins of CARMEL have performed autonomous radioactive surveys at Savannah River and Idaho National Engineering Laboratories). Our newest innovation, OmniMate, was commercialized by HelpMate, Inc. and supplied to DOE for autonomous mapping applications in the DOE complex.

PROGRAM REQUEST

During fiscal year 1998, the URPR provided vital contributions to education and research while meeting DOE technology needs. The motivation for this project remains steadfast—removing humans from hazardous environments while enhancing safety, reducing costs, and increasing cleanup task productivity. EM–50 has recognized the URPR's role and mission and have included full funding for the URPR for fiscal year 1999. However, strong Congressional support is requested to ensure this highly successful program and its base funding remains intact and unperturbed.

Request for the Committee

To continue this vital program, we request that the Committee include the following language into the fiscal year 1999 Energy and Water Appropriations Bill:

—The committee supports the DOE Budget Request for $4 million of ER&WM (EM–50) funds to continue the University Research Program in Robotics (URPR) progress in safer, less expensive, and more efficient robotic technology for environmental restoration and waste management.

PREPARED STATEMENT OF THE AMERICAN SOCIETY FOR MICROBIOLOGY

DEPARTMENT OF ENERGY

The American Society for Microbiology (ASM), the largest single life science organization in the world, comprised of more than 42,000 members, appreciates the opportunity to provide written testimony on the fiscal year 1999 budget for the Department of Energy's (DOE) research programs.

The ASM represents scientists who work throughout academic, governmental and industrial institutions worldwide. Microbiologists are involved in research to improve human health and the environment. The ASM's mission is to enhance the science of microbiology, to gain a better understanding of basic life processes, and to promote the application of this knowledge for improved health, and for economic and environmental well being.

The ASM strongly supports the inclusion of basic science programs within the DOE. While relatively small in terms of the overall DOE appropriation, these programs provide important fundamental discoveries that establish the foundation for subsequent developments in biotechnology related to energy and the environment. It is imperative for the United States to maintain a strong science budget that supports basic research.

Along with enhanced appropriations to fund specific program areas, it is important that the DOE receive increases in administrative budgets to properly staff and manage fundamental science programs. Investments in well-managed basic and applied science programs can produce long term benefits. Over the past decade, scientific research has become more interdisciplinary. It is essential that DOE have the resources necessary to adapt to these changes in science and to hire the necessary experts to manage programs effectively. This will allow the Agency to make educated program and funding decisions based on cross-disciplinary scientific expertise.

Many DOE scientific research programs share the common goal of producing and conserving energy in environmentally responsible ways. Areas of research include basic research projects in microbiology, as well as, extensive development of biotechnological systems to produce alternative fuels and chemicals, to recover fossil fuels, to improve the refinement process of fossil fuels, to remediate environmental problems, and to reduce wastes and pollution.

Last year, the United States signed the Kyoto Protocol and committed to reduce the nation's carbon dioxide emissions to eight percent below 1990 levels. The Administration has proposed a government-wide Climate Change Technology Initiative (CCTI) to implement this commitment and help to find solutions to problems associated with greenhouse gasses. The President's budget proposes $331 million to the DOE for this initiative. These funds will be allocated throughout the Agency's programs including the Office of Energy Research (OER). Biological research is slated to receive a significant boost from this initiative. As part of the CCTI, DOE will support microbiological research on carbon sequestration including microorganisms that consume carbon, and other microbes that assist in the development of carbon free energy sources. This research will be supported throughout the program offices of the OER. Combating global warming is critical and these programs will make significant contributions to the long-term battle to maintain the quality of our atmosphere.

The ASM is encouraged by the President's request for DOE's science programs. The Administration's proposed budget for fiscal year 1999 requests $18 billion for the DOE overall. Included in that request is $2.7 billion for programs supported by the OER. The following comments will highlight research supported by the Office of Health and Environmental Research (OHER), and the Division of Energy Biosciences in the Office of Basic Energy Sciences (BES). The following statement makes recommendations related to genomics, bioremediation, ocean science, and basic energy science. Federal investment in these programs today will help to ensure fundamental research to find solutions to future environmental and energy problems while maintaining U.S. scientific leadership worldwide.

GENOMICS

DOE supports the Microbial Genome Program (MGP) within the Office of Biological and Environmental Research (BER). The program, developed in 1994 as a compliment to the Human Genome Program, already provides complete sequence information on important microorganisms. The Administration has proposed $13 million for fiscal year 1999, about $7 million more than last year. About $5 million of this increase are new funds associated with the CCTI. Last year the ASM urged Congress to double the microbial genome budget in an effort to increase research in this critical area of science.

The ASM recommends that Congress provide $15 million, for the MGP. A base funding level of $10 million to sequence critical organisms within the scope of DOE's mission should be provided to the MGP. Funding from the CCTI should serve as an add-on to the program for specialized sequences of organisms related to the mission of the CCTI.

Researchers supported by the MGP have already sequenced several complete microbial genomes, including ones from methanogens living in deep-sea thermal vent regions. Shortly, the genome of "Deinococcus radiodurans", a bacterium that is extremely resistant to radiation, will be completely sequenced. This sequence information provides clues into how we can design biotechnological processes that will function in extreme conditions, including ones that will generate fuels and help clean up the environment. With each new genome that is sequenced we gain a greater understanding of microbial evolution and diversity. Also, each sequenced genome has revealed how much more science needs to learn. Thirty percent of each genome has no known function. This presents a great challenge for scientists to unravel the genomes significance for understanding microbial evolution and the potential for biotechnological developments.

The MGP contributes to the overall health and environmental quality of the nation by researching solutions to some of the nation's most complex environmental problems such as toxic waste cleanup and processing, future alternative energy production and efficiency, and the reduction of carbon gasses from our atmosphere. This program provides essential research in biotechnology, and a better understanding of the energy process, and bioremediation. The MGP is at the cutting edge of microbiological research. As part of the CCTI the MGP will support more research into methane and hydrogen production and reduction. As scientists learn more about the diversity of microorganisms, especially those that live in extreme conditions, they learn more about how to develop newer, cleaner forms of energy, technologies to clean up the waste associated with energy production and consumption, and protective technologies from radiation.

The DOE has established the necessary peer review and advisory program to the MGP to ensure that the microorganisms selected for sequencing will yield the greatest scientific informational benefits and that the research is of the highest quality. Important new knowledge has been gained from each and every genome sequenced. The ASM believes that even greater benefits would be achieved if the program were funded at the requested level of $13 million and strongly urges this Subcommittee to consider adding these funds to the Microbial Genome Program for support of competitive research.

The DOE has expanded its research into microbial diversity, and will begin sequencing the genomes of bioremediative microorganisms. Due to a scientific approach called sequence leveraging, a practice of using previously sequenced microbes to build the sequences of similar non-sequenced microbes, the results of these initiatives will be more readily available to other scientists, through the use of databases. All genome sequences supported by the MGP are available to the public and as such contribute to further scientific exploration. The public disclosure of genomic data will aid scientists in their research into new biotechnologies such as bioremediation, a technology that is proving to be a practical and a cost-effective way of eliminating pollutants.

BIOREMEDIATION

The MGP's research into bioremediative microoganisms compliments the research supported by the DOE's Natural and Accelerated Bioremediation Program (NABIR) and other DOE bioremediation research initiatives. The Administration's request for DOE bioremediation research is $28.0 million for fiscal year 1999. This program is level funded from fiscal year 1998. For fiscal year 1999, included in this request is nearly $22 million for the NABIR program, and $1.5 million for the Microbial Genome Program. The ASM supports the Administration's request for bioremediation research. However, the ASM believes that greater benefits will be achieved if the

NABIR program is increased to $30 million, providing about $41 million for bioremediation overall.

Bioremediation scientists are searching for cost-effective technologies to improve current remediation methods to clean up DOE's contaminated sites. This research will lead to new discoveries into reliable methods of bioremediation of metals and radionuclides as well as organic pollutants in soils and groundwater. The fiscal year 1998 appropriation included funds for one field research site. The ASM's recommendation of $30 million for NABIR will provide the funds necessary to sustain two field research sites. The NABIR program supports real world field research that works to determine the practical applications of bioremediation for cost-effective cleanup of pollutants at DOE sites. Field research is a critical phase of this program. The ASM strongly recommends that additional funding be allocated to this effort with the aim of ensuring that two field research sites be established that span the breadth of pollution problems faced by the sites managed by the DOE and others.

OCEAN SCIENCE

Other exciting new microbiological research supported by BER is in the Ocean Sciences Program. The Administration's budget request includes $2.1 million for this program in fiscal year 1999. Microbiological research supported by the Ocean Sciences Program investigates the effects global change has on marine microbes. The findings from this program will be crucial to understanding the responses of marine biological systems to changes in their environments. The ASM fully supports the Administration's request for this program.

BASIC ENERGY SCIENCES

The Administration's requested funding level for the Office of Basic Energy Sciences is $836.1 million for fiscal year 1999. This funding level is an $168.8 million increase over last year. BES funds important microbiological basic research programs through the Energy Biosciences Division. In fact, about one-fifth of all BES funds go directly to support research at academic institutions across the nation.

For fiscal year 1999, the budget proposal has funded the Energy Biosciences Division within the BES at about $32 million, an increase of $5.1 million over last year. This program focuses on research in both microbiological and plant sciences. The exciting research supported by DOE's Energy Biosciences will lead to new discoveries in producing energy without risk to the environment and finding effective methods of cleaning up existing contamination. This year Energy Biosciences will focus on research into the reduction of carbon emissions as part of the CCTI. One area related to microbiology will be research into carbon consuming microorganisms.

Other microbiological research supported by this program includes biotechnology related to energy, mechanisms occurring in microorganisms, biofuel production, and technologies to aid in the restoration of contaminated environmental sites. More basic research on hydrogen, methane, and ethanol production is needed if we are to meet future energy needs and to have fuels that will minimize environmental pollution. The ASM supports the proposed funding level for this program and urges Congress to allocate these funds for the Energy Biosciences.

CONCLUSION

DOE's research programs help to keep the United States at the forefront of scientific discovery and competitive in the world marketplace. The ASM encourages Congress to maintain its commitment to the Department of Energy research programs to maintain the United States' leadership in these vital industries and continue our commitment to a strong basic science program.

The debate over the effect of greenhouse gasses on the environment is complex. While some may disagree about the severity of the greenhouse problem, most will agree that the reduction of industrial gasses into the atmosphere will provide more long-term environmental benefits than continuing to increase the rate these gasses enter our atmosphere. In Kyoto, the United States committed to significantly reduce carbon dioxide emissions into the atmosphere. DOE's basic research programs support research that investigates solutions to existing and future environmental and energy problems. Through the leadership of DOE's basic research science in clean fuels, and environmental processes, new technologies will be developed to enable the U.S. to be better prepared to meet environmental problems and the economic challenges associated with them.

In summary, the ASM makes the following recommendations:

The ASM believes that it is imperative for the United States to maintain a strong science budget that supports basic research.

It is essential that the DOE receive sufficient increases in administrative budgets to properly staff and manage biological science programs.

The ASM recommends that Congress provide $15 million, $9 million more than fiscal year 1998 funding, for the Microbial Genome Program. The MGP should have a base funding level of $10 million to sequence critical organisms within the scope of DOE's mission. Funding from the Climate Change Technology Initiative should serve as an add-on to the program for specialized sequences of organisms related to the mission of the CCTI.

The ASM's recommends $30 million be appropriated for the NABIR program to provide the funds necessary to sustain two field research sites and an increase in bioremediation research. This recommendation would bring DOE's overall bioremediation budget to $41 million for fiscal year 1999.

The ASM fully supports the Administration's request for $2.1 for the Ocean Sciences Program.

The ASM recommends the Energy Biosciences Division within the BES receive $32 million for fiscal year 1999, an increase of $5.1 million over last year's funding.

Thank you for the opportunity to provide testimony in support of the DOE basic life sciences programs. The ASM hopes that its recommendations will be useful to the Subcommittee. We would be pleased to respond to any questions.

PREPARED STATEMENT OF THE BUSINESS COUNCIL FOR SUSTAINABLE ENERGY

INTRODUCTION

The Council is pleased to offer testimony to the Energy and Water Subcommittee of the Senate Appropriations Committee on the proper role for government in promoting energy research and development, as it relates to renewable energy programs at the Department of Energy (DOE).

The Council was created in 1992 and is comprised of businesses and industry trade associations which share a commitment to pursue an energy path designed to realize our nation's economic and national security goals through the rapid deployment of efficient, non- and low-polluting energy technologies. Council members include a diverse range of manufacturers, energy producers, suppliers of energy resources and energy service companies. Our member companies range in size from Fortune 500 enterprises such as Enron, Honeywell, Maytag and Southern California Edison, to small entrepreneurial businesses, to industry trade associations representing the natural gas, wind, solar and insulation industries.

FEDERAL PROGRAMS TO PROMOTE RENEWABLE ENERGY RESOURCES

The Council recognizes that it is the suppliers and users of energy—not the federal government—that ultimately will decide which energy sources will meet our future energy needs. However, the federal government does play an important role in helping the private sector share the risk of investing in deployment of clean technologies that, while at or near economical viability, face financial, informational or institutional obstacles to their wide market availability.

WIND

World markets for wind energy are growing at an unprecedented rate. Figures for 1997 indicate that total worldwide installed wind capacity stands at 7,758 megawatts (MW), up 25 percent from a year earlier. This figure includes approximately 1,524 MW installed in 1997. The Council supports DOE's total request of $43.5 million for wind energy research and development in the fiscal year 1999 to fund projects in turbine research ($24.8 million), cooperative research ($8.0 million recommended) and applied research ($10.7 million). This level of funding is particularly important to continue development of next generation wind turbine technologies needed to keep the U.S. industry competitive in restructured domestic markets and in the fast growing, highly competitive international markets.

Although wind is making headway in the electric power generation market, U.S. markets for wind energy have plateaued, with only 11 MW installed in 1997, 10 MW in 1996 and 41 MW in 1995. Clearly, there are opportunities to reverse this recent decline in wind energy production and resume growth in the world markets as wind power costs continue to fall. The goal of cost-shared DOE/Wind Industry efforts is to develop the next generation aimed at delivering electricity in the range of 2.5 cents/kWh.

The Council supports DOE's programs focusing on small wind turbines up to 50 kW, including the cost-shared Advanced Small Wind turbine project. Small wind turbines are used for smaller on-grid and off-grid applications where the value of

the energy is high. Presently, U.S. small wind turbine manufacturers are the world's leading suppliers but they must rely on exports for approximately three-quarters of their business. The absence of domestic markets makes this industry vulnerable to foreign competition, particularly from countries with more developed markets. For this reason, the Council is encouraging DOE to expand its small wind turbine market development programs by creating initiatives similar to PV–COMPACT, PV–BONUS and the Million Solar Roofs program. Such initiatives would lower the costs of small wind turbines, create thousands of new jobs and give more opportunities for the marketplace to choose the most competitive small-scale renewable energy technologies.

The DOE has also been effective in helping U.S. small wind turbine companies overcome barriers to important international markets. While the DOE expenditures in this area have been very modest, support work by the National Renewable Energy Laboratory in the areas of wind resource studies, economic analyses and pilot projects has created substantial new markets in South America, Asia and Russia. Throughout the world, rural villages are being electrified or provided with clean water by small wind turbines exported from the U.S., at costs that are lower than the conventional alternatives of extending the grid or running diesel generators.

Funding for Cooperative Research and Testing will provide support for industry testing at the National Wind Technology Center (NWTC) in Rocky Flats, CO. This will allow for continued development of a U.S.-based certification capability for wind energy technologies. Ultimately, streamlined certification criteria will make it easier for U.S. businesses to market and sell American-made wind turbine technologies in international markets.

The main focus of the applied research program is development of models to better understand aerodynamics (through wind tunnel tests), fatigue damage prediction and structural reliability capabilities. Modeling and code design work is underway at both the National Renewable Energy Laboratory (located in Golden, CO) and the Sandia National Laboratory (New Mexico).

More and more electric utilities are becoming interested in generating power from large-scale wind power plants. The global market for wind power is expected to further grow over the next few years. New wind power markets are driven by the fact that at least one-third of the world's population—over 2 billion people—do not have access to reliable energy. Maintaining a U.S. presence in this growing industry is a valuable investment of federal resources—one that will pay off many times in the next several decades.

The global wind energy market has been growing at a remarkable rate over the last several years and is the world's fastest growing energy technology. The growth of the market offers significant export opportunities for U.S. wind turbine and component manufacturers. The World Energy Council has estimated that new wind capacity worldwide will amount to $150 to $400 billion worth of new business over the next twenty years. Experts estimate that as many as 157,000 new jobs could be created if U.S. wind energy equipment manufacturers are able to capture just 25 percent of the global wind equipment over the next ten years.

SOLAR ENERGY

The United States currently leads the world in the diverse portfolio of solar technologies: photovoltaics (PV) for manufacturing, thin films and energy services, solar thermal power in advanced concentrations (solar power towers, parabolic troughs, and dish-engines) and solar buildings in integrated systems and energy services delivery. However, our international competitors are positioning themselves to take market share from the U.S. in vast, multi-billion dollar world markets, as a result of strong support provided by their respective governments—especially in Japan and Germany—through a variety of aggressive development and deployment programs. Maintaining our lead will require strong and focused U.S. government action, not only to support international activities but also to secure a position in growing domestic markets.

Solar technologies available today include PV, solar water and pool heating, solar process heating and solar thermal power technologies. Faster integration of solar energy systems in both supply-and demand-side applications in our domestic economy, combined with support for increased exports of U.S. solar technologies, will have the parallel benefits of creating thousands of new high-technology manufacturing jobs while improving our environment. The Council supports the trend toward market-driven, industry cost-shared programs designed to leverage federal dollars with private-sector participation to enhance private-sector understanding and use of these technologies.

Improving conversion efficiency of solar panels and reducing manufacturing costs will play a key role in sustaining U.S. dominance in the area of PV. The Council supports the DOE's photovoltaic system program. PV programs are among the best leveraged (the PV–COMPACT program, for example, leverages $4 and $5 for every federal dollar expended) in DOE. Our two most formidable competitors, Japan and Germany, are outspending DOE's investment in PV research and development and PV commercialization programs. While U.S. industry is exporting a significant amount of its products to these countries, most expect this surge in demand to rapidly diminish as in-country manufacturing capabilities are increased. As an example, the Japanese Ministry of International Trade and Industry has set a domestic deployment goal of 400 megawatts of PV by the year 2000 and its manufacturers are responding to the challenge.

Japanese manufacturers are expected to expand their annual production capacity four-fold to 80 megawatts over the next three years. Not only will this expansion allow the Japanese industry to meet its domestic demand for PV, it will enable Japan to overtake the U.S. in terms of global market share. The Council also supports the Administration's Million Solar Roofs Initiative (MSR).

The Council supports DOE cost-shared initiatives in R&D (thin films and other advanced materials, manufacturing and other solar initiatives which address these issues. Equally important is the concept of building integrated PV programs where PV manufacturers, systems integrators and utilities are working together to reduce the cost of PV generated electricity. The Council also supports the Department's PV–COMPACT program. PV–COMPACT is a collaborative effort involving more than 80 electric utilities, representing over half the electricity produced in the U.S., and other interested organizations to garner the economic, commercial and environmental benefits of PV technologies.

PV's and other solar technologies offer the U.S. environmentally benign and cost-effective energy supply options in a variety of market applications. The market viability of these technologies is demonstrated in growing private sector interest in developing new manufacturing facilities related to solar industries. In the area of PV production alone, the last three years have witnessed six U.S. companies—including Council members United Solar Systems Corporation and Amoco/Enron Solar—announce plans to construct new photovoltaic plants. This activity is a unique example of DOE funding encouraging significant private-sector investment that creates new jobs. The Council strongly urges Congress to continue its support of public/private partnerships that help ensure that U.S. companies can compete effectively in rapidly emerging world renewable energy markets.

The Council supports DOE's Solar Thermal Buildings program, a research and development program focusing on materials and components for solar water and space heating technologies for building applications. Based at the National Renewable Energy Laboratory and the Florida Solar Energy Center, the program also has a strong technology standard and certification component. Activities in fiscal year 1999 should include ongoing cost-shared technology validation projects, laboratory R&D and customer-oriented applied R&D of solar building technologies with universities and industries.

The Council supports the Solar Thermal Electric and Process Heat programs, an R&D program on materials and components with a heavily cost-shared technology validation component. Over the past five years, the primary program focus has been collaboration with industry to develop advanced solar thermal electric technologies to the point of commercial readiness.

RENEWABLE ENERGY PRODUCTION INCENTIVE

As part of the Energy Policy Act of 1992 (Sec. 1212), the Congress passed the Renewable Energy Production Incentive (REPI) to encourage the development of renewable energy projects in tax-exempt municipal utilities. This program has been successful in helping municipal utilities such as Sacramento Municipal Utility District develop wind and solar generating facilities. We strongly support the Administration's request of $4.0 million as a modest, cost-effective step toward renewable energy project development.

INTERNATIONAL ACTIVITIES

Finally, the Council would like to offer its support of federal programs designed to help open important international markets for renewable energy technologies. The Council is extremely supportive of the fiscal year 1999 increases in funding for international energy programs such as the International Solar Energy Program.

The developing world—Eastern and Central Europe, the former Soviet Union, Asia, Africa and Latin America—presents tremendous opportunities for the deploy-

ment of renewable energy technologies. Renewables offer great flexibility to developing countries looking for economically viable, reliable and clean energy supply options that can be used to serve growing metropolitan areas and remote rural regions where power is otherwise unavailable. Renewables can also help support the development of commercial activities such as agriculture and telecommunications through remote power source applications. Competition in rapidly growing developing country markets is intense; U.S. renewables manufacturers face the dual obstacles of competition from conventional energy sources and foreign renewables manufacturers buoyed by government assistance.

In this regard, it is important to note that major U.S. competitors are now making aggressive moves into the renewables market. When measured against the relative size of their economies, Japan, Germany and Sweden are each now making larger government R&D investments in renewables than is the U.S. In fact, the U.S. taxpayer spends a lower portion of its R&D budget on energy than any other taxpayer in an industrialized, market-based economy.

U.S. government assistance in identifying market opportunities, providing education and training for energy decision-makers in the developing world and supporting demonstrations of renewable technologies in overseas applications promises to help ensure that U.S. renewables manufacturers will be successful in capturing market-share throughout the expanding global market for clean energy technologies and services.

CONCLUSION

Promoting research, development and validation of emerging renewable energy technologies will result in the near-term creation of thousands of new jobs, a stronger economy, enhanced export opportunities for domestic manufacturers and a cleaner environment. DOE's budget request continues federal emphasis on developing low- and non-polluting energy technologies and services as a means of achieving these goals. It utilizes cost-shared collaboratives with industry to leverage limited federal funds in recognition that cooperation with industry is vital for addressing market imperfections impeding the widespread use of renewables. The Council strongly supports this approach and urges Congress to continue its support of federal research, development and validation programs for renewable energy technologies.

PREPARED STATEMENT OF W. RON ALLEN, PRESIDENT, NATIONAL CONGRESS OF AMERICAN INDIANS

INTRODUCTION

Good morning Chairman Domenici, Vice-Chairman Reid and distinguished members of the Appropriations Subcommittee on Energy and Water Development. Thank you for the opportunity to present testimony regarding the President's budget request for fiscal year 1999 Indian programs and services. My name is W. Ron Allen. I am President of the National Congress of American Indians ("NCAI"), the oldest, largest and most representative Indian advocacy organization in the nation, and Chairman of the Jamestown S'Klallam Tribe located in Washington State. The National Congress of American Indians was organized in 1944 in response to termination and assimilation policies and legislation promulgated by the federal government which proved to be devastating to Indian Nations and Indian people throughout the country. NCAI remains dedicated to advocating aggressively on behalf of the interests of our 230 member tribes on a myriad of issues including the critical issue of adequate funding for Indian programs.

THE PRESIDENT'S FISCAL YEAR 1999 BUDGET REQUEST

Department of Energy

The Department of Energy (DOE) manages programs to mitigate and remediate ceded and former Indian lands contaminated by the Cold War legacy. However, funding for these programs are inadequate for activities such as: tribal involvement in decision- making processes; shipping of high and low level radioactive waste through Indian country whose jurisdictions do not have adequate emergency response programs in place to protect people, lands and resources; and, siting of a permanent repository for spent nuclear on former traditional lands under an arbitrary policy which does not involve local tribes but supports non-Indian state and county governments for oversight activities.

The DOE Office of Civilian Radioactive Waste Management (OCRWM) is performing scientific and technical studies at Yucca Mountain on the Nevada Test Site for a proposed high-level spent nuclear fuel and radioactive waste permanent repository. The Nevada Test Site is within the traditional homelands of the Shoshone and Paiute peoples whose culture, environment, and health already has been impacted by federal government-sponsored atomic testing and other activities. However, DOE–OCRWM did not request fiscal year 1999 funding for oversight activities for the tribes indigenous to this area. The fiscal year 1999 budget request of the DOE–OCRWM program is $380 million from which $16 million is for the state of Nevada, nine Nevada counties, and one California county (designated local units of government under the Nuclear Waste Policy Act of 1987, as amended [Public Law 100–203]) for oversight activities at Yucca Mountain. (Under the current fiscal year 1998 budget, the ten counties are receiving $5 million and the area tribes are not included in this allocation). We ask that this Committee ensure that funds are made available for tribal involvement and examine DOE's arbitrary policy of ignoring the tribes who remain in their homelands but are left out of the oversight process at Yucca Mountain.

The NCAI Nuclear Waste Program, funded through a DOE–OCRWM cooperative agreement, is a national information dissemination effort to provide tribal governments with updates on the implementation of the Nuclear Waste Policy Act of 1982 (Public Law 97–425). The long-range issues and impacts to Indian country are significant and national in scope, but tribes do not have adequate staff or resources to track this program. This year, the NCAI Nuclear Waste Program operated under funds from a renewed five-year cooperative agreement. The Program budget is almost at its lowest funding level since its inception in 1982 and is slated to stay at the fiscal year 1999 requested funding level of $148,000 in the out years. Considering inflation, cost of living and other factors, continued level funding results in further reductions annually. In order to sustain a viable program and provide tribal leaders with relevant and current information and assist in the interactive DOE process, NCAI requests increased DOE–OCRWM annual funding to the NCAI cooperative agreement as part of its trust responsibility to keep tribes informed on programmatic impacts and maintain an open dialogue with impacted tribal communities.

The Office of Nuclear Energy, Science and Technology has requested $10 million in fiscal year 1999 for research and development collaboration to refurbish and upgrade those nuclear utilities whose licenses will soon expire and will have to apply to the Nuclear Regulatory Commission for relicensing. This request reflects a 44 percent increase for nuclear energy research and development. We request the DOE direct a portion of this funding to be shared with tribes within the 10-mile Emergency Planning Zone and the 50-mile Ingestion Pathway Zone around commercial nuclear reactors.

Under the Office of Environmental Management Office of Public Accountability (EM–22), nine tribes have cooperative agreements to participate in site cleanup and waste management oversight activities. The current fiscal year 1998 tribal allocation of $4.2 million is $1 million less from the fiscal year 1997 authorization. The fiscal year 1999 EM–22 budget has been reduced by 20 percent and it is not clear whether tribal budgets will stay at level funding. Adequate tribal program funding has always been a problem despite the fact that many federal sites slated for cleanup are former tribal lands or ceded territory and contain significant cultural sites. DOE–EM officials have suggested they are working to avoid negative impact on tribal budgets. We request an increase in tribal funding and ask this Committee to ensure that the DOE–EM not undermine these small tribal allocations.

The Office of Energy Efficiency and Renewable Energy (EERE) Solar and Renewable Resources Technology budget supports research and development programs in energy efficiency and renewable technologies in utility, building transportation, and industry sectors. Part of the EERE Solar Program Support budget request is for $10 million for a 5-year Open Solicitation for Renewable Energy Technologies. The program provides up to $3 million for tribes in the open competition for deployment of renewable energy. The fiscal year 1999 request includes $4 million to develop a fish-friendly turbine. We support this effort and ask this committee's support on this budget category.

CONCLUSION

Mr. Chairman, we urge the Congress to fulfill its fiduciary duty to American Indians and Alaska Native people and to uphold the trust responsibility as well as preserve the Government-to-Government relationship, which includes the fulfillment of health, education and welfare needs of all Indian tribes in the United States. This

responsibility should never be compromised or diminished because of any Congressional agenda or party platform promises. Tribes throughout the nation relinquished their lands as well as their rights to liberty and property in exchange for these ongoing services as well as this trust responsibility. The President's fiscal year 1999 budget is a positive step towards acknowledging the fiduciary duty owed to tribes.

We ask that the Congress consider the funding levels in the President's budget as the minimum funding levels required by Congress to maintain these services and the federal trust responsibility. The consensus of Indian country is that the federal government's budgetary process has failed to provide for effective services and minimum to raise the living standards of Indian communities consistent with non-Indian communities. In order for federal government to reasonably expect tribal government to truly achieve the self-determination, self-governance and self-sufficiency goals mutually identified by the federal government and the tribal governments will not be achieved unless meaningful increases are provided for Indian programs and services.

Mr. Chairman, this concludes my statement. Thank you for allowing me to present for the record, on behalf of our member tribes, the National Congress of American Indians' initial comments regarding the President's fiscal year 1999 budget.

PREPARED STATEMENT OF JEFF SEEMANN, PROJECT DIRECTOR, NEVADA NATIONAL SCIENCE FOUNDATION EPSCOR PROJECT

Mr. Chairman: I am Jeff Seemann, Project Director of the Nevada National Science Foundation EPSCoR Project, and Chair of the Department of Biochemistry at the University of Nevada, Reno. I am submitting this statement on behalf of the eighteen states [1], plus the Commonwealth of Puerto Rico, that are eligible to participate in the Experimental Program to Stimulate Competitive Research (EPSCoR).

The Coalition of EPSCoR States supports the Energy Department's budget request for EPSCoR, but we respectfully urge the Subcommittee to consider appropriating an additional $3 million for this productive program. The Department request for $6.815 million is included in the Basic Energy Sciences budget.

The Experimental Program to Stimulate Competitive Research (EPSCoR) is a research and development program established by the National Science Foundation. Through a merit review process, EPSCoR is improving our Nation's science and technology capability by funding research activities of talented researchers at universities and non-profit organizations in states that historically have not received significant Federal R&D funding. EPSCoR helps researchers, institutions, and states improve their research capabilities and quality in order to compete more effectively for non-EPSCoR research funds. EPSCoR is a catalyst for change and is widely viewed as a "model" Federal-state partnership.

In 1992 Congress authorized the Energy Department to conduct an EPSCoR program in Section 2203 of the Energy Policy Act (Public Law 102–486). The Department designed its EPSCoR program based upon the National Science Foundation's model developed with the overriding purpose of enhancing the capabilities of the eligible states to conduct nationally competitive energy-related research and to develop science and engineering manpower to meet current and future needs in energy-related areas.

Building a world class scientific research base in Nevada has been one of the major goals of our EPSCoR Program. The foundation for building this research enterprise will always be the hard work of our talented science and engineering faculty in the University and Community College System of Nevada (UCCSN). One of the major objectives in growing the research competitiveness of our faculty is to build a solid base of infrastructure that supports their research activities. EPSCoR has been and will continue to be a major catalyst in building the research infrastructure in Nevada. It operates on several principles:

—to stimulate high quality research;
—to promote cooperation across traditional disciplinary lines and across institutional lines;
—to build permanent, systematic improvements in the research environment; and
—to obtain funding from non-EPSCoR sources to sustain research initiated through the EPSCoR program.

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[1] Alabama, Arkansas, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, North Dakota, Oklahoma, Puerto Rico, South Carolina, South Dakota, Vermont, West Virginia, and Wyoming.

Nevada's DOE EPSCoR project was established in October 1994. It was one of nine states selected to receive grants following merit-based competition. The other states that currently hold DOE awards are Alabama, Kentucky, Louisiana, Maine, Montana, Puerto Rico, South Carolina and Wyoming. Each state must match its DOE grant with state, university or other non-federal funds.

The current DOE EPSCoR grant to Nevada is for $3,920,000 over four-year period. This grant is matched with funds from participating units of the University and Community College System of Nevada (UCCSN). The purpose of our DOE EPSCoR program is to improve capabilities and production of high quality research in order to help serve the needs of DOE, the nation, and the state. The Nevada DOE EPSCoR program encompasses the following components, all of which have been established and are now operating smoothly and productively.

There are two primary focuses of our project. One is the Chemical Physics Research Cluster that encompasses the activities of 9 faculty, 3 postdocs, 7 graduate students and 9 undergraduates at the University of Nevada, Las Vegas (UNLV) and University of Nevada, Reno (UNR) working on three related research projects. This cluster is studying chemical physics processes with applications ranging from understanding hot, dense plasmas to developing short-wavelength lasers. Researchers in this cluster have developed unique opportunities to work with four of the Department's National Laboratories, Sandia National Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Lawrence Berkeley National Laboratory.

I should note that one of our young faculty members, Dr. Bruno Bauer, a Presidential Young Investigator award winner, has garnered a $2 million "High Density Z-Pinch" fusion energy device that has been transferred to UNR from Los Alamos National Laboratory. It will be used to investigate fundamental questions in plasma and atomic physics, to advance techniques of radiography, and to develop practical applications in medical, materials and environmental sciences.

The second research cluster focuses on Responses of Desert Vegetation to Elevated Atmospheric Carbon Dioxide. It supports the work of twelve faculty, 5 postdocs, 7 graduate students and 10 undergraduates at UNR, UNLV, and the Desert Research Institute (DRI). A substantial portion of the DOE EPSCoR funding for this cluster has been utilized to establish a dedicated state-of-the-art facility on the Nevada Test Site to study the effect of 21st century atmospheric carbon dioxide concentrations on desert ecosystems. This is the Nevada Desert Free Air CO_2 Enrichment Facility or FACE, an excellent example of the kind of scientific infrastructure building that EPSCoR is designed to stimulate. It is the only one of its kind in a desert environment.

The research conducted by this cluster is particularly important to Nevada. It is well-established that the levels of carbon dioxide in the atmosphere have been increasing steadily, primarily as a result of consumption of fossil fuels. The percentage has increased by 30 percent since the pre-industrial era, and will double by the end of the 21st century. The research is aimed at determining what effect these increasing carbon dioxide levels will have on desert ecosystems. In a desert, plants are already under a great deal of stress from heat and from limited water. It is of great interest to Nevada to determine the response of desert ecosystems to increased carbon dioxide levels. The FACE facility came about as a result of coordination between the Energy Department, the National Science Foundation, Nevada EPSCoR, and Brookhaven National Laboratory. It has been critical to the support of increasing the knowledge base of this research.

There also is a human resource development component of our DOE EPSCoR project. Operating primarily at UNR and UNLV, it also has major outreach activities involving DOE–NV Education Outreach and Office of External Affairs, and Nevada K–12 and Community College institutions.

The Energy Department conducted a formal review of our research efforts in 1997 and determined to extend support for our clusters with $1.5 million for another two years.

In May, the Department, in conjunction with representatives of the Federal agencies who sponsor EPSCoR programs, hosted workshops and a round table meeting at Argonne National Laboratory. The program included a series of workshops to promote the formation of collaborations between the faculty from the EPSCoR states and the scientific and engineering staff at the national laboratories and facilities. The Coalition found this to be a successful first session and encourages the Department to continue to host such events.

Recently the Office of Energy Research, acting through the DOE EPSCoR office, initiated another new program to support collaborative partnerships between academic or industrial researchers from eligible states and DOE's National Laboratories, facilities, and centers. Undergraduate and graduate students who are active

members of the research teams were encouraged to apply to spend a summer or academic year at a national laboratory or DOE facility. This initiative will further efforts to enhance the capability of EPSCoR states to conduct nationally competitive energy-related research and to develop science and engineering manpower in energy-related areas to meet current and future needs. In addition, it helps DOE to recruit young scientists and engineers.

These are the types of activities the Coalition believes the Department should strengthen and expand. This is why we believe additional funds should be made available for fiscal year 1999. Increased funding would also permit DOE to select for implementation grants more than the two or three states contemplated in the budget.

Given the success of the EPSCoR programs in Nevada, it is not surprising that we are very interested in and enthusiastic about the future of the DOE EPSCoR program. It has been our experience that the EPSCoR programs yield a return far beyond the original investment. EPSCoR allows the states to accomplish more than is possible through the regular research programs. It has helped Nevada attract and retain young researchers, such as Bruno Bauer, who are able to demonstrate through EPSCoR support of their research, that they have bright future in the fields of plasma and atomic physics. It has enabled Nevada to develop a unique, state-of-the-art research facility at the Nevada Test Site. This is what EPSCoR is intended to do.

At its core, DOE EPSCoR supports quality peer-reviewed research, but also builds the research infrastructure that improves our overall competitiveness. It stimulates collaboration, strategic thinking and broad scale planning, and development of a shared research vision by the state. Nevada is making good use of EPSCoR in concert with and complementary to the other agency research initiatives.

Mr. Chairman, on behalf of the Coalition of EPSCoR States, I urge this Subcommittee to continue to support the DOE EPSCoR program. Recognizing the very tight fiscal constrains this Subcommittee faces in the new era of a balanced federal budget, we request that the Subcommittee provide $10 million to the Energy Department for its EPSCoR program in fiscal year 1999 as part of the Basic Energy Sciences budget. The additional funds should be used to support new research implementation awards, support collaborations with the national laboratories, and cofund meritorious applications submitted to DOE's regular grant programs by researchers in EPSCoR states.

The Energy Department's Experimental Program to Stimulate Competitive Research is a wise and worthwhile investment of scarce public resources. It will continue to contribute significantly to efforts to build the scientific and engineering research efforts of eligible states and the Nation.

Thank you for your consideration of this request.

PREPARED STATEMENT OF KERRY L. SUBLETTE, SARKEYS PROFESSOR OF ENVIRONMENTAL ENGINEERING, UNIVERSITY OF TULSA

It is proposed that the U.S. Department of Energy support a focused, university-based program, the Integrated Public/Private Energy & Environmental Consortium (IPEC), with the goal of increasing the competitiveness of the domestic energy industry through a reduction in the cost of compliance with U.S. environmental regulations. Federal support is specifically requested as part of the fiscal year 1999 appropriation for the Department of Energy through the Biological and Environmental Research account or other source the Subcommittee may determine to be appropriate.

Last year the Congress provided $1.5 million in funding for the Integrated Public/Private Energy & Environmental Consortium (IPEC) (formerly the Integrated Petroleum Environmental Consortium) in the fiscal year 1998 appropriations bill for the Environmental Protection Agency (EPA). Specially this funding was provided for the development of cost-effective environmental technology, improved business practices, and technology transfer for the domestic energy industry. With initial funding under the Science and Technology account of EPA, IPEC will implement a comprehensive mechanism (Center) to advance the consortium's research expertise in environmental technology. The consortium includes the University of Tulsa, the University of Oklahoma, Oklahoma State University, and the University of Arkansas.

IPEC's operating practices and linkages to the independent sector will ensure that real problems in the domestic energy industry are addressed with real, workable solutions. Indeed this Subcommittee highlighted and supported these efforts by including strong support language in the committee report. We thank you for your support and would also like to express our appreciation to those members and their staff

who provided valuable advice and guidance during the last session of Congress. As envisioned and proposed by the consortium, State-level matching funds have been pledged to support IPEC, creating a true Federal-State partnership in this critical area. In fiscal year 1998, IPEC has secured a pledge of $375,000 in matching funds from the Chancellor of Higher Education of the State of Oklahoma.

IPEC officers have met with the Director of the Environmental Engineering Research Division of the EPA National Center for Environmental Research and Quality Assurance. The Consortium is working with EPA to ensure that we meet the agency's requirements for funding as a research center and the successful funding of IPEC.

IPEC is proceeding in its solicitation and review process so that we will be in a position to fund projects as soon as possible. The IPEC Industrial Advisory Board (IAB) has been formed and met for the first time on January 20, 1998. This twenty-member Board is composed of environmental professionals from the domestic energy industry and is dominated by representatives of independent producers. We are pleased to report that IPEC's Industrial Advisory Board has approved five programs for funding and more are expected in the coming months. These five projects include the following:

(1) *Intrinsic bioremediation of whole gasoline*.—This project seeks to develop a scientific basis for a risked-based approach to management of sites contaminated with gasoline. The project will investigate the mechanism and rate of the natural attenuation of gasoline via biodegradation by microorganisms which occur naturally in soil (termed intrinsic bioremediation). If all of the regulated components of gasoline can be naturally biodegraded, then contaminated sites which pose no immediate threat to human health or environmental receptors can be given a low priority for active intervention freeing precious resources to be allocated to sites where the threat is more acute.

(2) *Microflora involved in phytoremediation of polyaromatic hydrocarbons*.—Phytoremediation is the term applied to the use of plants and microorganisms that thrive in the plant's root zone to biodegrade soil pollutants such as polyaromatic hydrocarbons (PAH's). PAH's are a major class of recalcitrant pollutants and are a significant byproduct of petroleum processing and refining. PAH's are concentrated in food chains, are toxic, and some are recognized mutagens and carcinogens. This project will determine the feasibility of using plants to degrade these PAH's in contaminated soil by creating a "living cap" of plants and associated microorganisms over contaminated sites. The costs of such waste treatment are far below those required for conventional treatment such as excavation and incineration of contaminated soil.

(3) *Passive sampling devices (PSD's) for bioavailability screening of soils containing petrochemicals*.—The concept of a risk-based corrective action applied to the management of contaminated soil or groundwater requires that a regulator assess human risk. Soil contaminants can be detected by chemical analysis, but this provides little information on the actual hazard presented to ecological and human receptors. In some cases, contaminant levels above current soil quality guideline levels exists, but not toxicity. In other cases, chemical levels are below soil quality guidelines, yet toxicity persists. This project seeks to develop a rapid, cost-effective screening tool or passive sampling device (PSD) to determine the actual toxicity of contaminants in soil and their bioremediation potential. Use of such a device to determine the actual risks to human health presented by a site and its amenability to bioremediation would allow regulators to better prioritize contaminated sites needing immediate remedial action.

(4) *Using plants to remediate petroleum-contaminated soil*.—This project also proposes to use plants and associated microorganisms in the plants root zone to effect the remediation of soil contaminants. This project specifically seeks to conduct field studies to develop protocols suitable for phytoremediation of petroleum-contaminated secondary containment berms. These earthen berms are designed to contain fluids in the event of a major spill or leak in a tank. Many of these berms become contaminated with oil through leaks, spills, and normal transfer operations. This project envisions the continuous cultivation of suitable plants on these berms to keep oil contamination under control.

(5) *Probabilistic risk assessment of petroleum contamination using detailed physical models*.—Like all human endeavors the exploration and production (E&P) of oil and gas has associated with it some risk of damage to human or environmental health. Response to this risk can be reactive or proactive. The latter is of course preferred since proactive management prevents environmental damage and injury and is less costly. This project will develop a proactive risk management program for E&P operations to minimize the potential for environmental damage. This risk-based approach makes resource allocation more effective based on the probability

that a scenario will occur and the potential severity of the associated damage. Proactive risk management in the domestic petroleum industry has the potential for both significant cost savings and enhanced environmental protection.

The use of the Industrial Advisory Board to measure the relevancy of research within the Consortium is truly unique and ensures that the Consortium is meeting the needs of the domestic energy industry. IPEC has secured significant matching funds from industry for these first five programs. The combined funding request for these five projects is $492,000; however, the investigators have secured another $502,000 in matching funds from industry for these projects from individual companies and industry organizations such as the Gas Research Institute, the American Petroleum Institute and the Petroleum Environmental Research Forum. IPEC is well on its way to becoming a true public/private partnership.

As we have previously testified, the ability of small and medium sized producers to compete in a global market is complicated by two factors: the cost of regulatory compliance and the declining cost of crude oil. With your help IPEC is developing cost-effective solutions for the environmental problems that represent the greatest challenge to the competitiveness of the domestic energy industry. However, the fiscal year 1998 appropriation is only a beginning. For example, the IPEC Industrial Advisory Board has identified 26 critical research needs. With the current funding we can begin to address only a fraction of these needs. There is much work to be done and we respectfully request that the Subcommittee provide $2 million in funding for IPEC in fiscal year 1999.

THE CONTINUING CRISES IN THE DOMESTIC ENERGY INDUSTRY

The crisis in the domestic energy industry that we described in testimony in the last session of Congress has only gotten worse as the price of crude oil continues to fall to below $13 per barrel. The independent producers are producing from mature fields left behind by the majors. Although there is a significant resource base in the fields this is the most difficult and the most costly oil to produce. The independent producer has only one source of revenue—the sale of oil and gas. There is no vertical depth to his business. With the price of oil this low the independent producer is extremely vulnerable to the costs of environmental compliance. This latest drop in oil prices will no doubt result in another wave of business closures, plugged and abandoned wells, and reduced new well completions. The problem is so acute that the Governor of Oklahoma has recently formed an emergency task force to determine what the state can do to help Oklahoma producers survive the current plunge in prices. A similar price crash in the 1980's triggered a prolonged statewide recession. Clearly this trend is not in the best interest of the U.S. in terms of energy self-sufficiency or national security. We are turning over control of our cost of production in terms of energy costs to foreign interests. If domestic exploration and production and refining are to continue to play a strategic role in meeting U.S. energy needs, the domestic petroleum producer will continue to require access to cost-effective technology for pollution prevention, waste treatment and remediation in exploration and production (E&P) and refining.

IPEC'S RESPONSE TO CRITICAL RESEARCH NEEDS

IPEC will continue to work with the domestic energy industry to provide solutions to those environmental problems that represent the greatest challenge to the competitiveness of the industry. Specifically in fiscal year 1999 IPEC will continue to work with our Industrial Advisory Board to address the remaining critical research needs they have identified as well as address new needs that develop. These research needs include the following:

(1) *Bioremediation and other remediation technologies*.—Reducing toxicity of hydrocarbon-contaminated soils; development of rapid, on-site remediation technologies; control of salt migration in the subsurface; developing methodologies for phytoremediation.

(2) *Risk Assessment*.—Development of cost-effective ecological risk assessment methods for petroleum impacted sites; development of cost-effective and relevant terrestrial (animal/plant) bioassays for use in ecological risk/impact assessment; development of field methods for ecological risk assessment; development of methods to evaluate actual and future environmental risk of petroleum impacted soils; determining the correlation between ecological risk assessment and human health risk assessment; determining the impact of intrinsic bioremediation on risk-based closures; development of risk-based guidelines for handling, disposal and storage of NORM-contaminated solids, pipe, and equipment.

(3) *Measurement Technology*.—Development of cost-effective methods (direct and indirect) for measuring the amount and extent of petroleum hydrocarbon sources in

unsaturated and saturated soils; development of useful and easy to implement field and analytical methods and protocols for demonstrating intrinsic bioremediation; validating current models for predicting flash emissions of hydrocarbons in E&P operations.

(4) *Process Technologies*.—Control or treatment of flash gas emissions from stock tanks; use, treatment or disposal of oil tank bottoms; development of cost-effective methods for capture, recycling/destruction of volatile organic compound emissions from hydrocarbon processing and storage tanks; development of improved water treatment methods—particularly those methods; development of methods to for treatment of hydrogen sulfide in the reservoir.

(5) *Management and Decision Tools*.—Development of methods to predict plume migration of salt water from pits; development of methods to calculate the full life cycle cost of material and waste handling in the petroleum industry; development of proper pit closure methods using a clay or compacted soil cap; development of improved methods for disposal of drilling wastes; development of methods to distinguish between historical oil field pollution and recent, current and/or ongoing pollution.

In addition to working with our Industrial Advisory Board, IPEC will continue in fiscal year 1999 to build linkages with organizations which provide services to the domestic energy industry. As IPEC begins to fund technology development projects the Directors will work with the leadership of these organizations to develop a synergy between their efforts and those of IPEC. These organizations form the IPEC Affiliates Group and include the National Petroleum Technology Office (NPTO) of the U.S. Department of Energy, the Interstate Oil and Gas Compact Commission (IOGCC), the Petroleum Environmental Research Forum (PERF) the Oklahoma Energy Resources Board (OERB), the Oklahoma Independent Petroleum Association (OIPA), the Gas Research Institute (GRI), the Office of the Oklahoma Secretary of Energy, the Osage Agency of the Bureau of Indian Affairs and the Oil Producers of Arkansas (OPA). Recently, Governor Frank Keating of Oklahoma named the IPEC Director to the Environmental and Safety Committee of the IOGCC.

HOW IPEC'S OBJECTIVES ARE CONSISTENT WITH THE MISSION OF THE BIOLOGICAL AND ENVIRONMENTAL RESEARCH PROGRAM

Although IPEC's close ties to the independent sector of the domestic energy industry have resulted in a strong working relationship with the National Petroleum Technology Office in the Office of Fossil Energy, IPEC continues to have broad applicability across the Department of Energy. Biological treatment of waste materials and bioremediation of contaminated media such as water, air and soil are widely recognized as potentially the most cost-effective treatment methodologies available for many types of wastes. Petroleum hydrocarbons are both the most widely distributed class of environmental pollutants and the most amenable to biological treatment. These facts have certainly been recognized by the IPEC Industrial Advisory Board in that of the five research projects approved thus far by the IAB as relevant to IPEC's mission, four concern the use of plants and microbes to treat contaminated soils. Further, of the critical research needs identified by IPEC's Industrial Advisory Board fully half concern bioremediation, phytoremediation, ecological risk assessment, and toxicity issues. These topics are clearly within the mission of the DOE BER Program.

The mission of the Biological and Environmental Research (BER) Program under Environment, Safety and Health is to "develop the knowledge needed to mitigate or correct the consequences of energy use while contributing to the education and training of the scientific work force". This is identically the mission of IPEC when applied to the domestic energy industry. IPEC will use academic scientists and engineers in partnership with industry to develop new, cost-effective technology to solve environmental problems which are having a major economic impact on the domestic energy industry. These academic investigators will utilize undergraduate and graduate students in the sciences and engineering in these projects resulting in the training of new environmental professionals.

An example of an innovative petroleum environmental technology which fulfills the mission of the BER Program is intrinsic bioremediation of petroleum hydrocarbons. Intrinsic bioremediation is the application of indigenous microorganism to the attenuation of hydrocarbons which contaminate soil and groundwater. It has recently been shown that many petroleum hydrocarbons will be biologically degraded in soil and groundwater even in the absence of oxygen and without active intervention. These observations suggest that if no environmental receptor (drinking water aquifer, stream or lake) is immediately threatened, no intervention may be necessary to remediate certain spills. This conserves financial resources for application

to other problems where the actual risks to public health are significant. However, intrinsic bioremediation is not sufficiently well understood at present to safely make these types of judgments. A better understanding of the rate and extent of natural attenuation of petroleum hydrocarbons in the subsurface will require a multi-disciplinary approach analogous to the BER subsurface science program. The response of "biological systems to local disturbances resulting from energy-related activities" is a key element of both the BER Program and IPEC's investigations of intrinsic bioremediation.

IPEC is in the second year of a major three-year effort to address an important problem in the exploration and production of petroleum and natural gas: the remediation of hydrocarbon-impacted soil and groundwater. The project is funded by the Biological and Environmental Research (BER) Program of DOE ($973,000) with cost share from Amoco Production Co. Specifically this research is investigating the mechanisms of the natural biodegradation or intrinsic bioremediation of hydrocarbons in the subsurface with the goal of providing a sound scientific basis to support risk-based regulatory decisions at hydrocarbon-contaminated sites.

FUNDING OF IPEC

IPEC is seeking appropriations of $2 million for fiscal year 1999 and the succeeding fiscal years 2000, 2001, and 2002 through the Department of Energy. The consortium will be responsible for at least a 50 percent match of federal appropriations with private sector and state support over a four year period. The Consortium will be subject to annual review to ensure the effective production of data, regulatory assessments, and technology development meeting the stated goals of the Consortium.

PREPARED STATEMENT OF THE NEW YORK UNIVERSITY

A CENTER FOR COGNITION, LEARNING, EMOTION AND MEMORY (CLEM)

New York University respectfully seeks the Subcommittee's support for a project of scientific research which is not only an important priority for the University, but which we believe will advance national interests through enhanced scientific understanding of normal brain development as well as the many disabilities, disorders and diseases that erode our ability to think and learn.

The University proposes to establish a Center for Cognition, Learning, Emotion and Memory. This Center will draw on the University's strengths in the fields of neural science, biology, chemistry, psychology, computer science, and linguistics to push the frontiers of our understanding of how the brain develops, function malfunctions, matures, and ages. In addition, as a major training institute, the Center will help prepare the next generation of interdisciplinary brain scientists.

Our project addresses the research and programmatic priorities of this subcommittee and the Congress. For example, we strongly support the goals presented in the Conference Report accompanying the fiscal year 1998 Appropriations bill for the Departments of Labor, Health and Human Services and Education, in which the Congress encouraged the National Institute of Child Health and Human Development to support, and I quote, "research in the area of brain development, mechanisms that underlie learning and memory, the acquisition and storage of information in the nervous system, and the neural processes; underlying emotional memories as they relate to intellectual development and cognitive growth." We thank the Congress for taking the time to consider and give its support to the important research being conducted in this area. We at New York University firmly believe that in the coming decades, a federal investment in mind and brain studies will repay itself many times over.

To establish this Center, New York University is seeking $10.5 million over five years to support and expand the research programs of existing faculty, attract additional faculty and graduate and postgraduate trainees, and provide the technical resources and personnel support that will allow us to create a premier, world class scientific enterprise. Individual researchers in the science programs at NYU compete for investigational support through traditional routes, quite effectively. However, these traditional funding sources do not address the specific need for establishment of a new cross-disciplinary area of scientific study, particularly one that transcends biomedicine, psychology, education, computer science, cognitive science, and linguistics. Nor do they provide the extensive funding necessary for faculty and student support and personnel and technical resources.

Exploration into the fundamental neurobiological mechanisms of the nervous system can help educators, scientists, health care providers, policy makers, work force

managers, and the general public by enhancing our understanding of normal brain development and function in both children and adults, thereby helping us to detect and correct impediments that affect our ability to learn, to think, and remember, and to mature as productive members of family and society. Research in this area will ultimately contribute to a better understanding of how children learn at different stages; how childhood and adult learning is shaped by different cognitive styles; how aging affects memory; and how diseases alter memory.

New York University is well poised to make important contributions in this area. Founded in 1831, the University today is the largest private university in the United States, with over 49,000 students representing a broad range of backgrounds and coming from every state and over 120 foreign countries. NYU comprises thirteen schools, colleges, and divisions and is known for the excellence of its schools of law, medicine, film, and business; the Institute of Fine Arts; the Courant Institute of Mathematical Sciences; and departments in the Faculty of Arts and Science, notably neural science, chemistry, biology, psychology, French, English, philosophy, anthropology and economics. Located in the heart of the world's most cosmopolitan and diverse city, New York University is a leading national—and in many fields, international—center of scholarship, teaching and research. It is one of twenty-nine private institutions constituting the distinguished Association of American Universities, and is consistently among the top U.S. universities in funds received from federal sources and from private foundations.

The Center for Cognition, Learning, Emotion, and Memory will be an interschool, interdisciplinary unit linking faculty, students, programs and resources from several schools of New York University. These are the Faculty of Arts and Science, Courant Institute of Mathematical Sciences, School of Medicine, School of Education, and Center for Digital Multimedia. CLEM, to be housed at the University's Washington Square campus within the Faculty of Arts and Science, will be the locus for laboratory research and training in fundamental neurobiological, psychological and computational studies of the nervous system. In addition, CLEM will be a point of convergence for faculty and students seeking to incorporate these research perspectives into their own work in education, medicine, and technology, and seeking as well to enrich laboratory research with interdisciplinary collaboration and conceptual bridges.

The new Center will be administratively housed within the NYU Department of Neural Science. This department includes affiliated investigators from biology, chemistry, psychology, physics, computer science, medicine, and mathematics. It is a national center of research and teaching, encompassing a pre-eminent faculty, and generating substantial external funding from federal and state agencies as well as the private sector. The department holds world-class stature in the study of the nervous system as a sensory communications system, as a controller of motor activity and as a neural network that generates the emotional foundation of voluntary behavior. The neural sciences at NYU have attracted millions of dollars in generous support from, for example, the NIH, NSF, and EPA, the Howard Hughes Medical Institute, the W.M. Keck Foundation, and the Alfred M. Sloan Foundation. Its faculty have won prestigious awards, being named National Institutes of Health (NIH) Merit Awardee, Howard Hughes Medical Institute Investigator, National Science Foundation (NSF) Presidential Faculty Fellow, McKnight Foundation Scholar in Neuroscience, and MacArthur "Genius" Fellow. The department cultivates productive linkages with investigators from other disciplines, educational institutions, and research sectors. Thus, linkages between neural scientists, and educators in the NYU School of Education, clinicians in the NYU School of Medicine, and software designers, computer scientists, and graphic artists in the NYU Center for Digital Multimedia facilitate the application of scientific discoveries in the classroom, in the clinic, and in new technologies.

The new Center for Cognition, Learning, Emotion, and Memory Studies will bring the University's many strengths in these areas more fully to bear on the challenges and opportunities that multi-disciplinary studies present. The Center will provide an organizational identity, core resources, and common focus for the university's efforts. For students, it will provide an educational forum to apply knowledge gained in one discipline to problems in other disciplines. For researchers, the Center's synergistic linkages between basic science departments, biomedical departments, and mathematical and computational units will encourage intellectual cross fertilization and will permit the consolidation of individual efforts in multi-disciplinary but in conceptually coordinated efforts. For colleagues in the fields of education, medicine, and technology, the Center will facilitate connections with laboratory scientists and enhance the translation of research knowledge into health care, educational, and commercial applications. The enhanced research and training that will be possible at the Center will attract public and private funding above and beyond the substan-

tial funds, honors and recognition already awarded to the University's researchers, and will support the Center's continued growth and development.

The Case for the New Center at New York University

New York University has the resources necessary for the successful creation and operation of a major multi-disciplinary research and training center. There is top-level administrative leadership, a commitment to science, intellectual and administrative resources, established frameworks for interdisciplinary and interschool collaboration, strengths in neuro-biological, psychological and computational sciences, and standing in the international scientific community. The Faculty of Arts and Science, which encompasses the College and the Graduate School, has a preeminent faculty of 560, an annual operating budget of $197 million, a student population of approximately 9,200, and over 450,000 square feet of dedicated space apart from shared University facilities, making it a vital center of teaching and research. The science enterprise is especially vigorous, the result of a decade-long multi-million dollar development plan to renovate research and teaching laboratories and recruit distinguished junior and senior faculty, a pioneering science curriculum for undergraduate non-science majors, extensive research experiences for undergraduate science students, and an enhanced graduate student training program of supervised research and teaching assistantships.

New York University has, as part of its multi-year science development plan, created a world-class and widely recognized neuroscience program. Neural science at NYU is particularly well known for research in visual processing and perception, theoretical neurobiology, molecular and developmental neurobiology, and cognitive neuroscience. It has outstanding researchers and well-established strengths in visual neuroscience, auditory neuroscience, cognitive science, neuromagnetism, neurochemistry, neurobiology, behavioral neuroscience, mathematical modeling, and computer simulation. Recently, these faculty have begun to unravel the biological mechanisms underlying cognition, learning and memory. As an example, NYU scientists have made important contributions to visual processing, deriving the most successful methods available for studying nonlinear interactions in neuronal information processing; emotion, giving the first real glimpse into the neuroanatomy of fear; neural development, with landmark work on the vision system; and the neural bases for auditory function, including neural sensitivity to auditory motion stimuli.

With these strengths, New York University is strategically placed to create a new and distinctive center that will produce a new understanding of the brain, and new ways of using that knowledge for improving human health and welfare. The Center for Cognition, Learning, Emotion, and Memory will capitalize on our expertise in physiology, neuroanatomy, and behavioral studies, and will build on active studies that range from the molecular foundations of development and learning to the mental coding and representations of memory. The Center will encompass diverse research approaches, including mathematical and computational modeling, human subject psychological testing, use of experimental models, and electrophysiological, histological, and neuroanatomical techniques. Examples of the kinds of research that will be conducted are taken from our current research efforts, which are now dispersed in the departments of biology, chemistry, neural science, psychology, and computer science: Neural scientists are investigating the anatomical and physiological pathways by which memory can be enhanced; the conditions that facilitate long-term and short-term memory; and the brain sites where all these memories are processed and stored.

Neural scientists, working with computational scientists, are using digital imaging to characterize normal and pathological mental processes in humans. Developmental biologists are studying the molecular basis of development and learning. Vision scientists are studying form, color and depth perception; visual identification; the varieties of visual memory; and the relationship of vision and perception to decision and action. Neural scientists are studying the neuroanatomy and physiology of emotion. Physicists are taking magnetic measurements of brain function that trace the decay of memories. Behavioral scientists are studying learning and motivation, acquisition of language, memory and aging. Neurobiologist and psychiatrists are conducting clinical studies of patients with nervous system disorders, especially memory disorders. These existing researchers are well recognized by their peers and have a solid track record of sustained research funding from federal agencies and private foundations.

As we move through the last years of the "Decade of the Brain," NYU, through this new Center, is strategically positioned to lead and contribute to accomplishment of the goals of this important initiative. Establishment of this Center requires support to bring together investigators in the different disciplines that address cognition, learning, and memory. Centralized core resources are required to facilitate

collaboration and add efficiency to the research and training functions. New faculty who specifically bridge the disparate areas of knowledge and expertise need to be hired and "set up." Support must be provided to attract students to this new area and to promote work in this area, especially for those from groups traditionally under represented in the sciences.

While other academic institution are also conducting research into brain studies, New York University has special strengths in important emerging research directions that are central to this Subcommittee's priority areas. To elaborate, vision studies at NYU follow an integrated systems approach that has been shown to be the only successful approach to unraveling this complex system, and that has established NYU as an internationally known center for neuroscience studies in vision. The interest in vision, a key input to learning, is associated with focused studies on the learning process, particularly, the interaction with memory and behavior. These researchers are exploring hard and exciting questions: How does vision develop in infancy and childhood? How does the brain encode and analyze visual scenes? What are the neural mechanisms that lead to the visual perception of objects and patterns? How do we recognize letters and numbers? How do we perceive spaces, depth, and color? How does the brain move from vision and perception to planning and action? How does the brain process what we see?

Advances in Biomedical and Behavioral Research.—Research conducted in our Center will by its nature address the loss of memory through aging or disease (including Alzheimer's), as well as disorders of emotional systems that commonly characterize psychiatric disorders. Many of the most common psychiatric disorders that afflict humans are emotional disorders—malfunctions in the way emotional systems learn and remember—and many of these are related to the brain's fear system. Neurobiological studies of emotion and emotional memory in the brain will generate important information about the brain systems that malfunction in, for example, anxiety, phobias, panic attacks, and post-traumatic stress disorders. Research into the brain mechanisms of fear will help us understand where our emotions come from, why these emotional conditions are so hard to control, and what goes wrong in emotional disorders. Ultimately, the research will generate clues for prevention and treatment of emotional disorders, focusing perhaps on the ways in which unconscious neural circuitry can in effect, be altered or inhibited.

Accordingly, we believe that the work of this Center is an appropriate focus for the Department of Energy, given the Department's long-term involvement and investment in computer science technology through its Basic Energy Sciences program. The focus of the Center for Cognition, Learning, Emotion, and Memory is entirely consistent with the Department's commitment both to the Basic Energy Sciences, including computer science, and to its commitment to Biological and Environmental Research. We believe the Center will help enhance the Department's commitment to education, and especially science. Thank you for the opportunity to submit this testimony for the hearing record.

PREPARED STATEMENT OF CYRUS M. JOLLIVETTE, VICE PRESIDENT FOR GOVERNMENT RELATIONS, UNIVERSITY OF MIAMI

Mr. Chairman and Members of the Subcommittee: I appreciate the opportunity to present testimony on behalf of the University of Miami. We are most appreciative of your support in the past for our various programs, and hope that the Committee will look favorably on funding the following programs in the fiscal year 1999 appropriations cycle. The University is seeking your support for a joint program with the U.S. Army Corps of Engineers which is addressing some of the urgent problems of South Florida's declining environment, and for an innovative project to treat infectious hospital waste.

We respectfully request that you allocate $5 million for the U.S. Army Corps of Engineers (USACE) Waterways Experiment Station (WES) in support of the Environmental Modeling, Simulation, and Assessment Center (EMSAC). The purpose of these funds is twofold: (1) to provide core support of $2.5 million to EMSAC, including $500,000 to involve minority academic institutions, their faculty, and students in research activities of the center; and (2) to provide $2.5 million to establish a cooperative agreement with a major research institution involved in complementary interdisciplinary scientific research relevant to ecosystem management and ecological risk assessment. From these latter funds, the academic partner would also commit an additional $500,000 to involve minority academic institutions, their faculty, and students in academic research activities.

An academic partnership with a major research institution will enable EMSAC to draw on a broader spectrum of intellectual and scientific resources for environ-

mental modeling and problem solving, ecological risk assessment, and scientific support to the environmental decision-making process. Minority partnerships initiated from EMSAC and its academic partner will promote broader involvement of traditionally under-represented groups in the environmental sciences and management.

We are convinced that only through consistently funded, long-term partnerships of government and academic scientists developing the scientific bases for improved environmental decision-making can this nation make the next major advance in improving the health of the environment and protection of our unique natural resources while enjoying economic prosperity.

The mission of EMSAC is to advance the development of environmental modeling, simulation, and assessment tools for the study of large regional ecosystem management problems. EMSAC's activities are focused around the methodologies of ecosystem management and ecological risk assessment and include assessment and forecasting of the effects of human uses and impacts on the environment; assessment and forecasting of ecological conditions under pre- and post-restoration scenarios; habitat restoration; and the development of computer systems to support management and restoration activities. EMSAC also implements the USACE Land Management Systems (LMS) Program, which is an important R&D activity of the Corps. In particular, LMS is a key vehicle for the development and implementation of the ecosystem management framework. EMSAC is a broadly interdisciplinary research unit within the USACE framework of personnel resources, computer infrastructure, and experimental facilities. Core support will strengthen EMSAC's ability to collaborate in solving environmental problems within the USACE and the Department of Defense, as well as with other Federal, state, and international partners.

This cooperative research activity will build upon the unique strengths of USACE WES and its academic partners to develop the next generation of assessment and management tools for support of environmental decision-making. These new approaches to ecological risk assessment and management are especially promising for solving regional environmental problems in which the quality of life of the human population must be advanced and sustained while mutually improving the health of the associated ecosystems and achieving long-term ecological sustainability. Examples of initial applications of an ecosystem management approach include the restoration and sustenance of critical environments in the South Florida regional ecosystem and in the Upper Mississippi River System with attention to multiple demands on these nationally important resources.

CONTINUATION FUNDING FOR INNOVATIVE ELECTRON BEAM MEDICAL WASTE TREATMENT SYSTEM

Appropriations from the Department of Energy over the past three years of approximately $1.5 million have been utilized for the development and commercialization of a high energy electron beam treatment system to treat infectious medical waste. These monies from DOE were matched by approximately $750,000 from Florida Power & Light Company, the principal electric utility in South Florida. The combination of these funds were used to research the efficacy of electron beams for disinfecting medical waste after proving the validity of the concept. The world's first full scale electron beam treatment facility was constructed at the Jackson Memorial Hospital/University of Miami Medical Complex in Miami, Florida. The facility includes an eight million volt electron accelerator, coupled with a conveyor and medical waste shredding system. This prototype system was inaugurated in 1997 and is currently ready for full scale testing. The electron beam medical waste treatment system has recently received a license for operation from the State of Florida. This is the first licensed medical waste treatment facility utilizing electron beam technology in the world. Results from over two years of testing prior to building the full scale system, generated data that was utilized in the license approval process.

It is requested that $1.5 million be allocated in fiscal year 1999 to the medical waste treatment project in Miami, Florida. These continuation funds will finish verification of the process and allow for commercial exploitation of this new and exciting technology. Specifically, analyses to determine dosimetry, that is the efficiency of treatment, need to be undertaken in 1998. These dosimetry experiments must be performed on actual medical waste, which can be obtained in the Jackson Memorial Medical Hospital Complex. These analyses and full scale operation of the facility are crucial for commercial and therefore, public acceptance of this technology.

Federal regulations tightening emission standards on medical waste incinerators issued in 1997 have forced all hospitals to re-evaluate their medical waste disposal treatment techniques. Currently, there is a huge need for alternative technologies to incineration and autoclaving. Both of these processes produce either unwanted

environmental emissions, or are not easily operated in a hospital environment. Work over the past three years utilizing DOE and FPL funding has shown that the electron beam process has the potential to be an efficient, energy-saving and emissionless waste treatment system, which can render infectious medical waste harmless and allow it to be disposed of in a manner similar to normal solid waste. After the disinfection step, the waste can be easily processed by commercial shredders to reduce the volume by up to 80 per cent if landfill space is at a premium.

Without additional funding at a level of approximately $1.5 million, required testing of the full scale system cannot be accomplished. Thus, critical demonstration of efficiencies of the treatment system cannot be made and thus, commercial exploitation will not be possible. It is therefore crucial that these extra funds be allocated to this project, so that the final step in development of this new and exciting technology can be made, allowing for its commercialization and subsequent utilization by society.

Thank you again for your consideration of these exciting research projects.

PREPARED STATEMENT OF DAVID E. BALDWIN, SENIOR VICE PRESIDENT, FUSION GROUP, GENERAL ATOMICS; CHARLES C. BAKER, ADJUNCT PROFESSOR, UNIVERSITY OF CALIFORNIA, SAN DIEGO, US ITER HOME TEAM LEADER; ROBERT J. GOLDSTON, PROFESSOR AND DIRECTOR, PRINCETON PLASMA PHYSICS LABORATORY; MICHAEL E. MAUEL, PROFESSOR, COLUMBIA UNIVERSITY, PRESIDENT, UNIVERSITY FUSION ASSOCIATION; MIKLOS PORKOLAB, PROFESSOR AND DIRECTOR, PLASMA SCIENCE AND FUSION CENTER, MASSACHUSETTS INSTITUTE OF TECHNOLOGY; MICHAEL J. SALTMARSH, DIRECTOR, FUSION ENERGY DIVISION, OAK RIDGE NATIONAL LABORATORY; KEITH I. THOMASSEN, DEPUTY ASSOCIATE DIRECTOR, ENERGY PROGRAMS, LAWRENCE LIVERMORE NATIONAL LABORATORY

Chairman Domenici, Senator Reid, and Members of the Subcommittee: Thank you for allowing us the opportunity to present testimony to the Subcommittee on fiscal year 1999 funding for the Department of Energy's (DOE) Fusion Energy Sciences Program. We offer a unified view as leaders of five of the nation's largest plasma science and technology laboratories, the president of the University Fusion Association, and the leader of the US Home Team for the International Thermonuclear Experimental Reactor (ITER) project—all funded by the DOE Office of Fusion Energy Sciences, representing over sixty research groups, comprising over one thousand scientists, engineers and technicians. We believe that we can provide substantive insight into the DOE Fusion Energy Sciences program and its needs for the coming fiscal year.

In short, we recommend that the fiscal year 1999 budget for Fusion Energy Sciences be increased to at least $250 million. This figure is based on two specific requirements: (1) to accelerate restructuring of the domestic fusion effort around the goals of science and innovation, and (2) to develop rapidly more cost-effective approaches to the international pursuit of fusion energy science and technology. Our recommendation is consistent with the September 1997 report of the President's Committee of Advisors on Science and Technology (PCAST) and with recent reviews by the Fusion Energy Science Advisory Committee (FESAC).

Fusion has long been recognized as one of mankind's most exciting scientific grand challenges, seeking to harness the power of the stars on earth. This research has been conducted as a highly collaborative international scientific effort with participation by most of the developed nations of the world. It has been widely recognized that if fusion energy can be successfully developed, it will have an enormous beneficial impact on the world. Furthermore, the scientific and technological spinoffs from fusion research have had a strong, ongoing, beneficial impact on the nation.

The current success of our economy is, in part, due to our ability to obtain cheap petroleum on demand. However these resources are finite and, as recent events in the Middle East have shown, the concentration of these energy resources in a politically unstable region of the globe has undesirable strategic implications. As oil and natural gas reserves are consumed in the next century, the economic and strategic importance of energy resources will only grow. In addition, as the world population increases and a larger fraction of countries develop more energy intensive, industrialized economies, the world will need new, environmentally acceptable energy sources. The nation or nations that are prepared to provide the necessary technologies will be at a substantial economic advantage. Increased federal investment in R&D for fusion and other emission-free energy technologies, as recommended by PCAST, is clearly prudent.

Plasma science is an important element of the nation's science and technology portfolio. As pointed out by the National Research Council (NRC) in its 1995 report, the rewards from the field of plasma science to our national science and technology base have been, and will continue to be, very strong. The Fusion Energy Sciences Program has stewardship of the nation's plasma science effort, and it is the advance of fusion research that has driven that field forward. The science developed for fusion research is key to our understanding of solar physics and of the space environment, including the "space weather" which affects our satellites and astronauts. Commercial applications derived from plasma science and technology, or developed by experts trained in the fusion program, include: plasma spray coatings and ion implantation in metals used for machine tools, ball bearings, and medical implants; application of polymer films to recording media; manufacture of computer chips and integrated circuits, where 40 percent of the steps involve plasma processing; semiconductor and textile defect detection using laser imaging techniques developed for plasmas; plasma flat panel television displays; plasma switches for electricity transmission, part of a new industry using plasma electronics; environmental remediation of chemical and radioactive waste; high-efficiency lighting; applications of superconducting magnet development to magnetic resonance imaging systems; and applications of plasma diagnostics to other complex imaging problems. There is no doubt that the investment the federal government has made in plasma science and fusion is paying increasingly rich technological dividends today while making strong progress in the development of a practical fusion power source for tomorrow.

THE FUSION PROGRAM IS FOCUSED ON SCIENCE AND INNOVATION

The U.S. Fusion Energy Sciences Program is being restructured to focus on science and innovation within the domestic program, while the pursuit of energy-producing plasmas and fusion technology is undertaken through international collaboration. We appreciate the Committee's recognition in last year's Report of the fusion community's efforts to become more efficient and to develop a new strategy for the future. This new strategy for the Fusion Energy Sciences Program comprises three parallel elements:

—Stewardship of basic plasma science
—Innovative approaches to plasma confinement
—Energy-producing plasmas, pursued internationally

Important scientific progress was made in each of these three areas last year. For example:

—Basic Plasma Science.—Observations of colliding rings of plasma made in laboratory experiments have shed new light on the processes by which massive amounts of solar material can be torn from the magnetized surface of the sun and hurled toward the earth.
—Plasma Confinement.—A first-principles theoretical understanding of how sheared plasma flows stabilize turbulence in tokamak plasmas has emerged. A small spherical torus experiment in Europe has demonstrated a 3-fold increase in plasma pressure, relative to the confining magnetic pressure, as compared with the tokamak record.
—Energy-producing Plasmas.—Experiments on the Joint European Torus (JET) with DT plasmas have moved the world closer to fusion energy break-even, and the ITER Final Design Report has been issued and reviewed favorably, both attesting to the feasibility of creating energy-producing plasmas on earth.

IMPLEMENTING THE RESTRUCTURING OF THE FUSION ENERGY SCIENCES PROGRAM

The Administration's proposed Fusion Energy Sciences budget attempts to move forward the fusion program restructuring around the twin themes of science and innovation, and moving forward the international process for the design and construction of a next-step burning plasma experiment towards a lower cost approach. We support both of these goals.

Unfortunately, the proposed fiscal year 1999 budget fails to provide the funding necessary to achieve its goals. The reality is that under the Administration's budget proposal virtually every aspect of the fusion program will remain severely constrained in fiscal year 1999. Despite reallocation of ITER funds, progress towards restructuring in both the domestic and international areas will be severely limited. In particular:

—The program supported by the proposed fiscal year 1999 budget includes only modest increases for Basic Plasma Science. This is an area of great importance for the nation's science and technology base and contributes directly to the application of fusion energy science to other disciplines. Although the stewardship of basic plasma science is in the hands of the Office of Fusion Energy Sciences,

only $5.9M appears in the fiscal year 1999 budget request. Last year, only 35 of over 240 research proposals for basic plasma science received funding.

—In the Innovative Confinement Concepts area the fiscal year 1999 budget does not provide adequate funding for concept exploration experiments. Last year, only 4 of the 40 innovative proposals submitted received funding, and many excellent proposals given very positive reviews remain unfunded. Many currently operating concept exploration experiments are also underfunded. These crucial areas of innovation are severely constrained.

—Increases are supplied for fusion's Major Experimental Facilities, but funds for the C–MOD and DIII–D tokamaks are inadequate to provide both the necessary operating time for the national teams of scientists and engineers who use these devices and the long-planned upgrades to allow exploration of new regimes of advanced tokamak physics. These experiments will operate a maximum of 14 out of a possible 24–26 weeks in fiscal year 1999. There was an increase for the NSTX spherical torus to complete construction, but its operation is similarly underfunded as a collaborative national facility.

—Funding for the development of Low-Activation Materials, critical for the environmental attractiveness of fusion, continues at the low level of $6M/year.

—The ITER activities have been unbundled into more fundamental and broad-based Technology Research and Advanced Design Studies. Technology funding is not adequate to permit the initiation of significant new initiatives in support of the Innovative Confinement Concepts, and the funding to Advanced Design leaves the U.S. in a weak position to affect the evolution of the international effort towards a more cost-effective implementation.

—Finally, the opportunity to increase our present, very limited collaborations on the world's largest Foreign Fusion Research Devices, JET in Europe and JT–60U in Japan, in order to demonstrate advanced physics regimes in these more powerful devices, in support of the reduced-cost ITER, is almost completely missed in this budget. Increased scientific collaborations in these large international experiments are critically important for the demonstration of the advanced physics regimes that underpin lower-cost approaches to burning plasma experiments.

The proposed fiscal year 1999 fusion budget is inconsistent with the August 1997 recommendations of the FESAC subpanel, chaired by Dr. Hermann Grunder, Director of the Thomas Jefferson National Accelerator Facility, a facility supported by the High Energy and Nuclear Physics program of DOE. The Grunder FESAC panel recommended a Fusion Energy Sciences budget of at least $250M in fiscal year 1999. Consistent with a series of earlier FESAC and FEAC recommendations, it called for a budget of at least $200M in support of basic plasma science and confinement innovation. It also provided specific recommendations for redirection of the approximately $50M of funds which previously went to support the ITER Engineering Design Activities. Neither the recommended funding for science and innovation, nor the recommended funding for the restructuring of ITER is provided in the fiscal year 1999 proposed budget.

In addition, PCAST recently reviewed the challenges and opportunities for federal energy research and development. After careful balancing of priorities by a diverse and distinguished Committee with a wide perspective on energy technologies, PCAST recommended increased funding in four R&D areas, including fusion. In fact, the Committee's recommendation for fusion funding in fiscal year 1999 was $250M, completely consistent with the Grunder/FESAC recommendation.

We strongly advocate increasing the Fusion Energy Sciences budget to at least $250M. This level of support will allow the growth of new research focused on science and innovation, and will permit the rapid investigation of more cost-effective means to the international pursuit of fusion energy science and technology. It will signal to students and researchers alike that the United States is serious about pursuing science and innovation in fusion.

Our requested increase of $22M above the levels provided in the Administration's request does not address many of these needs, but we believe the most urgent are the following:

Science and Innovation in the Domestic Program—+$15 million

(a) Increase emphasis on basic plasma science and technology for non-fusion applications, taking advantage of scientific and technological advances provided by the balance of the program: Fusion science and technology provide a highly stimulating research environment for the training of undergraduate and graduate students. An increase in this area would allow growth of plasma science research and technology development both at Universities and at national research centers, and continue to

address the recommendations of the 1995 NRC report, "Plasma Science: From Fundamental Research to Technological Applications."

(b) Increase exploration of a variety of approaches to fusion, its technologies and materials, including inertial fusion energy. Concept innovation is the central area of focus of the domestic Fusion Energy Sciences program. Excellent new ideas for plasma confinement innovation have been proposed for testing at the small and intermediate scales, but limited funding has severely retarded progress in this area.

(c) Increase utilization of major U.S. experimental facilities, focused on innovation and basic understanding. Recent exciting results open up new opportunities in toroidal confinement. Plans for technology upgrades and increased utilization of the DIII–D and C–MOD tokamak facilities and plans for the operation of the NSTX spherical torus are highly constrained by limited funds. The benefit of incremental dollars spent in these areas is very high.

A More Cost-Effective Approach to the International Pursuit of Fusion Energy Science and Technology— +$7 million

(a) Increase efforts to develop more cost-effective approaches to addressing the goals of ITER. Funding for intensive examination of a broad range of lower-cost options for the international pursuit of fusion energy science and technology is greatly constrained in the Administration's budget at a crucial time when the U.S. and the international team will be seeking innovative approaches to reducing costs.

(b) Increase experimental collaboration on the major experimental facilities abroad, JET and JT–60U, with the goal of demonstrating in these large facilities advanced operating modes for a next-step burning plasma experiment, which will permit substantial cost reductions. Successful demonstration of advanced operating modes on these largest devices in the world program is a clear prerequisite for the adoption of such modes as a basis for lower-cost approaches to addressing the goals of ITER. In the Administration's budget, funding levels for collaboration on JET and JT–60U are far below what would be required to allow U.S. researchers to play a significant role on these powerful foreign devices.

The intent of these recommendations is to enable the U.S. fusion program to accelerate the restructuring initiated two years ago by expanding the breadth of its research while focusing on the twin goals of science and innovation, and also to address the issue of finding less expensive means to pursue fusion energy science and technology as an international partner. We believe that these are very important goals, consonant with the expressed wishes of Congress, and necessary for the effort to provide the knowledge base for an attractive non-carbon energy source to safeguard our nation's environmental health and long-term energy security.

Again, we thank you for affording us the opportunity to present our views. We hope they will be helpful as you consider funding for our nation's science and energy programs for fiscal year 1999.

PREPARED STATEMENT OF SCOTT SKLAR, EXECUTIVE DIRECTOR, SOLAR UNITY NETWORK

INTRODUCTION

The Solar Unity Network (SUN), the policy organization representing virtually every U.S. solar thermal and solar-electric manufacturer, component supplier, distributor and installer, submits this written testimony, in lieu of oral testimony, on the fiscal year 1999 U.S. Department of Energy RD&D budget. SUN receives no federal funds and serves explicitly as the policy entity for the U.S. solar energy industries.

The solar industry requests the following funding levels (in millions):

[In millions of dollars]

	Fiscal year 1998 actual	Fiscal year 1999	
		Administration	SUN
Photovoltaics	65.52	78.80	105.00
Solar Buildings	2.66	5.00	5.00
Solar Thermal	16.57	22.50	32.00

FISCAL YEAR 1999 PHOTOVOLTAICS RD&D PROGRAM

The solar industry is requesting a $105 million appropriation in light of inequitable cuts during the last two appropriation cycles and the fact that our two major competitor nations, Germany and Japan, are spending $95 million and $182 million respectively. Two-thirds of the German and Japanese budgets are tied to domestic commercialization of new photovoltaic technologies which do not require their companies to cost-share with government.

The U.S. solar industry strongly supports the basic premise of the U.S. Photovoltaic RD&D program established in the Bush Administration and continued in the Clinton Administration. An effective RD&D program must be comprised of a combination of pure and applied research which, includes development, and technology validation. The U.S. solar industry has committed itself to cost-share the applied research and technology validation aspect of the RD&D program which leads all DOE civilian RD&D programs in this regard.

In the Photovoltaics RD&D program, two key pure and applied R&D activities stand out and deserve enhanced funding: (1) the thin film partnership, which is a cost-shared program to drive the next generation of photovoltaic materials with a proclivity to automated manufacturing (essential to become cost-competitive in the traditional marketplace); and (2) PV BONUS, which is a cost-shared program to develop new kinds of photovoltaic building materials (siding, roofing, window-tinting) for the building sector, likely to become a premier application when electric utility deregulation is fully implemented.

The most highly leveraged applied and technology validation programs must be enhanced and continued within the photovoltaic RD&D program: (1) the PV Manufacturing Initiative, which is a cost-shared program to overcome technological hurdles to automate manufacturing of new PV materials; and (2) PV COMPACT, which validates a variety of photovoltaics systems in end-use applications to validate their market readiness in a highly cost-shared program with the electric utility sector (91 utilities comprising more than half of the U.S. electricity generation have organized to support this program).

The Photovoltaic Manufacturing Initiative is NOT a program supporting incremental improvements in manufacturing. The program specifically supports highly innovative approaches to drive cost reductions for NEW materials in manufacturing. The program has demonstrated its success in 1996 with the ribbon-cutting of three new U.S. automated manufacturing plants. In 1997, four more new automated manufacturing plants were unveiled. In 1998, four new automated manufacturing plants are likely to be ribbon-cut. Virtually all of the success in this program is from driving new manufacturing processes with new materials.

The PV COMPACT program is NOT a subsidy program of market-ready technology but a technology validation program cost-shared by the electric utility sector at an order of magnitude of seven-to-one. Advanced PV systems need monitoring and performance data in order to be utilized on a wide scale basis by the electric utility industry. SUN supported fiscal year 1997 appropriations report language which directed that competitive awards be made toward projects which drive down costs. However, the basis of the projects were to validate performance first with an eye toward future replication.

The solar industry believes the photovoltaics RD&D program as administered by the U.S. Department of Energy is one of the most well-managed and best-leveraged of any program within the DOE RD&D portfolio.

The President's request to establish a Million Solar Roofs program is essential to ensure that a vibrant, growing domestic market maintains the U.S. photovoltaic industries' 50 percent global market share. A minimum $10 million program for cost-sharing technology deployment through state governments is an essential requirement of the program.

FISCAL YEAR 1999 SOLAR BUILDINGS PROGRAM

The solar buildings program is primarily a basic RD&D program on materials and components with a technology standards and certification program based at the National Renewable Energy Laboratory (NREL) and the Florida Solar Energy Center.

SUN recommends a fiscal year 1999 funding level of $5.00 million for the Solar Buildings program administered by the U.S. Department of Energy with no less than $2 million for ongoing cost-shared technology validation projects, $2 million for laboratory R&D, and $1.0 million for applied R&D of solar building technologies by industry, customers and universities.

The Solar Buildings program, which requires a minimum of $5 million per year over three years, will allow the DOE program to provide technical assistance to the

states, utilities, energy service companies, and local building code officials to develop programs that will lead to reduced technology costs and increased deployment.

SUN believes that the Solar Buildings RD&D program should support the Million Solar Roofs program by providing technical assistance to federal procurement and federal lending technical officials.

The solar buildings program is just beginning to cost-share RD&D with industry. In fact, the program primarily funds technical entities on systems performance, materials testing and systems certification. The remainder of the program is directed to system performance modeling and cash-flow analysis geared toward the acceptance of utility and energy service company utilization of these technologies. The solar buildings program is a true R&D program, but SUN believes the development activity must be cost-shared with industry as economies-of-scale in manufacturing occur that will in turn reduce costs and increase deployment.

FISCAL YEAR 1999 SOLAR THERMAL PROGRAM

The solar thermal electric program is primarily a basic RD&D program on materials and components with a technology validation segment that is cost-shared with industry. The program, based at the National Renewable Energy Laboratory (NREL), conducts basic research on concentrator materials. The program at Sandia National Laboratories focuses on energy storage materials and systems testing.

SUN recommends a fiscal year 1999 funding level of $32 million for the Solar Thermal program administered by the U.S. Department of Energy with no less than $12 million for ongoing cost-shared technology validation projects, $9 million for lab R&D, $2 million for international validation of solar thermal technologies cost-shared by multilateral RD&D institutions, $2 million for domestic initiatives, and $2 million for solar industrial RD&D.

The Solar Enterprise Zone initiative, which will require $5 million per year over three years, will allow the DOE program to provide technical assistance to the states and others to drive the next iteration of first-of-a-kind, large scale power tower, solar dish engine, and parabolic trough projects and help establish their performance and reliability. This cost-shared effort with five Southwestern states (Arizona, California, Colorado, and New Mexico, and Nevada) will be part of an expanded Solar Enterprise Zone concept to create more solar power development, manufacturing opportunities and more American jobs. The initiative must be leveraged at more than 50 percent by the states and other entities. The non-profit CSTRR should also be supported to drive solar development of the Nevada Test Site.

The solar industrial process heat R&D program accounts for five percent of the overall program and focuses on materials science and performance analysis.

The Solar Thermal program continues to meet its performance objectives:

—Solar Two, the power tower prototype, which utilizes mirrors which focus sunlight onto a receiver to store thermal energy to produce electricity day-or-night, rain-or-shine, was ribbon cut in June 1996. It is now in a 3-year operating and testing phase. The industry and utility consortium that successfully completed Solar Two has already embarked on an ambitious plan for commercial plants in the southwest U.S. (as part of the Solar Enterprise Zone), and is negotiating export projects in India, Brazil, and Egypt.

—Industry teams have been developing solar-dish engine systems as an alternative to diesel engines. Dish/engine deployment has been quite successful with test units delivered to NREL and Sandia in 1997.

—The eight existing solar parabolic trough plants continue to reliably generate 354 megawatts of power in California. Lowered operating costs and new plant designs achieved with DOE technical assistance have sparked renewed interest in this technology. Commercial plants are under development in Mexico, India, Morocco, and Egypt, and U.S. firms are well-positioned to capture a strong share of these export opportunities.

These 50–50 cost-shared, multi-year solar thermal projects between industry and DOE to validate advanced technology have leveraged over $160 million in private sector commitments and have been a strong success. Advanced technology prototypes will be fully demonstrated over the next few years and ready for early commercial market introduction just as market demand for solar electric projects is growing rapidly.

FISCAL YEAR 1999 RENEWABLE CROSS-CUTTING PROGRAMS

Some cross-cutting and especially essential RD&D programs must be maintained. The programs that are most significant (in millions):

[In millions of dollars]

Program	Fiscal year 1998 actual	Fiscal year 1999	
		Administration	SUN
Resource Analysis	.....	.....	5.0
Renewable Energy Production Incentive	2.0	4.0	4.0
Solar International	1.3	8.8	7.0
Hydrogen	15.0	15.0	17.0
Storage	3.0	4.0	5.0

Resource analysis.—Carried out predominantly by NREL, this program uses satellite and other anecdotally-collected data to develop resource maps for all renewable energy technologies. This is an essential R&D function that no one in the private sector will perform. Quantifying the resource is an essential tool for the financial, marketing, and utility regulatory decision-making communities. This program is in a closedown mode unless we turn it around.

Renewable energy production initiative (REPI).—Created in the National Energy Policy Act of 1992 in response to renewable investment tax credits and renewable energy production tax credits which could not be accessed by municipal utilities, it created a more balanced program to improve the experience level of applied R&D validation for cooperative, power authority and municipal utilities—a sector which is essential to the strong growth of renewables. They are often the first to experience and appreciate the environmental and employment benefits of using these emerging technologies.

Solar international.—$2 million only is required to continue the federal interagency activity, the Committee on Renewable Energy Commerce and Trade (CORECT), to insure that all facets of the federal government work together. This successful program signed into law by President Reagan, has been partly responsible for the more than 70-percent of U.S.-manufactured solar equipment now exported overseas; $3 million for Americas 21st Century initiated by the Bush Administration to make good on Latin American commitments and by Clinton on the Western Hemisphere Summit; and $2 million for Joint Implementation for renewables and efficiency overseas projects.

Storage.—Solar and other renewables cannot be viable without the ability to store the energy. This program has been key to developing matched technologies to create new kinds of electronics, controls, capacities and batteries to meter, store, and utilize electricity most efficiently from intermittent resource technologies. The U.S. is still a leader in this area, and the U.S. storage industry cost-shares this program which is primarily administered by Sandia National Laboratories. Storage is the key for sustainable solar and wind market growth.

Hydrogen.—Represents the ultimate storage medium for solar and other renewables, and it is a conversion fuel for biomass and fuel cells, and ultimately, the best transportation fuel. The DOE program primarily focuses on natural gas which must be broadened to renewable-based hydrogen focusing on pure RD&D at NREL and University Centers of Excellence at the University of Miami, the University of Central Florida (Florida Solar Energy Center), the University of Hawaii (Hawaii Natural Energy Institute) and the University & Community College System of Nevada (Desert Research Institute). SUN recommends applied RD&D validation via renewable hydrogen projects at the Solar Enterprise Zone and at PVUSA.

CONCLUSION

The solar energy programs at the U.S. Department of Energy are well-managed, have solid cost-share agreements and they continue to demonstrate measurable results. The solar programs have performed beyond expectations, and we hope the Subcommittee recognizes these achievements and embraces a robust and strategic program.

Prepared Statement of Gilbert A. Emmert, Professor and Chair of the Department of Engineering Physics at the University of Wisconsin-Madison

This testimony is submitted on behalf of the Nuclear Engineering Department Heads Organization (NEDHO) by Gilbert A. Emmert, Professor and Chair of the Department of Engineering Physics at the University of Wisconsin-Madison, acting in

the capacity of Chair of NEDHO. This testimony is also endorsed by the Education and Training Division of the American Nuclear Society (ANS), the National Organization of Test, Research, and Training Reactors (TRTR), and the Nuclear and Radiological Engineering Division of the American Society for Engineering Education (ASEE). NEDHO represents 32 nuclear engineering programs in 25 states, the ETD division of ANS has a membership of about 1,000, TRTR represents 30 university research reactor facilities, and the ASEE NRE division has a membership of 100 university professors. This written testimony provides our recommendations for the Department of Energy budget for University Nuclear Science and Reactor Support and nuclear energy research for fiscal year 1999.

SUMMARY OF RECOMMENDATIONS

The Department of Energy's (DOE) fiscal year 1999 budget request includes $10.0 million for University Nuclear Science and Reactor Support. This funding is to be used for supporting the nuclear engineering educational infrastructure (scholarships and fellowships, research grants, etc.) and for assisting university research reactors (fuel, instrumentation upgrades, reactor sharing). The $10.0 million request by DOE is a significant improvement over current funding, but considerably short of current needs. In order to provide for critical infrastructure and university reactor needs, this amount should be increased to $14.0 million. The educational infrastructure that produces trained nuclear engineers for government and industry is being rapidly eroded due to lack of funding; an increase in this budget request is necessary to better ensure the availability of the engineering expertise needed to realize the promise of nuclear energy and the application of radiation science to engineering and technology.

The Department of Energy is proposing a Nuclear Energy Research Initiative (NERI). This is to be a peer-reviewed nuclear energy research program bringing together the best minds in universities, national laboratories, and industry to address the critical research questions concerning nuclear energy. We strongly support this program and look forward to working with DOE to formulate the program so that it best utilizes intellectual talent in universities as well as that in national laboratories and industry.

Nuclear power faces critical issues that have broader implications than the needs of a particular industry. It is appropriate that research on these issues be funded by a government—industry partnership, such as the Nuclear Energy Plant Optimization (NEPO) program proposed by DOE. We support research to extend the life of currently operating nuclear plants, to establish a process for license renewal, and to improve the efficiency and capacity of existing plants. Such research is essential if our nation is to meet the Kyoto goals for greenhouse gas emission reduction and to improve the quality of our nation's air.

BACKGROUND

As of 1998, there are some 32 academic departments and programs in universities, with their principal discipline being nuclear engineering/radiation science and technology (NE/RST), which involves the design and operation of nuclear reactors and the application of radiation and nuclear techniques to science and engineering. Most of the departments are broad-based, including disciplines such as health and medical physics, radiation detection and measurement, thermal hydraulics and materials science related to nuclear processes, nuclear fusion and plasma physics, and the design and performance of fission reactors for the production of electricity. We educate engineers for the nuclear power industry and government (e.g. naval propulsion, weapons and non-proliferation activities, including treaty verification), health physicists (radiation specialists) who protect the health and safety of workers and the general public, medical physicists involved in cancer diagnosis and treatment, plasma scientists who develop new plasma processing techniques, and materials scientists who develop and test new materials for industry and research using radiation-based techniques.

University research reactors (URR's) in the United States form a fundamental and vital component in our national research and education infrastructure critical to many national priorities such as health care, education, environment and technology transfer. Currently, there are 30 operating university research reactors on 28 campuses in 25 states. In addition to their educational role for nuclear engineering and radiation science, university reactors are the source of neutrons for research in such diverse areas as medical isotopes, human health, life sciences, environmental protection, advanced materials, energy conversion and food science. They are also centers of multi-disciplinary research efforts in the fields of chemistry, biology, medicine, epidemiology, archaeology, environmental sciences, material sciences,

fluid mechanics, geology, energy production and many other areas. Many of the reactors serve as centers for pre-college education programs offered for high school students and teachers who come to the reactor for instructional programs and research. URR's also contribute to the educational base of future scientists and engineers in the above mentioned broad range of disciplines that use reactor based techniques to solve unique problems.

Both NE/RST academic programs and university research reactors are crucial to the maintenance of technical expertise in nuclear engineering and radiation science and technology in the U.S. Evidence is growing that the prolonged absence of federal support of this discipline is resulting in a growing imbalance between the supply (shrinking) and demand (growing) for these engineers. Attached to this testimony is a letter from Dr. William Naughton of ComEd (the largest nuclear electric utility in the U.S.) expressing the industry's concern for future needs for nuclear engineers and for maintaining the educational infrastructure for nuclear engineering and radiation science to supply those engineers. Continuation of the present situation will likely result in irreversible damage to the academic infrastructure, and hence, the nation's leadership in this increasingly important scientific arena.

UNIVERSITY NUCLEAR SCIENCE AND REACTOR SUPPORT

The federal government has generally looked to the DOE to provide the guidance and funding needed for the educational and research activities in nuclear engineering and radiation science and technology at the nation's universities. The National Science Foundation (NSF) has traditionally deferred funding for these academic programs to the DOE. For example, faculty members in other engineering or science disciplines can submit proposals to the NSF for funding of research and educational programs, but nuclear engineering faculty have been discouraged from doing this, with DOE being cited as the appropriate federal agency to funding such research requests. Prior to fiscal year 1996, the DOE had never embraced this concept and had not provided within its budget, sufficient resources to fund these programs at an adequate level. Congress recognized the need for such programs and provided funding at a level of $10 million each year from fiscal year 1990 through fiscal year 1993. This funding was reduced to $3.7 million in fiscal year 1994 and fiscal year 1995. In fiscal year 1996 DOE incorporated some parts of the program into a larger budget request of $6.1 million, but Congress approved only $3.5 million. In fiscal year 1997, Congress approved $4 million of a $6.95 million budget request (which included $1.2 million for unrelated programs) and in fiscal year 1998, Congress approved $7 million, which was an increase of $1 million above the budget request. While funding is increasing, it is occurring at a slow pace and remains far below the level needed to sustain a strong academic infrastructure. The following are the specific needs of the NE/RST and URR communities.

NUCLEAR ENGINEERING/RADIATION SCIENCE AND TECHNOLOGY EDUCATION

The Congressionally-mandated programs provide financial support for a number of activities in nuclear engineering/radiation science and technology (NE/RST) education, specifically: (1) research grants, (2) fellowships for promising U.S.-citizen M.S. and Ph.D. students, and (3) matching nuclear electric industry contributions to improve the educational infrastructure for NE/RST.

Research Grants.—The peer-reviewed Nuclear Engineering Education Research (NEER) grant program is the first component of the nuclear engineering education program. This program is extremely important because it provides opportunities for faculty and students to explore long-term, innovative ideas that could have great impact in applied nuclear science and technology. In the six years fiscal year 1988–93, over 800 proposals were submitted and DOE review panels recommended that 250 of these be funded because of their relevance to national needs, or their promise of possible major new technological development. Due to limited resources, only 80 of these recommended grants were actually funded, representing a three-fold shortfall in funds to support the proposals that could significantly enhance the nation's future competitive position in the world markets. All grants were canceled and the students were left without support when the program was abruptly terminated in fiscal year 1994. The loss of this program is having serious consequences for the human resource needs of government and industry for nuclear engineering graduates. The fiscal year 1998 budget included a reinstatement of this program at $2.2 million, which drew 99 research proposals; the budget is sufficient to fund only about 15 of them. We recommend funding of this research grant program at a level of $5 million.

Graduate Fellowships.—A second component of the nuclear engineering education program relates to graduate fellowships. These four year student stipends attract

exceptionally high quality U.S. citizens to pursue Ph.D. programs. The demand for such graduates exceeds the current supply because of the diversity of areas in which they perform research, from studies of materials and radiation damage to advanced controls and artificial intelligence, to improved understanding of thermal-hydraulic behavior, to the design of radiation detection methods for the protection of personnel. Without the long term financial support provided by fellowships, many of the most capable B.S. graduates will bypass graduate school for high paying industry positions, and their participation in the long-term research and technology developments needed to maintain U.S. competitiveness will be lost. About 40 graduate fellowships are required to meet the recommendations of the National Academy of Sciences (NAS) to encourage talented U.S. students to enter this field. A funding level of $1 million is necessary to maintain the supply of highly trained PhD's for government, universities, and industry.

Industry Matching Grants.—The third element of the nuclear engineering education program is the Matching Grants initiative. This program provides up to $50,000 per year from industry, matched by DOE, to a university to support nuclear engineering research and education. This innovative program was initiated by nuclear electric utilities who were concerned that academic departments in nuclear engineering would not be able to maintain adequate academic programs to provide the necessary manpower to keep nuclear power as a viable option for providing electricity into the next century. The program has had its greatest success in supporting the infrastructure of the departments by providing funds that can be channeled to needed areas on a year-by-year basis. The program originally included industry grants to 16 departments, totaling about $0.8 million each from the utilities and the DOE. This does not include all NE/RST departments who wish to participate. We recommend funding at a level of $1.0 million in the fiscal year 1999 budget to include additional NE/RST departments and to allow increases to offset inflation.

UNIVERSITY RESEARCH REACTORS

DOE funding provides support for the URR community in the form of 1) reactor fuel, 2) reactor sharing, and 3) reactor instrumentation upgrades.

Reactor fuel.—Since the Atoms for Peace program when the federal government encouraged universities to join in developing new knowledge and applications of radiation science, the fuel cycle costs for university reactors were provided by the federal government. Included is the loan of uranium, fuel fabrication, shipping of new and irradiated fuel, and acceptance of the spent fuel elements. Programs are in progress to improve fuel cycle economics by designing extended life fuel elements. There is also interest in removing from service fuel with over two decades of operation. In addition, Congress has mandated that the use of highly enriched uranium fuel at URR's should be terminated; conversion from high- to low-enrichment fuel has been progressing on a systematic basis. The cost of all these URR fuel-related issues total $3.8 million per year.

Reactor sharing.—The reactor sharing program must rate among the most cost-effective and successful expenditures of federal funds, making geographically distributed URR's available to many users as unique regional resources. This program allows faculty and students from other universities, community colleges, high schools, and junior high schools to utilize university reactors. This has led to research projects and lines of inquiry which might have never occurred had there not been a mechanism to access these facilities. The recommended level of funding is $0.6 million per year at a minimum.

Reactor instrumentation upgrades.—The cost to maintain university reactors and associated laboratories as state of the art teaching and research facilities is substantial. These facilities, initially constructed with major federal support, have aged without significant investment beyond the basic operating needs. Upgrading existing facilities is much more cost effective than replacing them. A relatively small investment in new equipment has proven to be very cost-effective. An annual pool of $1.0 million per year from fiscal year 1990–1993 had a dramatic impact on the health of URR's. It is recommended that the instrumentation program be maintained at a minimum of $1.0 million per year.

In order to maintain the educational infrastructure for nuclear engineering and radiation science and to provide an adequate level of funding for the university research reactors, the total level of funding needed is $12.4 million at a bare minimum. Since the University Nuclear Science and Reactor Support line in the budget request contains items unrelated to nuclear engineering and radiation science needs, this amount should be increased from the $10.0 million in the President's budget to $14.0 million to fully fund the NE/RST education ($7.0 million) and URR support ($5.4 million) programs.

NUCLEAR ENERGY RESEARCH INITIATIVE

The Department of Energy is proposing a Nuclear Energy Research Initiative (NERI). This is to be a peer-reviewed nuclear energy research program bringing together the best minds at universities, national laboratories, and in industry to address the critical research questions that need to be answered concerning nuclear energy. This program is modeled after the report of the Energy Research and Development Panel of the President's Committee on Advisors on Science and Technology (PCAST). We advocate that the peer-review process to be adopted for NERI be modeled after NSF review processes and support the DOE budget request of $24 million, although we believe that the higher funding level of $50 million recommended by PCAST is fully justified.

NERI is, in some ways, similar to NEER, but differs in a very fundamental and important way. NERI has the mission of supporting nuclear energy research; NEER provides research support for the academic discipline of nuclear engineering and radiation science. Nuclear Engineering as an academic discipline has its origins in nuclear energy, but has broadened to consider all applications of nuclear and radiation processes to science and engineering. Hence, it is concerned not only with nuclear fission-based power plants, but also with health and medical physics, radiation detection and measurement, materials science, waste management, environmental effects and monitoring, production of radiation and isotopes for a multitude of applications, and other aspects of radiological engineering. The NEER program provides research support to this broader range of areas, especially those not adequately funded elsewhere, while the NERI program focuses on only nuclear energy. NEER is analogous to the support for most scientific disciplines (except, historically, nuclear engineering) provided by the NSF without concern for a specific mission. While there are mission-focused research programs funded by other agencies that draw on disciplines supported by the NSF and provide funding for university research, it is clear to the broader scientific community that both broad-based fundamental support of the disciplines and mission-focused support is essential. The health of the NE/RST academic discipline requires the fundamental, broad-based support provided by NEER. We support both the continuation of NEER and the initiation of the NERI program.

NUCLEAR ENERGY PLANT OPTIMIZATION PROGRAM

Nuclear power faces critical issues that have broader implications than the needs of a particular industry. It is appropriate that research on these issues be funded by a government—industry partnership, such as the Nuclear Energy Plant Optimization (NEPO) program proposed by DOE. NEPO will focus on extending the life of currently operating nuclear plants, establishing a process for license renewal, and improving the efficiency and capacity of existing plants. Such research is essential if our nation is to maintain the nuclear option, meet the Kyoto goals for greenhouse gas emission reduction, and improve the quality of our nation's air. We support the DOE budget request of $10 million for NEPO.

BUDGET RECOMMENDATIONS

Our recommendations for support of nuclear engineering/radiation science are (in millions of dollars):

[In millions of dollars]

	Fiscal year 1998 actual	Fiscal year 1999 DOE proposal	Goal
NE/RST:			
NEER (research grants)	2.2	3.0	5.0
Graduate Fellowships	0.6	0.8	1.0
Industry Matching	0.8	0.9	1.0
URR:			
Reactor fuel and LEU conversions	2.1	2.3	3.8
Reactor sharing	0.5	0.7	0.6
Instrumentation	0.3	1.0	1.0
Unrelated;			
HBCU/HSI scholarships	0.5	0.6	.....
Pre-college education	.....	0.2	.....

[In millions of dollars]

	Fiscal year 1998 actual	Fiscal year 1999 DOE proposal	Goal
Radiochemistry	.....	0.5	.....
Totals	7.0	10.0	12.4

ATTACHMENT

LETTER FROM WILLIAM F. NAUGHTON

COMED,
February 4, 1998.

DEAN STEPHEN DIRECTOR,
College of Engineering, University of Michigan,
Ann Arbor, MI.

DEAR DEAN DIRECTOR: On behalf of the Nuclear Energy Institute (NEI), ComEd requests an opportunity to meet with the Big Ten Engineering Deans. The purpose of the meeting would be to emphasize the importance of academic programs in nuclear engineering in meeting the world-wide growing demands for highly qualified nuclear engineers both today and well into the 21st century. A strong outlook will require a strong academic infrastructure to meet that demand. Why should nuclear be singled out? Historically, due to its size as compared to Mechanical or Electrical Engineering programs, Nuclear tends to be overlooked despite a strong need and market.

To aid you in attending to this request, let me provide a little background information on NEI, ComEd, and the long-term employment outlook for nuclear engineers. NEI is the nuclear industry's representative in Washington D.C. NEI has nearly 300 members worldwide in all facets of the nuclear industry. ComEd, a Chicago based utility, is the largest investor owned nuclear utility in the U.S. with ten operating nuclear reactors. As Dr. Was has probably told you. ComEd inaugurated the DOE/Industry Nuclear Engineering Department Matching Grant Program in 1992 with five universities, four in the Big Ten. ComEd initiated the program in response to a National Academy of Sciences report that among other issues expressed concerns over the educational infrastructure and program quality of nuclear engineering education in the U.S. That program has recently been renewed for an additional five years, largely due to the efforts of the Big Ten schools affiliated with ComEd—Universities of Michigan, Illinois, Wisconsin, and Purdue.

Clearly, there is a continuing need for a solid educational and research infrastructure at U.S. colleges and universities in nuclear engineering. The nuclear industry is convinced that the 21st century will bring renewed expansion of nuclear energy, both in the United States and abroad. Nuclear energy is the most effective way to meet the world's growing electricity needs without producing emissions that damage our air quality or that are thought to contribute to global climate changes.

Although electricity demand in the United States continues to grow slowly, and no new large generating plants of any kind are expected to be built until 2005–2010 time frame, demand in developing countries is expected to soar in the next century. According to the World Energy Council, the International Energy Agency and the U.S. Department of Energy, energy demand worldwide will rise by 34 to 44 percent by 2010, and by 54 to 90 percent by 2020. At the same time, there is growing concern that increased emissions of carbon dioxide and other greenhouse gases from the burning of fossil fuels will cause disruptions in the world's climate. Nuclear energy is the only fully developed, emission-free electricity generating option with the potential for large-scale expansion.

In January 1998, President Clinton cleared the way for U.S. nuclear suppliers to compete in China's growing nuclear energy program. China's nuclear market is expected to include an average of two nuclear plant contracts a year between now and 2014, worth an estimated $50 to $60 billion between now and 2020.

Additionally, renewing the operating licenses for our nuclear power plants could help the nation reduce carbon emissions in 2010 to 1990 levels, according to a report issued by the five Department of Energy national laboratories last fall. The authors noted that the connection between research and development and nuclear plant license extension. Many of the nation's utilities that operate nuclear power plants are

in the planning stage for applying to the Nuclear Regulatory Commission to renew their operating licenses.

While the emphasis here has been focused on the needs of the nuclear power industry, the wider segment of the nuclear science and technology industry has similar long-term employment requirements especially in biology, medicine, environmental sciences, isotopes, radiation applications, etc. Thus, our university programs in nuclear engineering certainly both today and in the future will play a key role not only in the worldwide expansion of nuclear energy but also in the many beneficial science and technology services that it provides society.

Both NEI and ComEd look forward to meeting with you and the other Big Ten Deans to further discuss the current market and the long range forecast that signals a strong need for highly qualified nuclear engineers in all segments of nuclear science and technology. This strong outlook will require a strong academic infrastructure to meet that demand. Please contact me if you need any additional information.

Sincerely,

WILLIAM F. NAUGHTON,
Program Manager, Fuels.

PREPARED STATEMENT OF TOM SANFORD, DEPUTY MAYOR, CITY OF GRIDLEY, CA

Mr. Chairman, Members of the Subcommittee, my name is Tom Sanford, and I am the Mayor Pro Tem of the City of Gridley, California. I also serve as Gridley's commissioner on the governing board of the Northern California Power Agency, a joint power agency that includes 15 public power providers.

I appreciate the opportunity to testify before the Subcommittee regarding the federal funding priorities for the City of Gridley's ethanol project.I also want to thank the Subcommittee Members, and Congressman Vic Fazio, who represents our region, for the Subcommittee's past efforts, and we appreciate your continued support.

The City of Gridley is uniquely located in the heart of California's rice growing area, with an economy heavily dependent upon rice production and markets. In addition, Gridley operates a municipal utility, with responsibility for delivering electrical power to the Gridley community. The community, including local rice growers, have sponsored the Gridley Ethanol Project to solve a major rice straw disposal problem. This project will use rice straw and forest wood wastes to produce ethanol for the transportation fuel markets.

Mr. Chairman, in order to initiate construction of the biomass ethanol plant, the City of Gridley and its non-Federal cost-share partners request $5,000,000 in fiscal year 1999. The request represents what is needed in order for the City of Gridley to construct the optimum sized biomass ethanol plant. It is critical that we secure this funding in order to enable the project to go to construction next year. The project will be ready to go to construction in the summer of 1999 and failure to secure the funds will jeopardize our capacity to initiate construction on this important project. The project has a significant non-Federal cost share. After fiscal year 1999, assuming approval of the full $5,000,000 requested, the project will need one final contribution from the Federal Government of $5,000,000 in fiscal year 2000. The total planned Federal contribution to the project of approximately $12,000,000 will leverage a non-Federal investment of over $48,000,000 in the $60,000,000 plant.

Currently, biomass to ethanol production is primarily conducted in the mid-west using corn husks and waste as the principal feedstock. Ethanol is the sole product of this current process, which makes the economic viability of the technology completely dependent upon the current state of the ethanol market.

The technologies that will be used in the Gridley project more fully utilize the feed stock to produce a number of useful products while at the same time minimizing the byproducts requiring disposal. This will significantly improve the sustainability of the project and the technology.

Again, thank you for your past support and for this opportunity to testify.

PREPARED STATEMENT OF JOE F. COLVIN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NUCLEAR ENERGY INSTITUTE

Mr. Chairman and members of the subcommittee, my name is Joe Colvin. I am president and chief executive officer of the Nuclear Energy Institute. The Nuclear Energy Institute is the policy-setting organization for the U.S. nuclear energy industry. The Institute represents more than 275 members worldwide, including every U.S. electric utility that operates a nuclear power plant, as well as suppliers, nu-

clear fuel cycle companies, engineering and consulting firms, radiopharmaceutical laboratories, universities, labor unions and law firms.

Before I begin, I would like to express my gratitude to Chairman Domenici, Ranking Member Reid and the rest of the subcommittee members for considering the merits of nuclear energy in fiscal year 1999 budgets for the Department of Energy and the Nuclear Regulatory Commission.

INTRODUCTION

It is impossible to enter into a discussion about commercial nuclear energy without first examining its role in the broader context of environmental and energy policy issues. Nuclear energy—by virtue of its large-scale, carbon-free electricity generation—must be a major part of any national strategy to achieve clean air standards and mitigate greenhouse gas emissions.

Many policymakers have attested to nuclear energy's intrinsic value in meeting atmospheric emissions targets while providing nearly 20 percent of the nation's electricity. Energy Secretary Federico Peña recently recognized nuclear energy's critical role in energy policy: "Given growing concerns over global climate change and other environmental issues, the United States must maintain the option to both operate many of its current nuclear power plants and build new plants based on designs that emerged from our Advanced Light Water Reactor Program." Secretary Peña's message has been echoed by other representatives of the Executive Branch, the President's Committee of Advisers on Science and Technology, the Department of Energy's research laboratories and the New York Public Service Commission, to name a few. While this growing awareness is reassuring, nuclear energy's environmental benefits cannot be fully realized unless Congress actively supports federal programs that will resolve the few remaining challenges confronting the nuclear energy industry.

FEDERAL STORAGE AND DISPOSAL OF USED NUCLEAR FUEL

An overwhelming majority of Congress supports a legislative solution to federal management and disposal of used nuclear fuel. The Senate and the House of Representatives last year passed S. 104 and H.R. 1270, respectively, requiring the Department of Energy to uphold its immediate obligation to manage used nuclear fuel at a central storage facility while the agency continues scientific analysis of the proposed Yucca Mountain repository site. The bills currently are the subject of a negotiation to forge common legislation for final consideration by the House and the Senate.

The need for congressional intervention was reinforced by the Department of Energy's Jan. 31 default of a court-affirmed deadline to begin taking used nuclear fuel—a deadline Congress set in 1982. Although the agency claims its delay is unavoidable, the U.S. Court of Appeals for the District of Columbia Circuit ruled on Nov. 14, 1997, that DOE has an "unconditional obligation to dispose of utilities' spent nuclear fuel" (*Northern States Power Co. et al.* v. *U.S. Department of Energy and the United States of America*).

The Court of Appeals also ruled that the Standard Contract process provides a "potentially adequate" remedy for damages. The Department of Energy has stated its intention to apply the Standard Contract to pay utilities for damages out of the Nuclear Waste Fund, and simply offset such reductions by increasing future charges to utilities to the waste fund. The consumer-financed Nuclear Waste Fund should not be a source for those damages.

As the subcommittee weighs the Department of Energy's fiscal year 1999 request, it must consider the agency's fuel acceptance default and the need for DOE to meet its obligation as part of any compensation or damages. The industry encourages the subcommittee to instruct the Department of Energy to furnish a detailed account of how and when it will meet its obligation to accept used nuclear fuel.

Moreover, the improper use of the waste fund to pay damages would force an increase in utility customer payments to replenish the trust fund. In effect, the Department of Energy intends to make utilities pay themselves for DOE's failure to meet its statutory deadline. For these reasons, the Department of Energy should not be permitted to divert money from the Nuclear Waste Fund to compensate utilities for DOE's failure to honor its fuel acceptance obligation.

Despite the Department of Energy's default, the scientific and technical efforts must continue to determine if the permanent repository site is suitable. The Department of Energy's $380 million fiscal year 1999 request for OCRWM is necessary to ensure the office continues to meet deadlines for data collection and study at the proposed Yucca Mountain, Nev., repository; to improve the infrastructure of that laboratory; and to support analysis of scientific and technical data for use in a DOE

viability assessment due to Congress this fall. All of these projects further DOE's effort to prepare a draft environmental impact statement and license application for the repository. From our perspective, the fiscal year 1999 request assures timely scientific study and analysis, and a realistic schedule to complete a viability assessment for Congress by December 1998.

The nuclear energy industry continues to support strong oversight of the federal used nuclear fuel management program, particularly in monitoring the state of Nevada's use of federal grants made from the fund. Two reports from the U.S. General Accounting Office, one in 1990 and another in 1996, concluded that Nevada—which opposes the repository project—improperly spent more than $1 million of grant moneys. Through the Appropriations Committee's vigilance, recent appropriations acts have precluded Nevada from using grant funds for lobbying, litigation and certain multistate activities. Yet the GAO, in its 1996 report, found that Nevada's weak documentation of grant expenditures has made it difficult to determine whether the state is spending federal funds appropriately.

Until the subcommittee is satisfied that DOE-administered funds provided to the state are properly spent, any further funds should be withheld from grant recipients shown to have misspent past federal grant money. In the meantime, the nuclear energy industry believes that other Nevada-based programs, such as the state university system and county oversight efforts have been spending government money wisely and have provided useful contributions to the repository project.

NUCLEAR REGULATORY COMMISSION

Safety is the nuclear energy industry's top priority and we recognize the unique responsibility that the Nuclear Regulatory Commission has to assure adequate protection of public health and safety. However, the industry is concerned that the Nuclear Regulatory Commission has created a regulatory environment in which the agency's interest in compliance has blurred its primary mission. Licensees are being penalized based on regulation to the lowest common denominator at a time when overall plant performance, capacity factors and safety ratings are high.[1]

In a 1997 audit the NRC's Office of Inspector General recognized a conflict between the commission's goal of focusing on issues of greatest safety significance and its actual resources devoted to verifying license compliance with regulations of limited safety benefit.[2] The report, which focused on NRC events surrounding refueling practices at Northeast Utilities' Millstone Unit 1 plant, concluded that the commission should adopt a risk-informed, performance-based regulatory system. The Nuclear Energy Institute agrees that a focus on plant safety would enhance the commission's effectiveness and ensure that regulation focuses on those areas directly related to safety. The NRC's $488.6 million funding request should be devoted to implementing regulations that have a direct bearing on safety.

Almost all of the funding requested by the NRC—$466.9 million—would come from the collection of user fees from licensees, primarily nuclear power plant licensees—an increase of $12.1 million from fiscal year 1998. The nuclear energy industry continues to question the equity of a 100 percent user fee, which charges electric utilities for the cost of programs that are not directly related to the regulation of specific licensees, but rather, have national applications. Included in the NRC's budget is a request to extend its authority to collect a 100 percent user fee from nuclear power plant licensees through 2003. Extending the commission's collection authority and any future budgetary increases that impact the user fee would be unfair to licensees who confront a changing regulatory environment amid electric utility restructuring.

The 100 percent user fee could create a disadvantage for nuclear power plants among competing electricity sources, especially as the commission requests increases to its fiscal year budget throughout the authorized collection period.

The nuclear energy industry believes that, rather than increase the NRC budget—and thereby user fees—that if the commission focuses its programs and regulations on safety-based performance standards, it could fulfill its responsibility more efficiently. For example, such an emphasis on performance standards would free NRC resources for license renewal of nuclear power plants without increasing the agency's overall budget. The NRC's role in extending the operating licenses of nuclear facilities should stress timely and efficient review of issues related to continued plant operation and maintaining high safety standards.

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[1] For example, in 1997, the median value for unplanned automatic shutdowns at nuclear power plants was 0 per 7,000 critical hours, down from 7.3 in 1980; 1997 World Association of Nuclear Operators Performance Indicators.

[2] OIG/97A–01, NRC needs Comprehensive Plan to Resolve Regulatory Issues, Aug. 21, 1997.

The nuclear energy industry fully supports approval of the moneys requested by NRC from the Nuclear Waste Fund. These funds will allow the NRC to continue its oversight of the Yucca Mountain project as the Department of Energy prepares its license application for the repository. These activities are a crucial step toward implementation of the integrated used fuel management program.

In the area of safe cleanup at decommissioned nuclear facilities, the Nuclear Regulatory Commission should be commended for its continued efforts to establish reasonable residual radiation standards. The commission's standards are consistent with radiation standards set by U.S. and international scientific organizations, such as the National Council on Radiation Protection and the International Commission on Radiological Protection. Yet the Environmental Protection Agency is challenging the commission's policy by issuing guidance on residual radiation that would prompt an excessive duplication of existing standards and indefinitely delay site cleanups. The industry encourages the subcommittee to clearly instruct the EPA to continue its long-standing policy of deferring regulation of NRC-licensed site cleanup to the Nuclear Regulatory Commission under the authority of the Atomic Energy Act.

NUCLEAR ENERGY RESEARCH AND DEVELOPMENT

The Department of Energy's fiscal 1999 program for nuclear energy research and development represents a considerable improvement over its fiscal 1998 proposal, which fell short of congressional expectations and ultimately was rejected. One notable improvement in DOE's proposal is its inclusion of the nuclear energy industry in a cost-shared, joint research venture with the Department of Energy to optimize nuclear power plants. The nuclear energy industry firmly supports this initiative as a way to maintain energy diversity, and therefore, national security, an economic edge, and U.S. leadership in nuclear technology abroad.

Nuclear energy's significant role in helping the United States achieve clean air compliance and curb greenhouse gas emissions recently was recognized by the President's Committee of Advisers on Science and Technology. The committee recommended a funding profile that would boost incrementally the Department of Energy's nuclear energy R&D budget to $119 million by 2003—with $50 million recommended in fiscal year 1999 ($16 million more than DOE's request).

The Department of Energy proposes to enhance nuclear energy's national contribution to cleaner air through two new programs as well as a continuing education initiative:

A new $24 million Nuclear Energy Research Initiative would ensure that research conducted by universities, laboratories and the nuclear energy industry contributes to the national interest. The research initiative recognizes the value of nuclear energy's role in reducing the emissions of carbon dioxide and other restricted gases and particulates. Nuclear energy accounts for 90 percent of carbon reductions by the U.S. electric utility industry since 1973, and 30 percent of voluntary carbon dioxide reductions since 1993 under the Department of Energy's Climate Challenge program.

The Nuclear Energy Plant Optimization program would allocate $10 million to research and development projects that enhance the continued operation of our 105 nuclear plants. Similar to programs in other areas of energy production, the nuclear plant optimization program would provide technical and regulatory improvements for continued plant operation and increase productivity at existing plants. Both the industry and Department of Energy recognize the production costs of nuclear energy will be even more competitive once the capital costs have been fully depreciated after 40 years.

Finally, the University Support program would earmark $10 million for universities and colleges to enhance research and education in nuclear sciences by helping to sustain university reactor and engineering programs. However, the nuclear energy industry believes an additional $4 million is needed to expand the Nuclear Energy Education Research initiative, which Congress authorized in fiscal year 1998.

Many of the nation's nuclear medicine treatments, such as radiation therapy, were developed and enhanced by a work force educated in the nuclear sciences. It is crucial that the United States maintain its leadership role in nuclear technology so that it is a credible presence in the global nuclear community. Internationally, U.S. competitors are turning to nuclear energy to satisfy growing environmental constraints. Countries like France and Japan already have strong nuclear energy programs that respond to energy demand and environmental sensitivities.

The Department of Energy's research and development proposal is thoughtful, well conceived and relevant to the nation's energy and environmental goals. For the reasons stated above, the nuclear energy industry urges the subcommittee to sup-

port DOE's nuclear energy research and development programs, but adopt PCAST's recommended funding level of $50 million for fiscal year 1999.

The nuclear energy industry supports the funding as noted in these areas:

Uranium Decontamination and Decommissioning.—DOE's fiscal year 1999 request for appropriations from the fund includes $242 million for numerous activities at the government-owned plants and $35 million for uranium/thorium tailings cleanup reimbursements, as authorized by the Energy Policy Act. The nuclear energy industry urges the subcommittee to ensure that congressionally appropriated funds are used for decontamination and decommissioning activities as envisioned by the Energy Policy Act, and not for activities related to current operations of the gaseous diffusion plants.

Surplus Weapons Material Disposition.—The nuclear energy industry supports the Department of Energy's $168.9 million request for the disposal of surplus weapons fissile materials, an increase of $65 million from fiscal year 1998. The U.S. and Russian programs must move from a study phase to actual material disposition. The nuclear energy industry and federal agencies also must continue efforts to use mixed oxide fuel at U.S. reactors.

International Nuclear Safety Program and Nuclear Energy Agency.—The subcommittee should provide funding for the Department of Energy's International Nuclear Safety Program. Improving the operational safety at Soviet-designed nuclear power plants is imperative. Potential weaknesses in reactor safety abroad not only pose threats to public health and the environment, but also erode public confidence in the entire nuclear energy industry.

The Nuclear Energy Institute supports the funding of continued U.S. membership in the OECD's Nuclear Energy Agency.

Medical Isotopes.—The nuclear energy industry supports the Department of Energy's radioisotope program and encourages the enhanced and continued supply of isotopes for the purpose of medical research. Such isotopes are not readily available in the commercial sector and the Department of Energy has a history of supporting medical isotopes.

DOE Radiation Standards.—The nuclear energy industry is aware of the Department of Energy's development of radiation standards for safe cleanup and restoration of its decommissioned facilities. We urge the subcommittee to support the Department of Energy in finalizing these standards in order to enhance a safe, economic and timely conclusion to the agency's extensive environmental restoration program. Close involvement between the Department of Energy and the NRC ensures the early identification and resolution of potential concerns that otherwise would require more costly long-term review.

CONCLUSION

I would like to thank the subcommittee for the opportunity to share the industry's perspective on issues crucial to the nuclear energy industry. Although the Department of Energy has failed to meet statutory and court-affirmed deadlines for the storage and disposal of used nuclear fuel, Congress should support the agency's continued scientific and technical work at the proposed Yucca Mountain repository to avoid further delays. Even as Congress considers separate legislation to reform the federal nuclear waste management program, the subcommittee must ensure that activities within the Office of Civilian Radioactive Waste Management progress to support the repository project.

The nuclear energy industry urges the subcommittee to consider the fairness and equity of the Nuclear Regulatory Commission's user fee. Commission licensees should not be assessed 100 percent user fees for commission activities that do not pertain to regulating those licensees, but that have broader, national application.

Finally, by funding the Department of Energy's two new nuclear energy research and development initiatives, the subcommittee would reaffirm nuclear energy's valuable contribution toward achieving clean air compliance and mitigating greenhouse gases and continue the research necessary to further improve performance and safety of U.S. nuclear power plants. As the nation's second largest electricity source, nuclear energy is well-positioned to meet future energy demand in a manner consistent with national environmental policy.

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