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PENDING WATER RESOURCE PROJECTS

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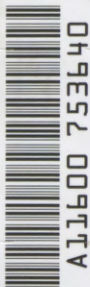
GOVERNMENT

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JUL 1 1974

HEARINGS

KANSAS STATE UNIVERSITY BEFORE THE



COMMITTEE ON WATER RESOURCES

OF THE

COMMITTEE ON PUBLIC WORKS

UNITED STATES SENATE

NINETY-THIRD CONGRESS

SECOND SESSION

ON

S. 2668

A BILL TO MODIFY THE PROJECT FOR THE FALLS DAM AND
RESERVOIR, NEUSE RIVER, NORTH CAROLINA

S. 3141

A BILL TO AUTHORIZE CONSTRUCTION OF THE CLINTON
PARKWAY, DOUGLAS COUNTY, KANSAS

S. 3262

A BILL TO DIRECT THE SECRETARY OF THE ARMY, ACTING
THROUGH THE CHIEF OF ENGINEERS, TO PROVIDE A FACIL-
ITY FOR A WHITE WATER CANOE-KAYAK SLALOM COURSE
ADJACENT TO THE SITE OF CAPTAIN MELDAHL LOCKS AND
DAM, OHIO RIVER

AND ALSO

THE PORTUGUES AND BUCANA RIVERS PROJECT, PUERTO RICO
AND
WILLOW CREEK DAM AND RESERVOIR, OREGON

APRIL 24 AND 25, 1974

SERIAL NO. 93-H40

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PENDING WATER RESOURCE PROJECTS

WEDNESDAY, APRIL 24, 1974

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
SUBCOMMITTEE ON WATER RESOURCES,
Washington, D.C.

The subcommittee met at 9:30 a.m., pursuant to call, in room 4200, Dirksen Senate Office Building, Hon. Dick Clark presiding.
Present: Senators Clark, Scott, and Stafford.

OPENING STATEMENT OF HON. DICK CLARK, U.S. SENATOR FROM THE STATE OF IOWA

Senator CLARK. The committee will come to order.

As you are aware, the purpose of this hearing today is to receive testimony on three legislative proposals which had been deferred for further examination and consideration during drafting of the recently approved Water Resources Development Act.

The first of the proposals to be reviewed is a bill by Senator Helms—S. 2668—calling for a major modification and reduction of the scope of the Falls of the Neuse Dam and Lake Project in North Carolina.

The other two measures on the agenda call for authorization of new developments.

A bill by Senator Robert Dole and cosponsored by Senator Jim Pearson—S. 3141—calls for construction of a proposed Clinton Parkway to provide access to a major Corps of Engineers recreational area in Kansas.

The other proposal—S. 3262—by Senator Robert Taft envisions development of a canoe and kayak slalom course on the Ohio River at the end of the Meldahl Dam near Cincinnati.

I am delighted that in each case the sponsors are with us as witnesses today and that Senator Sam Ervin, while unable to be here, has submitted a statement for the record on the Falls of the Neuse proposal.

In addition to sponsoring Senators, today's witness list also includes municipal officials from the areas affected by the legislation and we welcome their presence and contributions to the hearing.

The same can be said for Brig. Gen. James Kelly, the Deputy Director for Civil Works, Corps of Engineers, and members of his staff who are here to give us that agency's views on the proposals in question and the benefit of their knowledge and expertise with respect to the issues involved in each proposal.

With a word of welcome to each of you I now call upon General Kelly as the day's first witness.

STATEMENT OF BRIG. GEN. JAMES L. KELLY, DEPUTY DIRECTOR OF CIVIL WORKS, U.S. ARMY CORPS OF ENGINEERS; ACCOMPANIED BY IRVIN REISLER, CHIEF, PLANNING DIVISION, U.S. ARMY CORPS OF ENGINEERS

General KELLY. Thank you very much, Mr. Chairman.

I am accompanied this morning by Mr. Reisler, who is the Director of Planning in the Corps of Engineers, Office of Chief of Engineers.

FALLS DAM AND RESERVOIR

I will first offer testimony on the views of the Department of the Army on S. 2668, 93d Congress a bill "To modify the project for the Falls Dam and Reservoir, Neuse River, North Carolina."

The purpose of the bill is to prohibit the Secretary of the Army, acting through the Chief of Engineers, from acquiring any interest in land to be devoted exclusively to recreational development and fish and wildlife enhancement at the Federal water resources development project for the Falls Dam and Reservoir, Neuse River, N.C.

The 84th Congress, in recognition of numerous and critical water-related problems and requirements in the Neuse River Basin, N.C., directed the Army Corps of Engineers in 1956 to undertake a study of the basin to determine whether improvements for flood control, conservation of water resources in the interests of water supply and for allied purposes were warranted.

The findings of the corps study, which was initiated in 1958 and completed in 1965, indicated that there was a strong need for such improvements in the Neuse River Basin and incorporated a general plan of water resources development which was formulated to meet long-term requirements over the period of the next 100 years.

The Secretary of the Army specifically recommended to the Congress at that time in 1965 that the Falls Lake project near the cities of Raleigh and Durham was the most important project of the general plan to meet the most immediate and urgent needs of the basin for flood control, water quality control, water supply, and water-oriented outdoor recreation as well as provide the foundation upon which the general plan could be efficiently and expeditiously developed.

The Congress authorized construction of the recommended multiple-purpose Falls Lake project in its enactment of the Flood Control Act of 1965—Public Law 89-298.

Construction of the project will create a permanent lake of 12,490 acres located northwest of the village of Falls, N.C., and approximately 10 miles north of Raleigh and 17 miles east-southeast of Durham.

The project will fulfill a number of critical needs of national as well as regional and local significance by providing flood control resulting in a 50 percent reduction in downstream flood damages; a regional water supply of over 100 million gallons per day to serve

the Raleigh area which is undergoing rapid urban development and population growth; water quality control to enhance downstream fishery and to diminish the effect of nonpoint source pollution; and a variety of outdoor recreation facilities and opportunities close to rapidly growing urban centers.

Existing plans for land acquisition for the project as authorized are in accord with our established land acquisition policy at corps lake projects and require the acquisition of 42,259 acres of land.

Of this total, 12,490 acres will be required for the aforementioned conservation pool—which is shown in the dark blue on the chart—and 25,219 acres will be required for flood control pool purposes and freeboard lands—these are shown in light blue, yellow and orange on the periphery of the pool—to ensure Federal ownership of lands that will be periodically flooded or otherwise affected by the operation of the project adjacent to the permanent conservation pool.

These latter lands will also be necessary to prevent encroachment on the shoreline by adjacent landowners and may be made available for some use by the public when and where appropriate.

The remaining 4,550 acres of the total land—that is shown in green—acquisition for this project are the separable recreation lands which will be immediately adjacent to the aforementioned inner Federal holdings and which we would be prohibited from acquiring if S. 2668 is enacted into law.

Our planning for the acquisition, conservation and improvement of these 4,550 acres of separable recreation lands at the Falls Lake project has conformed to the requirements of the Federal Water Project Recreation Act—Public Law 89-72—which directs that full consideration shall be given to the opportunities, if any, which a project affords for outdoor recreation and that, whenever any such project can reasonably serve this purpose, it shall be constructed, operated and maintained to accomplish this purpose consistent with other authorized purposes of the project and with the provisions of that recreation act.

Accordingly our current plans are to make the greatest possible use of the recreational potential of the project within existing authorities.

Federal acquisition, conservation and improvement of the 4,550 acres of separable recreation lands could provide access to and complement 6,893 acres of the aforementioned flood control and freeboard lands for recreational use.

Some of these latter holdings will not otherwise be available or suitable for general public recreational use without the acquisition of the separable lands.

Accordingly, we would have to considerably reduce our scale of recreation development for the Falls Lake project if we are unable to acquire the separable recreation lands.

Specifically, the corps recreation development activity would probably be limited to a 1,000-foot strip of land around the lake. Permanent facility development would be restricted to a narrower

300-foot strip, farther from the lake, which would be an area such that it would not be damaged by the high waters of the lake.

The recreation opportunities directly afforded by the use of these separable lands would, of course, also be lost by enactment of S. 2668. Estimated annual visitations would decline from a maximum of 7.8 million to 2.8 million visitors with an attendant loss of recreation benefits.

Our preliminary estimates are, in this latter regard, that the project's benefit-cost ratio of 1.5 to 1.0 would be reduced to 1.2 to 1.0.

It also should be noted that the Department of the Army, in compliance with existing authorities, has already executed cost sharing agreements with the State of North Carolina concerning the recreation component and with the city of Raleigh concerning the water supply component of the Falls Lake project as planned.

Enactment of S. 2668 would obviously alter the ability of the parties to fulfill these agreements as written in favor of possible renegotiations of these matters in light of the changed circumstances of the project that it would cause.

In summary, the primary effect of enactment of S. 2668 would be to preclude Federal optimization of the outdoor recreation potential at the Falls Lake project as planned.

In addition, we would obviously be required to reassess this project in its new posture to assure its continued viability and ascertain its position of priority for Federal construction.

Having informed the committee and the Congress of these matters, we conclude this report by noting that the extent of cooperative outdoor recreation development at Federal water resources projects, such as the Falls Lake project, is based ultimately on understandings which the Federal Government reaches with affected non-Federal interests who realize many of the direct and indirect benefits and costs of such development.

If the Congress now determines after considering the views of all affected non-Federal interests that it is in the national interest that the scope of outdoor recreation development at the Falls Lake project be reduced, the Department of the Army offers no objection to enactment of S. 2668.

However, the legislation should permit acquisition of those separable lands necessary for construction of access roads necessary for the utilization by the public for recreation of the multipurpose lands acquired for the reservoir.

To try to clarify that a little, if none of the 4,550 acres can be acquired, it will definitely constrict the use of the reservoir. We would recommend that the language be amended slightly to permit, if passed, acquisition of those lands essential for access to the reservoir for recreation.

That concludes my statement on this project. Mr. Chairman.

[The bill, S. 2668, follows]

93D CONGRESS
1ST SESSION

S. 2668

IN THE SENATE OF THE UNITED STATES

NOVEMBER 7, 1973

Mr. HELMS introduced the following bill; which was read twice and referred to the Committee on Public Works

A BILL

To modify the project for the Falls Dam and Reservoir, Neuse River, North Carolina.

- 1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That (a) the project for the Falls Dam and Reservoir,
4 Neuse River, North Carolina, authorized by the Flood Con-
5 trol Act of 1965 (79 Stat. 1073), is hereby modified to
6 provide that the Secretary of the Army, acting through the
7 Chief of Engineers, shall not acquire any Federal interest in
8 land to be devoted exclusively to recreational development
9 and fish and wildlife enhancement at the project: *Provided,*
10 That nothing contained herein shall preclude the Secretary

1 from acquiring interests in land determined by the Chief
2 of Engineers to be necessary for the Falls Reservoir project
3 and to be used jointly for authorized project purposes, in-
4 cluding recreational development and fish and wildlife en-
5 hancement and from acquiring necessary lands for access to
6 the recreational development.

7 (b) The Secretary is authorized to renegotiate and
8 amend or modify any existing agreements between non-
9 Federal interests and the United States concerning cost
10 sharing and other items of cooperation for recreational devel-
11 opment, municipal and industrial water supply storage, and
12 other authorized purposes of the Falls Reservoir project to
13 accomplish any changes in such agreements which are neces-
14 sitated by the provisions of this Act. Advanced engineering
15 and design, land acquisition, and construction may be imple-
16 mented concurrently with the renegotiations authorized in this
17 subsection.

18 (c) The discount rate used or to be used in the com-
19 putation of benefits and costs for the Falls Reservoir project
20 under existing law and policy and applicable to the project
21 prior to the enactment of this Act, shall not be affected by
22 the enactment of this Act or changed as a result of the enact-
23 ment of this Act.

CLINTON PARKWAY, DOUGLAS COUNTY, KANS.

Senator CLARK. We will go on to the next project.

General KELLY. Mr. Chairman, to continue the testimony, I testify now on the Senate bill S. 3141. This bill would modify the authority for the Clinton Dam and Lake, shown in blue on the map, near Lawrence, Kans., shown in yellow on the map, to authorize the Secretary of the Army, acting through the Chief of Engineers, to construct a highway in Douglas County, Kans., to be known as the Clinton Parkway, shown in orange on the map.

The project for Clinton Dam and Lake, which is a part of the project for the Kansas River, Kansas, Nebraska, and Colorado, authorized by the Flood Control Act of 1962 (76 Stat. 1193), is located on the Wakarusa River near Lawrence, Kans.

The project, which is currently under construction and is about 35 percent complete, provides for flood control, water supply, fish and wildlife enhancement, and recreation.

The proposed Clinton Parkway, a four-lane divided highway, would extend from the western edge of the city of Lawrence 4.2 miles west to the boundary of the lake project at the lake access road "A"—a vertical purple line on map that connects project lands with U.S. Route 40.

The parkway would be placed in the Federal-aid secondary highway system at a Federal cost not to exceed 70 percent of the total construction cost, currently estimated at \$6 million.

While we defer to the Department of Transportation concerning the efficacy of construction of the highway, we are opposed to the provision authorizing the Secretary of the Army, acting through the Chief of Engineers, to use project funds to perform the construction and thereby assume the Federal share of the costs this construction entails.

Since a portion of the parkway would be located adjacent to, but outside of, the perimeter of the Clinton Lake project, we think these responsibilities should, properly, not be assigned to the Department of the Army.

Selection of the access roads to the damsite was made without consideration of the proposed parkway, and was based upon studies of their cost, required safety features, and environmental impacts.

We believe these access roads to be adequate and view the proposed parkway as secondary access. We feel that enactment of this bill could establish an unwarranted precedent for allocating Federal funds needed for flood control to unrelated road or highway development.

However, since a portion of the proposed parkway would be located in an area adjacent to the boundaries of the project lake, the corps has offered to furnish all necessary rights-of-way in the project area, subject to the approval of the Secretary of the Army, for the highway proposal.

Accordingly, we oppose enactment of S. 3141 as written.

[The bill, S. 3141, and a project description follows:]

93^d CONGRESS
2^d SESSION

S. 3141

IN THE SENATE OF THE UNITED STATES

MARCH 8, 1974

Mr. DOLE introduced the following bill; which was read twice and referred to the Committee on Public Works

A BILL

To authorize construction of the Clinton Parkway, Douglas County, Kansas, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 SECTION 1. The project for Clinton Reservoir, Kansas
4 River, Kansas, Nebraska, and Colorado, authorized by the
5 Flood Control Act approved October 23, 1962 (76 Stat.
6 1193), is hereby modified to authorize the Secretary of the
7 Army, acting through the Chief of Engineers, to construct
8 a highway in Douglas County, Kansas, to be known as the
9 Clinton Parkway. Such highway shall run from Twenty-third
10 and Iowa Streets in Lawrence, Kansas, westward approxi-

1 mately four and one-tenth miles to the Clinton Lake Access
2 Road A and shall be constructed in cooperation with the
3 State of Kansas and affected political subdivisions.

4 SEC. 2. The Federal share of the work performed under
5 this section shall not exceed 70 per centum of the costs of
6 such work. The Secretary may enter into such agreements
7 with the State of Kansas and political subdivisions thereof
8 as he deems necessary to provide for the cost sharing and
9 construction by such non-Federal interests of the work
10 authorized by this section.

11 SEC. 3. The highway shall be placed in the Federal-aid
12 secondary highway system of roads and maintained by the
13 State of Kansas or political subdivisions thereof upon
14 completion.

15 SEC. 4. There is authorized to be appropriated to the
16 Secretary not to exceed \$6,000,000 to carry out this section.

CLINTON PARKWAY, KANSAS

LOCATION

The proposed Clinton Parkway would extend from the intersection of Highways US-59 and K-10, in Lawrence, Kansas, westerly 4.2 miles to the Clinton Lake damsite access road near the lake administrative area. The proposed project lies entirely within Douglas County, Kansas.

AUTHORITY

The Clinton Parkway is being considered for authorization at this time. (H.R. 11682 sponsored by Representative Larry Winn and S. 3141 sponsored by Senator Robert Dole are before the House and Senate Public Works Committees, respectively. Both Bills call for modification of the existing Clinton Reservoir authority—the Flood Control Act of 1962, to include the parkway construction).

EXISTING PROJECT

The Clinton Lake project, located on the Wakarusa River in Douglas and Shawnee Counties, Kansas, is currently under construction and is about 35 percent complete. The dam and lake will provide flood control, water supply, fish and wildlife enhancement, and recreation.

NEEDS

The Clinton Lake, when completed, will include 5 public use areas around the lake. One of these use areas will be operated and maintained by the State of Kansas as a State park. Due to the proximity of the large population centers of Topeka and Kansas City, the annual visitor expectancy at the end of the first 3 years of operation is 1,040,000, and the ultimate annual visitor average is at least 3,000,000. The anticipated recreationists will have to rely on existing 2-lane low-type asphalt and gravel surfaced roads to gain access to the recreation areas. The residents of Lawrence and the Board of County Commissioners of Douglas County are concerned over the inadequacy of the existing roads and expected heavy traffic congestion.

PROPOSED PLAN OF IMPROVEMENT

The parkway would be a 4-lane divided facility with improved shoulders to accommodate hikers and bicyclers. The parkway alinement would retrace existing 23rd Street in Lawrence 2.5 miles west from the intersection of Highways US-59 and K-10, then extend west another 1.7 miles over new terrain to the damsite access road near the entrance of the planned State park. Some of the parkway would be located adjacent to the Clinton Lake project boundary. The Corps of Engineers has offered to furnish all necessary parkway rights-of-way in the lake project area, subject to the approval of the Secretary of the Army.

ESTIMATED COST

Proposed legislation (H.R. 11682 and S. 3141) would limit Federal participation at 70 percent of project cost, currently estimated at \$6,000,000 excluding value of existing lake project rights-of-way.

PROJECT ECONOMICS

The Clinton Lake project is an element of the Missouri River Basin system that includes 25 lakes and 19 local projects, and based on the lake project's fair share of the system benefits, the benefit-cost ratio is 1.5. As the last added unit in the system, the benefit-cost ratio is 1.15. The addition of the

proposed parkway to the lake project would increase the Federal share of the project roads about 600 percent, which would result in an increase in the Federal share of the total project cost of about 12 percent; from \$50.8 million to \$56.8 million. This would result in a reduction of the benefit-cost ratio from the lake project: as a part of the system, from 1.5 to 1.4, and as the last added unit of the system, from 1.15 to 1.05.

LOCAL COOPERATION

Local interests strongly desire construction of the parkway. Unable to generate funds at the local or state level for construction of the project, they have sought the assistance of their Congressional representatives.

ENVIRONMENTAL IMPACT

Construction of the parkway would lessen, if not eliminate the traffic problems and associated air pollution in Lawrence caused by congested lake-user's automobiles. During construction, if authorized, there would be an adverse impact in fuel and materials use, air and water pollution.

COORDINATION

The Corps of Engineers, Kansas City District, were first contacted in 1968 by Douglas County officials regarding participation in the proposed parkway costs. The District informed the officials that the parkway was not a requirement of the lake project and therefore, the Corps could not participate. There have been several subsequent contacts between county officials and the District since the 1968 meeting, but no further request to aid in the parkway construction has been made until recently.

CORPS POSITION

The proposed parkway would be a very desirable element in providing convenient access to Clinton Lake to take maximum advantage of the recreation areas. However, since the parkway would be located adjacent to, but outside of, the perimeter of the lake project, the Corps of Engineers does not believe that it should be granted authority to construct the parkway. Such authority and resultant construction could establish an unwarranted precedent for allocating Federal funds needed for flood control to unrelated road or highway development. This, in turn, could adversely affect the economic evaluations of many other similar dam and lake projects throughout the Nation. It is believed that the Administration has not yet taken a position on the proposed parkway.

WHITEWATER CANOE-KAYAK SLALOM COURSE, OHIO RIVER

General KELLY. The third bill that I would like to testify on is S. 3262.

S. 3262 would authorize and direct the corps to proceed with detailed planning studies for development of an artificial white water canoe-kayak slalom course somewhat like the one at Augsburg, Germany, used in the last Olympics.

In 1972 our Huntington District Engineer initiated a reconnaissance-scope feasibility study to consider the possibility of developing such a course at one of the Ohio River lock and dam installations. This was prompted by widespread interest among whitewater canoeing enthusiasts and stimulated by the telecasts of the 1972 Olympic games.

The study was made using available authority and funds for consideration of recreational development at completed corps projects. It resulted in the conclusion that the most suitable location for such a course would be at the site of the Captain Meldahl Locks and Dam on the Ohio River, about 30 miles upstream of Cincinnati.

Because of the uniqueness of this proposal, we felt that development of such a course was beyond the scope of the corps general authority for development of public recreational facilities at our projects.

Accordingly, we concluded that further unilateral pursuance by the corps would be inappropriate and specific authorizing legislation would be required.

Since 1972, canoe slalom competition has been dropped from the list of events for future Olympiads. Interest in an artificial course, however remains high in the Northeastern United States.

Recreational benefits from use and visitation, if an artificial course were provided, could result in economic justification. However, the decision to undertake such a development should rest, basically, upon a determination that there is a national or at least very significant regional interest which would be served.

As a threshold matter, our preliminary studies have indicated the appropriateness of more detailed studies regarding the engineering feasibility and economic justification of such a facility.

It would be appropriate that the Secretary of the Army be authorized to conduct a survey and prepare a subsequent report for timely presentation to the Congress on the feasibility of and justification for constructing such a facility adjacent to the site of Captain Meldahl Locks and Dam.

This report would, of course, include our recommendations on the extent of local cost sharing and other local responsibilities which should be assumed and if the report's findings are favorable to the project, it could form the basis for full construction authorization of the project at that time.

Accordingly, the Department of the Army opposes S. 3262's phase 1 authorization approach as being inappropriate but does favor the implementation of an Army survey authority of this project as I have previously outlined.

[The bill, S. 3262, and a project description follows:]

93RD CONGRESS
2^D SESSION

S. 3262

IN THE SENATE OF THE UNITED STATES

MARCH 28, 1974

Mr. TAFT introduced the following bill; which was read twice and referred to the Committee on Public Works

A BILL

To direct the Secretary of the Army, acting through the Chief of Engineers, to provide a facility for a whitewater canoe-kayak slalom course adjacent to the site of Captain Meldahl locks and dam, Ohio River.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That the Secretary of the Army, acting through the Chief of
4 Engineers, is authorized and directed to provide a facility for
5 a whitewater canoe-kayak slalom course adjacent to the site
6 of Captain Meldahl locks and dam, Ohio River: *Provided,*
7 That the phase I design memorandum stage of advance engi-
8 neering and design shall first be completed and the results
9 reported to the Committees on Public Works of the Senate
10 and House of Representatives, with recommendations as to

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1 the extent of local participation considered most appropriate
2 in connection with provision, operation, and maintenance of
3 such a facility for approval before proceeding further with
4 the design and construction of the facility.

5 SEC. 2. There is authorized to be appropriated to the
6 Secretary not to exceed \$175,000 for purposes of this sec-
7 tion, including model studies.

WHITEWATER CANOE-KAYAK SLALOM COURSE, CAPT. ANTHONY MELDAHL LOCKS
AND DAM, OHIO RIVER

SUMMARY OF 1972-73 FEASIBILITY STUDY

1. *Location.* The Captain Anthony Meldahl Locks and Dam are located at mile 436.2 on the Ohio River (confluence of the Ohio with the Mississippi is at Ohio River mile 981), about 30 miles upstream of Cincinnati, Ohio. The considered location for an artificial whitewater canoe-kayak slalom course is landward of the locks on the State of Ohio (north) side of the river.

2. *Site selection.* Following receipt of requests from whitewater canoeing interests that consideration be given to development of an artificial course as an adjunct to one of the Ohio River projects, the available sites were surveyed. Primary consideration was given to availability of land, adaptation to terrain, accessibility, location with respect to major population centers, costs, and safety aspects. Based thereon, it was concluded that the Meldahl site would be the most suitable.

3. *Considered plan.* The area that would be used for the slalom course is traversed by a small interior stream, Bear Creek, which drains to the mainstream downstream of the lock. For operation of the course Ohio River water would be diverted from the upper pool of the Meldahl Dam through an excavated approach channel; at the inward end (upper end of the course) a control structure with horizontal sliding gates would be provided to permit variance of flows; the course itself would consist of a serpentine, obstacle-littered channel (like the 1972 Olympic course at Augsburg, Germany) terminating in a stilling basin in Bear Creek. In the course area, the Bear Creek channel would be diverted to the stilling basin. Downstream from the stilling basin an enlarged outlet channel, to carry both natural Bear Creek flows and the discharges from the course (diverted flows from the Ohio River) would be required.

The approach channel would serve as a warm-up area for canoeists, and the downstream portion of the stilling basin as a take-out area. A hydraulic model study offers the most effective means for definitive design of details which will insure the desired flow conditions throughout the course facility. The preliminary design, used as the basis for the feasibility study, contemplated the following: Course length: 2,000 feet; Drop: 20 feet; Flow: variable, 300 to 1,200 cfs; Course width: Average 36 feet; Side slopes: vertical; Construction material: reinforced concrete.

These are generally similar to the features of the Augsburg course, except that course lacked for a variable flow capability. Based on other criticisms of the Augsburg course, hydraulic model investigations for a course at Meldahl should consider the feasibility of sloping rather than vertical side walls and of movable obstructions at selected locations to permit variance in course characteristics.

A 16-foot roadway and walkway paralleling the course would be provided for retrieving boats and coaching purposes. A number of other ancillary facilities would also be required for accommodation of users and spectators. Primarily, these would be access roads, parking and turnaround areas, and comfort station.

4. *Land requirements.* Most of the land that would be needed is presently available in Federal ownership. About 70 additional acres would be needed for locating the outlet channel downstream of the stilling basin. The area involved would also be suitable for overflow parking use. There are no improvements or persons to be displaced if it should be acquired in connection with the course development.

5. *Estimates of cost.* Based on July 1973 price levels, the estimated first cost of the considered plan is \$4,728,000. Annual costs, based on 5½ percent interest rate and amortization over a 50-year period are estimated as \$330,500.

First cost:

Development	\$3, 944, 000
Engineering and design, supervision and administration.....	710, 000
Lands	74, 000
Total	4, 728, 000
Interest during construction.....	267, 000
Total investment.....	4, 995, 000

Annual costs:	
Interest -----	\$281, 000
Amortization -----	19, 500
Operation and maintenance -----	30, 000
Total -----	330, 500

6. *Estimated recreation benefits.* A preliminary estimate of the recreation benefits which could result from the considered development has been made. It is anticipated that such benefits would be realized from: competitors and spectators at competitive canoe/kayak events; organized canoe/kayak outings; training; intertubing, rafting and the like; and visitors attracted to the site to watch the wildwater activities on occasions other than competition dates. From these, a total annual visitation of 356,000 is foreseen. The estimated annual benefits, based on assignment of varying unit values to the different kinds of visitation, ranging from \$6.00 to a participant in a competitive event to \$1.00 to the casual visitor, would be \$557,000.

7. *Cost sharing.* A conclusion has not been reached with respect to what might constitute appropriate cost sharing for the considered development. If undertaken as a Federal project, policy applicable to traditional recreational developments suggests that local interests might be expected to bear 50 percent of the costs. There are a number of factors, however, that suggest rigorous adherence to the principle of 50-50 cost sharing would not necessarily be suitable for this case. The slalom course proposal is unique. Further, a determination to proceed with such a development as a Federal undertaking would seemingly first require presumption of a significant national, or wide regional, interest to be served. This makes questionable any definition of "local interests". The land involved is already Federal property (essentially). In the extreme, the considered development could be viewed as the most appropriate means for optimizing public use of this property (because of the particular suitability of the site for such development)—thus suggesting Federal assumption of all costs.

The State of Ohio, within which the development would be physically located, generally favors the slalom course proposal. Although not indicating willingness to cost share in the development—recognizing some of the points outlined above—the Ohio Department of Natural Resources has indicated willingness to be responsible for management of the facilities if they are developed.

Senator CLARK. General Kelly, Senators Buckley, Scott of Virginia, and Taft, intend to submit questions for the record on your testimony. Those will be submitted to you for answer on the record.

General KELLY. We will be most happy to do that, Mr. Chairman.
[The questions and answers follow:]

ANSWERS TO QUESTIONS SUBMITTED BY SENATOR SCOTT ON THE FALLS LAKE
PROJECT, NEUSE RIVER BASIN, N.C.

Question 1. What is the land-use pattern of the 60 square miles of land that would be part of the project even if S. 2668 is adopted? What is the existing land use of the 4,500 acres that would be excluded under S. 2668?

Answer 1. Land within the 60 square mile project area is rural in nature and timber and agricultural land use predominate. Nearly, 92 percent of area lands are utilized for timber production. Agricultural land makes up 8 percent of the project area. Residential lands account for only 0.5 percent of the project area. The only concentration of dwellings is at Falls, a community with 20 occupied dwellings. There are 60 other dwellings scattered throughout the project area. The land use pattern has not changed significantly in recent years. Along the eastern portion of the project area there is a gradual trend toward rural residential development associated with the growth of the city of Raleigh.

Present use of the 4,500 acres that would be excluded by S. 2668 is 86 percent in timber, 12 percent agricultural, and 3 percent in dwelling sites.

Question 2. Who owns the land that would be excluded from the project under this bill? Would you provide us with a breakdown on the land owners, together with the size and estimated value of their holdings?

Answer 2. A great majority of the land that would be excluded by S. 2668 is owned by individuals. Other ownerships include about 200 acres owned by timber companies and a small amount owned by companies involved with investment and/or development.

There are 294 tracts (ownership) in the area that would be affected by S. 2668, of the 294 tracts, 127 would be deleted outright, and the remaining 167 would be affected in varying degrees. Size of the tracts range from less than one acre to approximately 200 acres. Typical tract size is 10 to 30 acres. Total estimated value of the 4,550 acres is \$4,362,000.

Question 3. What percentage of the present project benefits come from recreation? What would the recreation percentage be if S. 2668 were adopted?

Answer 3. Total recreational benefits, including fishing and hunting, are presently estimated at \$2,581,000 or 60% of the total benefit estimate of \$4,325,000. Assuming that Senate Bill S. 2668 were adopted, total recreation benefits are estimated to be \$1,740,000 or 50% of the total benefit estimate of \$3,484,000. However, the sum of cost allocations for recreational development and fish and wildlife enhancement does not exceed the sum of cost allocations for flood control, water supply and water quality as stipulated by P. L. 89-72.

Question 4. You testified that some of the 6,893 acres of flood control and freeboard lands "will not otherwise be available or suitable for general public recreational use without the acquisition of the separable lands." Would you please amplify on that statement?

Answer 4. A preliminary study of the terrain and topographic conditions of the Falls Lake "Project Lands" reveals that without the separable recreation lands recommended, it will be very difficult and costly to obtain access to the narrow strip of land that will be designated for public recreational use under Senate bill S. 2668. This narrow strip of land consists of 6.893 acres and is located between the top of the conservation pool (elevation 250.1 m.s.l.) and the project land acquisition line. All but a narrower 300-foot wide strip is located within the flood control pool and will be subject to periodic flooding. In order to provide access and circulation roads within the designated recreational areas, extensive cuts and fills will be required for bridges or large culverts across deep ravines between peninsulas. This will be costly both economically and environmentally. A typical example of this is shown on the attached drawing. From a social standpoint, it is believed that the quality of the recreational experience would be severely diminished from that provided in the project as presently planned. The 300-foot strip would not provide a buffer zone between project lands and the rapid urbanization in the periphery of the project unless stringent land use controls are implemented.

Question 5. You also stated that visitation would drop drastically if the separable lands were eliminated. Why is that, since the separable lands would not be on the water, and the lake would presumably serve as the main recreational attraction of the lake?

Answer 5. The primary reason for the substantial drop in visitation estimates is that recreation development would be restricted to a narrow strip of land between the conservation pool and the acquisition line at designated recreational sites. Permanent development will be restricted to an even narrower 300-foot strip of land above the flood control pool. The topography of the flood control lands plus the possibility of the inundation of these lands precludes, for the most part, any significant development of picnic areas or campsites. Also, water supply and sanitary facilities, wash houses, concession stands and permanent roads would be restricted to the 300-foot strip. Without adequate recreational facilities the recreational use of project lands will be limited.

The 12,490-acre lake created by the project will have the capacity to support the boating activities of about 668,000 annual visitors. Facilities to support these activities will be provided if Senate Bill S. 2668 is adopted. With the elimination of 4,550 acres of separable recreational lands there will be a significant reduction in the number and type of facilities provided for picnicking, camping, swimming, biking and sightseeing.

The reduced scale of recreational development that would result from the adoption of Senate Bill S. 2668 would not be suitable for the desired outdoor recreational experience normally associated and demanded by the public from reservoir projects because of access and greenspace limitations. Therefore, we cannot feasibly project the level of visitation normally associated with other Corps of Engineers reservoir projects located across the nation.

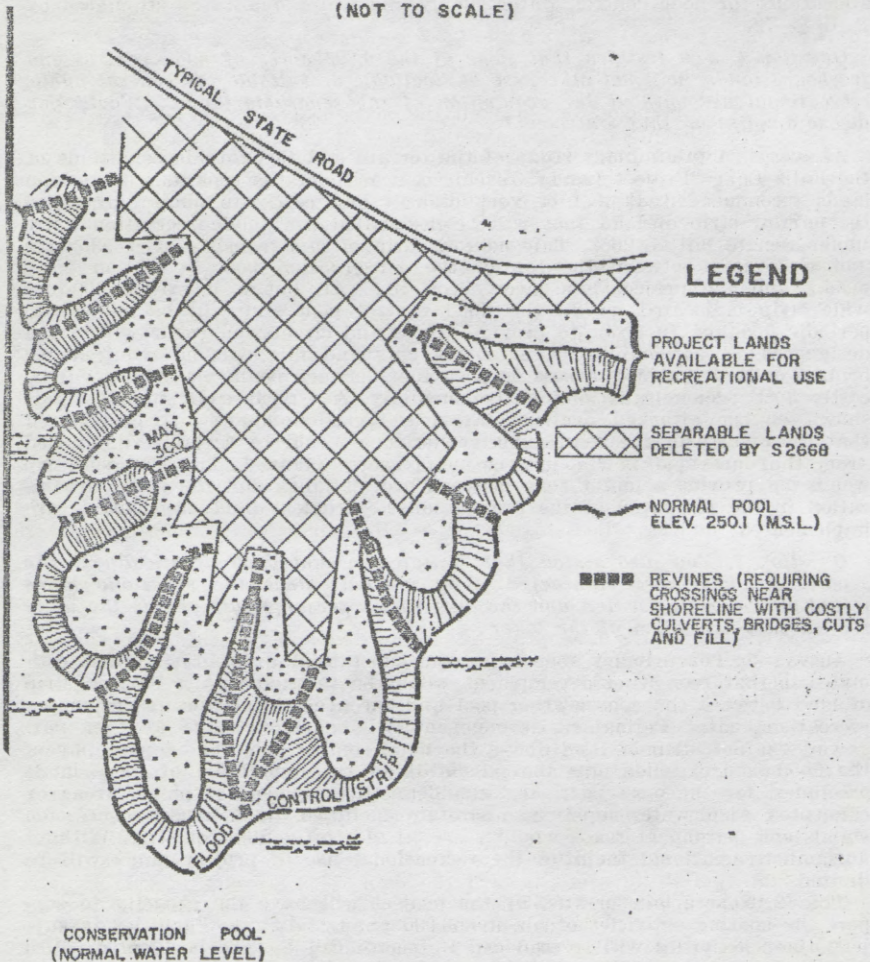
Question 6. You also say that this reduction would reduce the cost-benefit ratio to 1.2 to 1. At what discount rate is that figured? What would the ratio be at a discount rate of 5½ percent? At a rate of 6⅞ percent?

Answer 6. The 1.2 to 1 benefit-cost ratio was computed using a discount rate of 3.25 percent and a unit-day visitor value of \$0.90.

The benefit-cost ratios using the \$0.90 unit-day visitor value at discount rates of 5.625 percent and 6.875 percent are estimated at 0.83 to 1 and 0.75 to 1 respectively.

SCHEMATIC DIAGRAM

(NOT TO SCALE)



ANSWERS TO QUESTIONS BY SENATOR SCOTT ON CLINTON PARKWAY, KANS.

Question 1. What kind of access road system is the basis of the Corps' estimate of 1,000,000 visitors annually? What would be the volume of visitors annually if the Clinton Parkway were built? What effect would that have on the project's benefits and its cost-benefit ratio?

Answer 1. The Corps estimate of 1,040,000 annual visitors expected at the end of the 3-year initial operating period was based on utilizing the existing county road system; county road relocations constructed as part of the Clinton Lake project; access roads constructed to the dam and administration area; and access roads constructed to three of the five recreation areas; Bloomington, South Cove and the Clinton State Park. The volume of visitors is considered to remain the same even if the Clinton Parkway is built, and, consequently, no additional benefits would accrue to the Lake project. However, if the \$6 million for construction of the Clinton Parkway is added as a project cost, the benefit-cost ratio of Clinton Lake would be decreased: as a part of the Missouri River Basin system, from 1.5 to 1.4, and as the last added unit of the system, from 1.15 to 1.05.

Question 2. Besides the possible access in the area of the proposed Clinton Parkway, what other access exists at other points around the project?

Answer 2. Upon completion of the road relocation, access roads, and 3 miles of road improvements to be made by Douglas County, there will be a circumferential bituminous road around the main body of the lake. Access to South Cove, Bloomington, and the Clinton State Park areas will be by bituminous-surfaced roads, while initial access to the Woodridge and Rockhaven areas will be by gravel-surfaced roads extending from the circumferential road. Future plans are to upgrade these access roads to bituminous-surfaced roads when visitation indicates the need for improvement. In the upper reaches of the lake, which will be licensed to Kansas Forestry Fish and Game Commission for fish and wildlife management, access will be by existing County roads, in most cases gravel surfaced.

Question 3. What plan of agreement on access was contained in the project agreement with local interests?

Answer 3. Relocation contracts with Douglas and Shawnee Counties were entered into for replacement of their road systems affected by the lake project. A contract was also entered into with Douglas County to construct the north access road, along an existing county road, from highway U.S. 40 to near the damsite. Upon completion of construction of the lake project the County agreed to accept the access road for maintenance. Other access roads to be constructed to public use areas and at the damsite area have been fully reviewed by, and explained to, various public and private groups on several occasions.

Question 4. What is the current state of the road system serving the project area? How many cars and how many daily visitors could it handle?

Answer 4. When the lake project is completed and put into operation the road system serving the lake will be good. Bituminous-surfaced roads will serve the two major recreation areas (Bloomington and Clinton State Park), the boat launching area in the South Cove area, and the administration and overlook areas. The major road system as completed around the lake will be adequate to handle the expected visitor traffic. The highest volume of traffic can be expected on the roads leading to the Clinton State Park area, administrative and overlook area, the outlet area, and the South Cove area. The peak traffic volume to the above areas, based on the future visitation of at least 3,000,000, is expected to be about 6,200 vehicles per day. Of this total about 4,250 vehicles per day are expected to use the access road extending from highway U.S. 40 south toward the dam. The capacity of this road is estimated to be about 6,000 vehicles per day. The other road capacities serving the general area around the dam are estimated to be in the range of 3,000 to 4,000 vehicles per day. The road serving the Bloomington area is expected to have about 1,550 vehicles per day peak traffic for future visitation, whereas the capacity of this road is estimated to be about 7,000 vehicles per day.

Question 5. In his testimony, Senator Dole referred to road improvements at Perry Reservoir, as required by Section 230 of the 1970 Omnibus Act. Could

you tell us what specific improvements were directed by that provision, as well as by Sections 17 and 18 of P.L. 93-251. Are these provisions similar in scope to the intent of S. 3141? If not, how do they differ?

Answer 5. Section 230 of P.L. 91-611 authorized the Corps to provide a bituminous surface on about 5 miles of a Federal-Aid Secondary gravel-surfaced road serving the east side of Perry Lake. This authorization was made to eliminate the health and safety hazards created by dust from the existing gravel-surfaced road. The road was a recently completed relocation and, other than the surfacing, no additional work was required for safety. Section 17 and 18 of P.L. 93-251 provide for improvement of certain gravel-surfaced roads near the Tuttle Creek, Melvern, and Pomona Lakes to projects. The roads near Melvern and Pomona (Section 17) are in the same section of the law. Each of the sections provides that the Federal share of the work will be 70 percent of the total cost, but not exceed \$500,000 Federal Cost. These provisions are similar to the intent of S. 3141; that is, improving access to the lake projects, but appear to be directed at improving existing gravel-surfaced roads. The Clinton Parkway is proposed to be constructed to design standards for higher traffic volumes than the improvements authorized by Section 17 and 18, and about 1.7 miles of the Parkway would be new road construction.

Question 6. Please explain the need for noise reduction along the Clinton Parkway, if the road is built.

Answer 6. The development along Clinton Parkway is expected to be primarily residential and the control of types of vehicles, speed limits, proper buffer areas, and other controls on noise would be in keeping with a parkway through a residential area.

QUESTIONS SUBMITTED BY SENATOR BUCKLEY ON FALLS LAKE PROJECT

Question 1. What precedent exists for deleting separable recreation acreage from a project?

Answer 1. We are not aware of a situation in which separable recreation acreage has been deleted from a project.

Question 2. On what policy basis was the land specified in S. 2668 included in the project originally? Please cite the specific directions and the law that describes the Corps' policy on land acquisition, both generally and for recreation.

Answer 2. The scale of development of the recreation facilities proposed for the Falls Lake project was established in accordance with the provision of Senate Document No. 97, dated 29 May 1962. This document provided basic Congressional direction and guidance to Federal agencies for formulation and evaluation of water and related land resource developments. Specifically, paragraph V-A-5 of that document states:

"Full consideration shall be given to the opportunity and need for outdoor recreational and fish and wildlife enhancement in comprehensive planning for water and related land use development, and project formulation and evaluation. Project plans shall include provision for public acquisition of lands and rights-of-way adjacent to proposed Federal to Federal-assisted water resource projects (additional to those needed for other uses and for public access) for administration by Federal, State, or local public bodies, as appropriate, to insure full ultimate realization of the outdoor recreational, fish and wildlife, and related resource enhancement opportunities of the project area. Plans shall indicate, in appropriate detail, all facilities needed for full development of the recreation and fish and wildlife potential as well as specific indication of basic facilities required initially for access, health, safety, fire prevention, and use of the areas."

The above mentioned policy was subsequently enacted as a law with the passage of the Federal Water Project Recreation Act of 1965 (P.L. 89-72) on 9 July 1965. This law also established the recreation cost-sharing provisions between Federal and non-Federal interests. The Water Resources Council, in developing the new planning Principles and Standards (which became effective 25 October 1973, supplanting Senate Document No. 97) reaffirms the general

policy requiring full consideration of recreational opportunities afforded at Federal projects and is in full accordance with P.L. 89-72.

In their analysis of the Falls Lake project's recreational potential as presented in the authorizing document (House Document No. 175, dated 17 May 1965, Appendix IX), the U. S. National Park Service recommended purchase of 7,500 acres of separable recreation lands in order to provide optimum recreation development. After a review of the project plans in 1973, the U. S. Bureau of Outdoor Recreation advised by letter that the 4,550 acres of separable recreation land proposed by the Corps is the minimum required to safeguard the recreational and fish and wildlife potential of the project.

Specific Corps of Engineers directives concerning the acquisition of recreational and fish and wildlife lands which are in accordance with the above-mentioned policy and laws include: ER 1110-2-400, ER 1120-2-400, ER 1120-2-401, ER 1185-2-400, ER 1185-2-500, and ER 405-2-150.

QUESTIONS SUBMITTED BY SENATOR BUCKLEY ON CLINTON PARKWAY, KANS.

Question 1. What is the Corps' policy, and its statutory basis, for the construction of access roads? Please cite examples of various projects that were completed recently, or are nearing completion, where access was provided, and how it was financed, and where no access was paid for by the Federal government?

Answer. There is no general authority that permits the Corps of Engineers to construct access roads per se. Access roads planned and built by the Corps of Engineers are for the purpose of construction of an authorized project, to permit maintenance and operation of the project when completed, and limited public access to project facilities such as overlooks and recreation facilities. In general, these access roads are identified in the survey report, which, when authorized, becomes the basic authority for their construction. Normally, access roads built by the Corps of Engineers are contained within project boundaries, however, Section 207(a) of 74 Stat. 500, as amended by Section 208 of 76 Stat. 1196 (33 U.S.C. 701 r-1) does permit the Corps of Engineers, when utilizing existing public roads as a means of providing access to the project, to improve, reconstruct and maintain such roads to permit construction of the project. Upon completion of project construction, the Corps of Engineers may restore the road to at least as good condition as prior to utilization, and subsequently, all Corps responsibility for reconstruction and maintenance is ceased. All access roads built by the Corps of Engineers for completed projects and those nearing completion, are a part of the project, and were built with project (Federal) funds. There has never been an occasion where non-Federal funds were utilized to build access roads on Corps of Engineers project lands.

Question 2. Are there instances where the Corps, as part of an original project proposal, included major road access to the project in order to augment recreational opportunities?

Answer. Yes, there are instances where the Corps of Engineers have included access roads on project lands to permit utilization of the recreation features of the project, in the original project proposal (survey report). One such project is the Red River Waterway Navigation and Bank Stabilization Project, Louisiana, Arkansas, Oklahoma, and Texas (H.D. 304, 90th Congress, 2nd Session).

Question 3. What is the Corps policy—and statutory basis—on cost sharing of separable recreation costs?

Answer. The Corps policy and statutory basis on cost sharing of separable recreation costs is the Federal Water Project Recreation Act (P.L. 89-72, 16 U.S.C. 460 1-12 et seq.). In essence, the act states that the non-Federal entity (State, County, City, etc.) must assume: (a) at least one-half of the separable first costs of recreation facilities, including project lands acquired specifically for recreation, access and basic site preparation; and (b) assume all costs and full responsibility for the operation, maintenance, replacement, and management of recreation areas and facilities. Certain types of facilities, including but not necessarily limited to restaurants, lodges, golf courses,

cabins, clubhouses, overnight or vacation-type structures, stables, marinas, swimming pools, commissaries, chairlifts and such similar revenue producing facilities, may be constructed by the local entity or third parties but are not eligible for cost sharing.

Title to all lands and facilities specifically acquired, developed or constructed by or with Government assistance to enhance the recreation and/or fish and wildlife potentials of a project shall at all times be in the United States.

Question 4. Would it be equitable, do you think, to provide special Corps recreation access roads on a 50-50 cost-sharing basis, the same basis as other separable recreational costs, rather than on a formula based on Federal-aid highway construction?

Answer. The matter of equitability on cost-sharing is a matter for the Congress to decide an exemplified by the cost-sharing arrangements provided by the Federal highway program and the Federal Water Project Recreation Act. Currently, the Corps of Engineers does not build access roads within or outside of project lands utilizing a formula-based funding apparatus similar to that of the Federal-aid highway program. Corps of Engineers planning and recommendations for recreation access roads within the limits of Corps projects have included a requirement for 50-50 cost sharing in accordance with the policies of P.L. 89-72.

QUESTIONS BY SENATOR BUCKLEY ON WHITEWATER CANOE-KAYAK SLALOM COURSE
CAPT. ANTHONY MELDAHL LOCKS AND DAM

Question. What is the Corps policy on adding recreational benefits to a project once the project is completed?

Response. The basic policy is to optimize public use and benefit from Federal property which had to be acquired for project developments designed, primarily, to serve navigation and flood control purposes. For many years now, development of a master plan for facilities and arrangements to accommodate public use has been integral with overall planning and construction of any such project. Even for projects authorized and constructed many years ago, before recreation became a major consideration in our planning, minimal facilities for accommodation of the public were provided—some visitor parking, sanitary facilities, overlooks, and the like. Now, where recreational potential exists, we consider adding appropriate facilities to develop that potential. Such developments are undertaken as part of our operational responsibilities, and require non-Federal participation in accordance with the provisions of Public Law 89-72. Generally we are speaking of such things as picnic facilities, camping sites, fisherman access to the water's edge, hiking and nature trails, and improved access roads, parking, and sanitary facilities commensurate with the increased public use.

Question. At what level would you estimate that fees would have to be set—and what level of use be maintained—to make this proposal self-sustaining (a) to pay off operating and maintenance costs, and (b) to pay off the initial capital costs as well?

Response. For the feasibility study made by our Huntington District, total recreational visitation was estimated as about 346,000 per year. This was made up of about 46,000 actual users of the course, for various purposes; about 133,000 spectators at competitive events; and about 177,000 persons attracted to the site to observe course activities at other times. The tentative estimate of annual costs to the Corps for maintenance and operation of the course was \$30,000; total annual charges, including financial charges to pay off the initial capital costs, are estimated at \$330,500. Based on these estimated values, and assuming that the more casual visitors should not be charged a fee to enter upon the Government's property, an average fee of \$0.17 per user and competitive-event spectator would be required to recover operation and maintenance costs. To recover all Federal costs, an average fee of \$1.86 would be required. These values do not, however, include management activities such as scheduling, fee collection and traffic control, the costs for which have not been estimated. It is anticipated the responsibility for management would be assumed by a non-Federal interest—probably the State of Ohio.

Question. What would be the impact of construction of the sluiceway on the operations of the dam?

Response. When control gates for the course were open to permit flow through and use of the course, the openings of the existing gates in the dam would be set slightly different than they otherwise would be, so as to make compensatory reductions in the normal flows through the dam. Total flows past the installation would not be affected.

Question. What is the estimated cost of the project?

Response. Based on the tentative plan suggested in the feasibility study report—\$4,728,000.

Question. How long would it take to complete the Phase I, as would be authorized by S. 3262?

Response: About 2 years after funds were made available.

Question. What interest in this project has been expressed to the Corps?

Response. Unsolicited letters urging development of an artificial course were received from officers and members representing a number of canoeing organizations and clubs, several with attached petitions. These include the American Canoe Association, American Whitewater Association, U. S. Canoe Association, canoe clubs in Louisville, Kentucky, Elkhart and Indianapolis, Indiana, and from the Penn State Outing Club. Similar letters were received from members of the 1972 U.S. Olympic team, unorganized groups, and individuals, from locations as far apart as California and New Hampshire. In the many informal contacts with canoe groups in Ohio and the nearby states, during the feasibility report studies, strong interest in development of such a course was universally expressed. General support for such a project has been indicated by State agencies of West Virginia, Indiana, and Ohio, and by the U. S. Bureau of Outdoor Recreation. We have not received any expressions of opposition, either formally or informally.

QUESTIONS BY SENATOR TAFT ON WHITEWATER CANOE-KAYAK SLALOM COURSE
CAPT. ANTHONY MELDAHL LOCKS AND DAM

Question. Are there any known adverse environmental effects that will be caused by the proposed facility?

Response. The plan tentatively under consideration would involve redirection and enlargement of the lower mile of a small stream, Bear Creek, which drains through the existing Federal property to the Ohio River. This work would, of course, greatly affect the natural ecosystem of the stream in this reach. The significance of this, and the relative value of the system that the modified stream might sustain, remain to be assessed. Otherwise, we do not at this time visualize any other environmental effects of the proposed facilities that would require serious consideration.

Question. Are there any plans in the works that you know of which would provide for dams that would prevent the proposed course from being useful?

Response. No.

Question. Do you have any figures to indicate the number of participants that could be expected to use the course?

Response. For the feasibility study made by our Huntington District, based on the general data and insights obtainable from canoeing organizations and the concerned agencies of the nearby states, it was estimated that about 46,000 persons would use the course each year for canoe-kayak training, competitive events and organized outings, and for innertubing, rafting and the like. Additional recreational visitation, by spectators for competitive events and those attracted to the site to observe course activity at other times, was estimated as about 310,000.

Question. What further studies do you feel need to be undertaken?

Response. Hydraulic model studies to develop a specific plan for course layout and configuration. An exhaustive program of contacts with whitewater

canoeing interests to confirm justification for a course based on likelihood of sufficient utilization and visitation. Some further investigation to ascertain whether, if course development were to be realized, full Federal funding would be an unavoidable requisite. Environmental studies needed to support and prepare an adequate EIS for the project, if recommended.

Senator CLARK. I have a couple of questions. On the Clinton Parkway in Kansas, what is the projected traffic volume on that future highway? Have detailed studies been made which could substantiate any estimate?

General KELLY. I cannot give you a specific answer, Mr. Chairman. I can say that the expected attendance after 3 years of operation is about 1 million total, and the ultimate attendance is about 3 million annually.

I would say that these figures were considered in our development of the plans for access, and we would consider that the access available is adequate. There is no question that the construction of the road in question would improve access, particularly from the city of Lawrence.

Senator CLARK. What agency, State or Federal, would be responsible for the actual construction and periodic maintenance thereafter?

General KELLY. My understanding of this bill, sir, would make us responsible for the construction and the maintenance would revert to the State.

Senator CLARK. At what stage in project construction was it first apparent to State authorities that such an ambitious access road might be required or requested?

General KELLY. This has been under discussion for some time, sir. My recollection is that it first came to light about 1968.

Senator CLARK. I have a couple of questions on the Ohio River project.

Would Federal participation in such a project be justified, in your opinion? If so, to what degree?

General KELLY. This is really the substance of our problem, sir. We do not believe at this stage that we are prepared to take a position on that, and we recommend, therefore, that the survey report be made to look at this project in somewhat more detail, and particularly to look at the Federal interest and then the cost-sharing options which might be pertinent to it. Because it is so unique, we just are not prepared at this time to take a position on that.

Senator CLARK. Do you think it would be a revenue-producing facility or is it too early to tell that?

General KELLY. Our estimates, which are quite preliminary, seem to show that certainly the operation and maintenance cost could be carried by it, and beyond that we really have not gotten much detail.

Senator CLARK. Do you know if there are any prospects for State or local cooperation?

General KELLY. The best information we have from the State, sir, is that they are giving serious consideration, or would give serious consideration, to operating and maintaining it, but we have had no indication that they are prepared to provide funding for the initial construction.

Again, this has been based just on preliminary discussions.

Senator CLARK. If we go ahead with this project, do you think it would set a precedent in the public recreation field, creating additional large-scale demands for Federal sponsorship, or do you see this necessarily as precedent setting?

General KELLY. There is no question it would be a precedent. It would be the first built. Whether the second portion would necessarily follow, in that it would lead to other large-scale construction, I think is open to question. There certainly would not be great requirements for such a project.

I would think, again, this is an approach or a problem which would be addressed in the survey report and which obviously would have some bearing on the recommendations on the cost sharing.

Senator CLARK. We thank you very much.

General KELLY. You are most welcome, Mr. Chairman.

FALLS DAM AND RESERVOIR, NEUSE RIVER, NORTH CAROLINA

Senator CLARK. I notice that Senator Jesse Helms has come in. We will ask him to come forward at this time.

STATEMENT OF HON. JESSE A. HELMS, U.S. SENATOR FROM THE STATE OF NORTH CAROLINA

Senator CLARK. We welcome you, Senator Helms.

Senator HELMS. Thank you, Mr. Chairman.

Senator CLARK. Please proceed in any way you think appropriate.

Senator HELMS. Thank you, Mr. Chairman. I appreciate the opportunity to appear.

As the record will show, Mr. Chairman, I am the sponsor of S. 2668, a bill to modify the project for the Falls Dam and Reservoir, Neuse River, N.C., a project authorized by the Flood Control Act of 1965, 79 Stat. 1073.

The purpose of this bill is straightforward: It would remove from the project the so-called separable recreational lands, that is, the lands used solely for recreational development, as distinguished from joint purpose lands which are used for water supply, flood control, and so forth.

The U.S. Army Corps of Engineers has estimated that this would diminish the size of the land requirements by approximately 4,500 acres, minus some miscellaneous acreage necessary for access to the multi-purpose lands.

The result of this removal of the separate recreational lands will be a flat-out saving of considerable size. It certainly will be a sum that exceeds \$1 million, and I hope that the Corps of Engineers will sharpen their pencils even more.

I know that it is fashionable these days to describe \$1 million as "only \$1 million," or to say that it is only 1 percent or 2 percent of something very much larger.

In Washington, both we in Congress and the bureaucrats in the bureaucracy get very careless about throwing around the taxpayers' millions.

But I want to assure this distinguished subcommittee and the people of North Carolina that \$1 million is a very large sum of

money, particularly when it has to be extracted from the taxpayers' pockets.

And I know that the people of North Carolina are too smart to believe that this money comes from any other source than their own pockets.

As I have already noted, my bill is aimed at the separable recreational lands. When I came to Washington and began to study the Falls Lake project carefully, the first thing that struck me forcefully was the disproportionate share of benefits assigned to recreation.

Although the most pressing needs were for water supply, and to a lesser degree, flood control, over half of the economic justification of the project was attributed to recreation.

In other words, the really essential needs of the State could not justify the enormous expense of the project alone, so the recreation component was boosted to an extraordinary share of the cost justification.

In order to justify the essential aspects of the project, the justification was padded out with benefits that were merely desirable, but nonessential.

I am not suggesting that the designers of this project were engaged in any sleight of hand. I am fully aware that such calculations were permitted under the authorized parameters of such projects. But those calculations were made a decade ago in what was virtually another era. To many people at that time the Federal Treasury was a bottomless pit, from which millions could be scooped with ease. The merely desirable was confused with the essential, and it seemed that we could give everything to everybody.

Mr. Chairman, you and I know better than that. We live today in different times. Today we are paying for the outmoded concepts of a decade ago and longer. We are paying not only through higher taxes, but through ruinous inflation, the product of the Government's lack of fiscal discipline. I believe that our modern thinking on such projects is different.

The Congress is beginning to show more concern with budgetary problems. The Office of Management and Budget is scrutinizing fund allocations with the certain knowledge that there are many more demands for authorized projects of this kind than can be funded. I believe that OMB looks more favorably on projects which concentrate on essentials.

It was my conclusion, therefore, that if the Falls Lake project were to receive favorable consideration in the budgetary process, it had to be brought into tune with the thinking of the 70's.

In this period of fiscal crisis, I feel that I must apply the same standards of economy to projects which principally affect my State as I do to those which affect the Nation as a whole.

Although not all of the recreation content can be removed from the project, my legislation would remove all land acquisitions which are not involved in the essential purposes of the project. The purpose is not only to lower the cost, which is significant in itself, but also to modernize the rationale concerning all such projects so that it is more up-to-date with the fiscal needs of today.

The bill, therefore, separates those recreational lands which are, by definition, "separable." Nothing essential is taken away. By removing the inflated recreational content, it lowers the cost-benefit ratio, but not so drastically that the overall justification of the project is threatened.

I have been advised that the State of North Carolina welcomes this legislation, and is prepared to renegotiate the recreation agreement with the Corps of Engineers.

And although the reallocation of benefits may result in a higher cost-sharing for the remaining elements of the project, I believe that the new distribution of costs will be closer to a distribution based on essential needs, and thus will be more equitable.

The removal of the separable recreational lands will reduce the overall acreage of the project by about 9 percent. This is an important consideration in reducing the impact that the project will have on the community in which it will be located.

The burdens of relocation that such a project causes always fall heaviest upon a relatively small group of landowners, and any way that this burden can be reduced ought to be adopted as a measure of social justice. I believe that any land that is not essential to the basic purposes of the project should be eliminated.

Another factor to be considered is that the removal of the separable recreational areas will reduce the impact on the surrounding community. The proposed level of recreational activity is enormously disproportionate compared to recreation potential available in other parts of the State.

By removing the separable recreational lands, the State will have the opportunity to review its priorities for this and other regions and distribute its own resources in a more flexible manner.

Certainly the decreased visitation at this single site will be advantageous to the surrounding community by lessening the disruption to community life and easing the environmental impact of such a high level of visitation.

In closing, Mr. Chairman, I would like to mention that S. 2668 was drafted with the close cooperation of the Secretary of the Army and the Department. I want to thank Secretary Calloway for his generous assistance and personal interest in the outcome of this legislation. I also want to thank Jack Ford, the Chief for Civil Functions in the Office of the Under Secretary of the Army, for his invaluable assistance in my study of this project.

Senator CLARK. Thank you very much for your presentation. As usual, it is interesting and unique because not very often, I think, does a Senator come in and suggest that the Federal Government appropriate less money for his State.

Senator HELMS. Mr. Chairman, perhaps some day I will have to make a move to cut something in Iowa, in which case my consistency would not be in question. [Laughter.]

Senator CLARK. All right. Thank you very much.

Senator HELMS. Thank you.

Senator CLARK. We will hear next from Dr. Arthur Cooper, Assistant Secretary for Resource Management, Department of Natural and Economic Resources, State of North Carolina.

**STATEMENT OF DR. ARTHUR COOPER, ASSISTANT SECRETARY FOR
RESOURCE MANAGEMENT, DEPARTMENT OF NATURAL AND ECO-
NOMIC RESOURCES, STATE OF NORTH CAROLINA; ACCOMPANIED
BY ROBERT N. HUNTER, SPECIAL ASSISTANT**

Mr. COOPER. I would like to introduce Mr. Robert N. Hunter, special assistant in our department. He is here to appear with me on behalf of the department.

My statement is being read as a statement of the Governor of North Carolina and the Department of Natural and Economic Resources and, therefore, represents the official position of the State with respect to this proposed legislation.

The State of North Carolina has strongly supported the Falls of the Neuse project from its inception. We have given it the No. 1 priority among civil works projects of this type planned for North Carolina.

Unfortunately, opposition to the purchase of approximately 10 percent of the proposed project lands has acted as a thorn in the side of progress for this project. That opposition centers on the lands designated as separable recreation lands, those to be used solely for recreation. That opposition has created confusion over this project that could delay its completion by months, if not years, or perhaps forever.

Further delays will cost the Federal Government millions of dollars in these days of rapidly escalating land costs. Costs to State and local governments will be similarly affected.

Without the project, the people of the Raleigh-Durham area of our State will be deprived of the most economical means of developing a regional water supply. Economic expansion, so vitally needed in a State that ranks near the bottom in per capita income, will be adversely affected. Taxpayers will be forced to pay the extra costs of the higher efficiency treatment plants needed to make up for the water quality benefits planned for this project. Hundreds more would continue to lose up to \$1 million a year from floods that would go uncontrolled without this project.

For all those reasons and more, it is time to move ahead with the project. Senator Helms' amendment, which effectively removes the separable recreation lands from the project, appears to remove the final roadblock to completion of this project.

We can support Senator Helms' amendment with the following understandings:

1. That it will not endanger funding of the project.
2. That it will not result in a lengthy process of congressional re-certification for the project.

The project, as amended, would fall short of meeting ideal recreation development potential. However, we feel that other needs of the citizens—such as water supply, water quality, and flood control—appear in danger of never being met without the project, and that justifies our decision to support this amendment.

We also feel there is potential for constructive recreational development of the 6,300 multipurpose land acres remaining in the project, as amended. We can assure the Corps of Engineers our support in that matter. And there is the possibility the State, rather than the

corps, might purchase at least some of the necessary land for a State recreation area site. The State is ready to expedite any necessary contract renegotiations for recreation development, and also will work with the city of Raleigh and the Corps of Engineers in reaching satisfactory resolution of any water supply contract renegotiations.

We urge that in considering the proposed amendment, you consider the urgency of the project. We have recommended to our congressional delegation the reallocation of an additional \$700,000 to expedite land acquisition at the Falls project. We further urge that you review the corps' capabilities for this project, and meet these capabilities with appropriations.

Our department has recently completed a several month study of various aspects of the project. This study reemphasizes the immediacy to get the Falls Reservoir moving toward completion. Failure to do so will cost much more in other costs to the public—more than the total projected cost of the project.

Mr. Chairman, I have with me a copy of that special study and I will be pleased to leave it for inclusion in the record should you desire.

Senator CLARK. We will accept it for the files.

Mr. COOPER. We have other copies in Raleigh and we will be glad to transmit them to you.

I would be pleased to answer any questions you might have.

Senator CLARK. I think the one question we would like to have on the record is whether you regard the passage of the Helms bill as essential to construction of the project without additional delay?

Mr. COOPER. My answer to that question would be that the Helms amendment would appear to remove from the record the major objection to the project that has been encountered in the Raleigh-Durham area. That is the controversy over the separable recreation lands.

If it is necessary to remove that source of controversy, then this amendment becomes necessary.

Senator CLARK. Thank you very much.

Mr. COOPER. Thank you.

Senator CLARK. We are going to hear next from the mayor of Raleigh, the Honorable Clarence Lightner.

STATEMENT OF HON. CLARENCE E. LIGHTNER, MAYOR, CITY OF RALEIGH, N.C.; ACCOMPANIED BY L. P. ZACHARY, CITY MANAGER

Mr. LIGHTNER. Thank you, Mr. Chairman. The gentleman to my left is our city manager, Mr. Zachary, who will speak later under the section we have reserved for Mr. Howard Manning, attorney for our city.

Mr. Chairman and members of the Senate Subcommittee on Water Resources:

My name is Clarence E. Lightner. The authority under which I address you this morning is that of mayor of the city of Raleigh, N.C. As mayor, I speak for and with full concurrence of the city council of my city.

Senate bill S. 2668 relates to the major multipurpose lake of a system of lakes proposed under direction of Congress to resolve flooding damages, improve stream quality, provide public recreation, and water supply in the Neuse River basin located in the Piedmont and Coastal North Carolina. This major lake is the Falls of Neuse project.

The city of Raleigh has, like many cities, suffered severely from inadequate water supply. A study and report in 1954 stated that short-range interim projects would help but that the Neuse River was the only major long-range source of water supply for the future of the Raleigh area. This study projected 1971 as a target date for the completion of the Falls of Neuse project.

The U.S. Corps of Engineers had been actively studying the flood problems of the area. In the fall of 1961, the city council employed engineers to prepare a study which would locate a new water treatment plant on the Neuse River to take advantage of water storage that would be available when the Falls Dam project was completed.

In 1963 the people voted \$7.3 million to build a new water plant and intake which would be within the reservoir created by the proposed flood dam. Congress has appropriated \$6.436 million toward the development of the Falls of Neuse project through June 30, 1974.

The city of Raleigh, under a provision of the congressional act authorizing work on this project, signed an agreement for a water supply of 100 million gallons a day to be designed into the lake storage. The city of Raleigh will pay 100 percent of the cost of providing this water supply.

The State of North Carolina also has signed an agreement to provide public recreation areas around the project. The city of Raleigh provided interest and input in the planning for these areas but was not a part of this official agreement.

I hope and trust you now understand how vital the Falls of Neuse project is to the city of Raleigh and the whole area. We became a part of this Federal program over the years as good planning and projected needs dictated.

With this brief background, I now read the official resolution of the City Council of the City of Raleigh regarding S. 2668.

RESOLUTION No. (1974) 157

A Resolution of the City Council of the City of Raleigh, North Carolina, expressing its position concerning the Falls of the Neuse Project:

Whereas, a Senate subcommittee will hold a hearing in the near future concerning the Falls of the Neuse Project in North Carolina; and

Whereas, the City Council of the City of Raleigh maintains its extreme concern for the current and future need of a sufficient and reliable water supply source for the city; Now, therefore, be it

Resolved by the City Council of Raleigh, North Carolina that:

The following Statement of Position concerning S. 2668, introduced by Senator Jesse Helms, be adopted and directed to appropriate individuals and government bodies.

STATEMENT OF POSITION, FALLS LAKE, SENATOR HELMS' AMENDMENT

The City Council of the City of Raleigh takes a strong position in support of the Falls of the Neuse Project as proposed by the Corps of Engineers, and opposes any change that will jeopardize the completion of this project and prevent the people from the City of Raleigh and its surrounding area from securing the necessary water for the safety and health of the com-

munity. However, the amendment submitted by Senator Helms is directed towards recreational facilities under a contract between the State of North Carolina and the United States Government and if the State of North Carolina wishes to abandon the recreational portion of the project, the City of Raleigh will not oppose action provided that, by the abandonment of the recreational part of the project, the entire Falls of Neuse Project will not be placed in jeopardy.

To repeat and reiterate its position, the City of Raleigh supports the entire Falls of Neuse Project and will agree to the change to be brought about by Senator Helms' amendment provided such change does not delay nor endanger the early completion of the project which will provide the city and the surrounding area its planned water supply.

In taking this position, the city does not, however, agree that the public recreational areas in question are not needed by the people of this area.

Adopted: March 18, 1974.

Mr. LIGHTNER. We have given to Mr. Wes Hayden, of your staff, 20 copies of this statement, copies of the water supply history and need, a review of alternate sources of raw water, and an analysis of S. 2668 with Senator Helms.

[The documents referred to follow:]

MARCH 1, 1974.

To: Mayor and Members of the City Council.

From: City Manager.

Subject: Falls Lake Project.

CITY COUNCIL MEMORANDUM No. 7-74

Recently, the Mayor and members of the City Council have been made aware of a Bill introduced by Senator Helms that has a bearing on the proposed Falls Lake Project. It is anticipated that a hearing will be held in Washington on this Bill in the near future. At the time the Council was made knowledgeable of the Bill, administration was directed to provide information to the Council so that a position might be officially established. Because of the importance of the project to the City of Raleigh and the surrounding metropolitan area, the official position of the Council should be reported at the time of the hearing on this Bill.

In order to supply the Council with the latest information regarding this recently introduced Bill, I asked the Assistant City Manager for Programming and Budgeting to develop the present status. He visited Washington on February 19 to talk with Senator Helms. A report on this meeting is attached. It is suggested that the Council study this information and during a meeting in the very near future take an official position on the matter. Someone should then be authorized to appear at the hearing in Washington and convey this position to the proper authorities.

Attachment.

L. P. ZACHARY, Jr.

FEBRUARY 26, 1974.

To: City Manager.

From: Assistant City Manager for Programming and Budgeting.

Subject: Falls Lake Project—Washington, D.C.—Senator Helms—
February 19, 1974.

CITY OF RALEIGH, N.C., INTER-OFFICE CORRESPONDENCE

This message is to file a report of understanding resulting from a meeting with Senator Helms in his office on the above date at about 2:00 p.m. Dr. Jim Lucier of his staff and M. Howard Manning joined Senator Helms and me in this meeting.

The meeting was very informal and was for the purpose of exchanging knowledge of exactly where we are on the Falls Lake Project and the Beaver Dam Creek Emergency Water Project and what the future action may be.

Three points were covered in the talk.

1. Beaver Dam Creek Status Report.

2. Senator Helms' Amendment (S. 2668—copy attached) and his views of what our positions are concerning the current and future status of the Falls Lake Project.

3. The effect of the Amendment in changing cost allocation to the State and City as indicated by the Corps of Engineers' report to Mayor Lightner February 13, 1974.

BEAVER DAM CREEK STATUS REPORT

I expressed our appreciation to Senator Helms for his assistance in getting the Beaver Dam Creek Project moving into action. He was advised that to the best of our knowledge all systems were GO, and action is underway to acquire the land, complete the Federal-City agreement and let contracts. Senator Helms was advised the City could buy only the low dam elevation (16 mgd) at this time, which pointed to the need for moving to build the Falls Lake Project before the storage would no longer be adequate and further emergency investment would be required.

SENATOR HELMS' AMENDMENT AND FALLS LAKE PROJECT

I stated to Senator Helms that in my opinion because of his unique position in Congress the full weight of the accomplishment of the Falls Lake project was on his shoulders. Because of this belief, it was necessary to talk direct to the point of the meaning of his amendment and what direction will the Project have afterward. I explained that the reason for this discussion came from a City Council's request for information which would help it to know what action, if any, to take at the hearing on the proposed amendment (S. 2668).

The question we wished to ask was if we all (City and State) supported the Amendment and agreed to give up the park land outside the pool area could he (Senator Helms) then support the Falls Lake Project and help the State Government and the Raleigh-Durham area people to get this project accomplished.

Senator Helms indicated that he felt we should do nothing at this point that would deter or delay the Beaver Dam Emergency Project. I understand this to mean the process now in the works including the proposed budget funds should not be changed by pushing for a greater appropriation, etc. The Senator then related the serious money situation facing Congress. He indicated he wanted to look at the Falls Lake Project further (after the 4500 A. are deleted) in order to satisfy himself that the elements of the project can be fully justified. The Senator indicated that he wants to do everything he possibly can to help meet the needs of the City of Raleigh as to water supply, flood control and such, but feels he must reserve the right to look at and consider the various stages of funding as they arise.

THE EFFECT OF THE AMENDMENT (S. 2668) IN CHANGING THE COST ALLOCATION TO THE STATE AND TO THE CITY

The reduction in the initial recreation cost to the State from \$3.5 to \$1.9 (current estimate as planned) which will occur from the Amendment (S. 2668) will at the same time bring an increase in cost to the City for water of from \$5.2 to \$7.2 (current estimate as planned). The preceding analysis is from Colonel Costango in a letter report to Mayor Lightner February 13, 1974.

A discussion of this shift in cost from the State to the City included the basis on which costs are estimated. Changes in allocation of cost estimates affect the Cost Benefit Ratio which if altered sufficiently could endanger the life of the project.

Since the Senator had not received a copy of this information he was not in a position to properly analyze or suggest a course of action.

SUMMARY

Senator Helms generously allowed time for a full period of discussion for which we were grateful. He asked that we convey to the City Council his sincere desire to help this City and State in every way he possibly can. He asked that we recognize there are problems and answers to be worked on which he will most certainly continue to do.

Our understanding from the discussion however, is that Senator Helms believes this amendment should be adopted to remove from the Project all strictly recreational land and costs related to it. That no blanket commitment

or approval can be made now on the amended project, but that further evaluation and consideration must be made from time to time.

CONCLUSIONS

The City Council has at least two alternatives as to its position with regard to the Helms Amendment.

1. To take a strong position based upon the Corps of Engineers' figures and argue that the savings brought about by the amendment would be less than the additional cost to the City of Raleigh and that the Project should remain as it is; that the additional cost of the Project brought about by the delay far exceeds any savings that would be occasioned by the adoption of the Helms' amendment; that the risk of the Project becoming non-viable on the cost benefit ratio is too great to run in view of the responsibility of the City in securing and furnishing water for 200,000+ people. In taking this position, the City would be acting without the support of the State Government and without the support of Senator Helms, but the responsibility for the loss of the Project, if were lost by the adoption of the amendment, would rest squarely upon the State of North Carolina and upon Senator Helms.

2. To take a position that the removal of the 4500 acre for Public Park Areas may serve as a compromise with the City, State and Senator Helms jointly assuming responsibility in changing the Project status. This position will not insure Senator Helms' support of the Project as amended.

Senator Helms asked that the Council be assured that whatever position it felt it should take, he would understand and will continue to work for a water supply for Raleigh.

W. H. CARPER.

CITY COUNCIL MEMORANDUM No. 25-78

June 15, 1973.

To : Mayor and members of the city council.

From : City Manager.

Subject : Review of alternate sources of raw water.

As stated many times, the City of Raleigh has studied and reviewed about every possible source of raw water volume, all which lead to the conclusion that the U.S. Corps Falls Dam Project provided the most feasible, dependable and to the people of this area, economical raw water supply in the whole area. The attached will review each possible source, the yield, estimated cost and comments or points pertinent to particular items.

Respectfully submitted,

W. H. CARPER.

Attachment.

Possible raw water sources	Yield mgd	Estimated cost	Remarks
Kerr Reservoir.....	100	\$55,440,000	Pumping costs are not included in this capital cost estimate and would be extremely high as a continuing operating cost. Also, the legal complication in obtaining from this source 100 million gallons a day would be extremely great. This project was evaluated prior to starting on the Neuse River.
New Hope Reservoir.....	100	24,500,000	Pumping costs are not included in this capital cost estimate and would be extremely high as a continuing operating cost. Corps engineers have recently and informally indicated that, in their opinion, the Cape Fear Valley will need all the water that will be available in that Valley.
Falls Reservoir—U.S. Corps of Engineers.	100	4,327,000	The city has a contract with the State of North Carolina and the Federal Government to provide this volume of water in Falls Project. Also, this capital cost can be spread over 50-year payment period at low interest. The whole city water system is designed around this project and at this location.
Falls Dam—City of Raleigh.	100	22,000,000	Revised preliminary estimate—U.S. Corps of Engineers, Apr. 11, 1973, over original estimate \$15 million. Without the benefit of full design and evaluation, the revised figure should be used. It is presumed at this point that this figure cost would be on the City of Raleigh.

Possible raw water sources	Yield mgd	Estimated cost	Remarks
Interim Storage—Falls Intake.	45	4,513,000	This estimate was made in 1971 by L. E. Wooten which includes land costs. It is presumed that this estimate is now considerably below present cost figures. It was not considered because of the loss of investment with the completion of the Falls Project. Further, the length of time to obtain this project by the city would be considerable.
Interim Storage—Beaver Dam Creek.	¹ 16.1	1,690,000	This project was previously selected as the most feasible interim storage in that a minimum of investment would be lost because of the large lake which provided that the land would be acquired by the U.S. Corps of Engineers. Also, the short time of development is a major factor.
Upper Barton Creek.....	² 22	2,250,000	This estimate includes land costs but was discarded because the storage recovery was not safe due to small drainage basin.
Lower Barton Creek.....		(³)	The site was studied and eliminated because of the extremely small drainage area and storage capacity.
Crabtree Creek—Watershed Dams.		1,000,000	A special council committee studied the Crabtree Creek Conservation Dams and reported on Oct. 1, 1970, that the capital investment in pumps, pipelines, plus the operating cost, could not be justified in view of the low guaranteed volume of water. The total storage indicated 568 million gallons which is less than Lake Johnson in volume.
Upper Flat River—SR1471.	⁴ 16.6	5,745,000	This estimate is for total cost and would be available to City of Raleigh for estimated period up to 1980-82.
Recycling Neuse Waste-water Plant:			
To: Southside Water Plant.	10	1,436,220	This estimate is for one 20 inch pipeline only; having no estimate for pump requirement or power cost for operation. This would not add to the available storage except when the Southside lakes dried up. It is, therefore, a replacement item, rather than a supplemental item.
To: Northside Plant.	100	14,925,000	This estimate covers pipelines only. Pump station investment and operating costs are not included but would be great. This volume of water would not be available for many years. The amount available coming from the waste treatment plant would be only that planned to go through the plant. In both of these items, it is our opinion that the recycling of wastewater for water supply will require considerable evaluation both by the State Board of Health—Water and Air Resources, as well as the general public.

¹ Elevation 449 feet.

² 90 day period only.

³ No estimate made.

⁴ Elevation 445 feet.

AVAILABLE SOURCES OF FUNDS

The October, 1971, Bond Issue Proposal provided for "\$12,400,000 of bonds to finance the improvement, extension and enlargement of the water system maintained by the City of Raleigh for supply and distribution of water * * * ." While this statement of intent approved by the Local Government Commission was intentionally very general, the program itself was built upon certain specified items of need; one item being a provision of \$2,000,000 for a raw water storage basin. The rest of the funds are made available for improvements to both plants, to provide additional transmission ability, to provide for additional system storage and to provide for expansion of the distribution system.

This means that the City Council does have legal flexibility in the application of water bond program funds. I remind you, however, that the \$2,000,000 for interim raw water was a specific item in the discussion.

Other sources of funds which the Council could call upon would be from the Sales Tax Funds, Revenue Sharing Funds and funds indicated in the Utility Budget as annually reserved, pending transfer to the Bond Indebtedness Fund. All of these funds mentioned are being earmarked for other programs but in the wisdom of the City Council could be transferred and applied to the need for providing raw water.

Respectfully submitted,

W. H. CARPER.

APRIL 10, 1973.

To: Mayor and Members of City Council.

From: City Manager.

Subject: Water Supply: What Has Been Done and What Must Be Done.

CITY COUNCIL MEMORANDUM NO. 19-73

An adequate and constant water storage and treatment system is without doubt the most important element of all that enables an urban area to exist.

For too many years, the Raleigh area has been troubled with periods of inadequate storage or inadequate treatment. Within its financial capability and always with the support of its citizens, much has been accomplished in "catching up" and programming ahead for the water needs of this area. The strong and rapid growth of this urban area has added to the difficulty of planning for, and being able to accomplish within a safe time period, provisions for adequate storage and treatment.

With the rapid development of the Triangle area and the advent of the regional concept for planning and development, the Raleigh water system in the Wake County area and the Durham system to the northwest will be looked to for meeting regional water needs.

Raleigh already serves Garner, Cary, Apex and some areas outside City and will be the focal system for expanded area needs. The Durham system already serves the Research Triangle area and the Raleigh-Durham Airport. This is only an indication of the tremendous demands for water immediately ahead.

At this point, I direct your attention to the Raleigh Water Story from the past to 1965, following which I will bring the "Story" to the present with a look to the future.

PLANNING FOR SUPPLY AT RALEIGH, N.C.—W. H. CARPER

A paper presented on November 9, 1964, at the N. C. Section, American Water Works Association Meeting, Raleigh, North Carolina, by W. H. Carper, City Manager, Raleigh, North Carolina.

At its founding and for many years afterward, Raleigh was laid out on a ridge running west to east. It has now spread northward across the Crabtree Creek Valley and southward across the Walnut Creek Valley. These valleys drain west to east. The next valley south of Walnut Creek Valley is the Swift Creek Valley; north of Crabtree Creek Valley is the Neuse River Valley. The Neuse River flows in a southeasterly direction from north of the Durham vicinity, passes north of Raleigh at a distance of about 7 miles and turns southward, passing about 3 miles to the east.

EXISTENT FACILITIES

At the present time, the total source of water treatment and initial pumping is located on the Walnut and Swift Creek basins. Two storage lakes with a total of about 1 billion gallons capacity are upstream from the treatment plant on Walnut Creek, and two storage lakes capable of holding about 3 billion gallons are on Swift Creek. Along with connecting raw-water lines and a 13 million gallon per day (mgd) plant, these facilities comprise Raleigh's supply and treatment assets.

1950 PLAN

Like so many communities throughout North Carolina and the United States, Raleigh was just beginning to shake itself loose from the war years but had done little planning or adequate anticipation of the demands for water for the great and rapid municipal growth that was to come, when it ran into trouble.

Although the citizens of the city began to act in the late 1940's, their action proved to be too late to avoid sending themselves through not one but two serious periods of water shortage. One of the first problems the new council-manager government faced in 1947 was that of a questionable water supply and distribution system. Partial recognition had previously been given to part of this question in the form of a Pitometer Study that had been made, in 1945, of the finished-water system only.

At that time, the water supply for the city consisted of two impounding lakes holding about 539 million gallons, plus a pickup point in an abandoned

mill dam pond on Swift Creek having practically no storage but good stream-flow. The treatment facility had a rated capacity of 8 million gallons per day, finished-water ground storage of 4 million gallons, and elevated storage of 1.45 million gallons. The population of the city at that time was about 56,000 and this population was demanding water at an average rate of 4.6 million gallons per day, with a maximum of 6.9 million gallons per day.

In 1949, the City Council employed consulting engineers to develop plans for expanding the water system. By the time the author joined the City government, in September 1950, a capital improvement program incorporating the findings and recommendations of the two engineering firms working on the water system had already been presented to the City Council. A recognition that the Walnut Creek and Swift Creek basins would be limited in capacity brought an inquiry regarding the feasibility of tapping the Neuse River at a point east of the city and pumping to the present plant. The records indicate that this proposal was turned down by the State Health Department because of the condition of the water.

The program of water system expansion included in the proposed 1950 bond program called for raising the spillway level of Lake Johnson (one of the two impounding lakes on Walnut Creek) 5 feet, which would increase its storage volume from 400 to 690 million gallons; construction of a new impounding dam on Swift Creek at the location of the old mill pond; and laying a second 37,000 foot pipeline into the city. With a new pump station and a lake holding about 750 million gallons, the storage supply would be almost doubled. Also, the treatment plant was to be increased from 8 to 13 mgd, with an additional 4 million gallons of finished-water ground storage.

The bond issue was approved in January 1951, and work began immediately on enlarging the system. Lake Johnson was enlarged and filled that spring.

SHORTAGES

The work was too little and came too late, however, for a prolonged drought hit the city in the summer of 1951. A city of 65,000 people suffered through a long, hot summer, hoping and praying for rain, watching the lakes drop lower and lower. All sorts of gimmicks and rules had to be applied to get Raleigh through that season.

The rains finally did come, however. Work went ahead on the new Swift Creek Lake and the treatment plant expansion. But the sins of omission again caught up with the community in the form of a second prolonged drought in 1953. This one proved a heartbreak, because the last spring rain fell just about 2 weeks before the gates of the new dam were closed.

The summer of 1953 saw the community literally fighting for its life because of the lack of water. A lake on a basin to the south of Swift Creek was tapped and, with the aid of the civil-defense office in Atlanta, two 20,000 feet portable pipelines and two emergency lift stations were laid across the ridge and water was pumped into the upper end of the Swift Creek basin. Furthermore, the City Council directed the swift construction of a 2 million gallon treatment plant on Crabtree Creek under a crash construction schedule. This project was completed only a few weeks before the rains came and was therefore of little actual use.

1954 STUDY

As a result of the double blow of the 1951 and 1953 droughts, the City Council determined that there should be no more shortsighted plans or efforts to provide the city with a dependable water supply and distribution system. This determination was not directed to engineering efforts but to the people of the community. And so a study was made in 1954 to evaluate the dependability of the system. James Lambeth, then Director of Public Works and Chief Engineer for the city, delved deeply into this subject along with the author. The effort was a two-pronged one: (1) to rate the actual capacity of the then-existing watersheds and pumping and treatment plants (now called the Southside system), and (2) to determine where the city should look for a new source.

The study encompassed rainfall records, the runoff characteristics of the basin, the evaporation factors of the lakes, pumping and line capacities, and the maximum rates of treatment and pumping at the plant. Population change and per capita use adjusted to this type of community were made an important part of the study. Valuable data and technical assistance were re-

ceived from Charles Smallwood, Professor of Civil Engineering at North Carolina State College; Edward Rice of USGS; and the City Planning Department.

Further development of the Swift Creek basin was studied and it was determined that a second lake upstream from the new lake just completed would increase the safe yield of this basin from 8.95 to 16 mgd.

The Crabtree Creek basin was also examined and explored. At the best possible dam site to be found, it was determined that the safe yield that might be expected within reasonable cost was 11.2 mgd.

Although the Neuse River received an important position in the report's conclusion, data reported in previous studies were considered sufficient for the report.

The concern for providing adequate water required that the report go so far as to evaluate the possibility of piping water some 60 miles from Kerr Lake, in the Roanoke River basin at Henderson. An inquiry by letter to all the municipalities from Raleigh to the lake, asking for an expression of interest or concern, brought no response, however.

FINDINGS

The summary of the 1954 study concluded that:

1. Additional raw-water storage would be necessary before 1964 and would have to be provided as soon as possible.
2. By alterations, changes in treatment rates, and so forth, the plant capacity could be increased to 16-18 mgd.
3. With the maximum capacity of the treatment plant being limited to 16-18 mgd, a safe yield from water supply sources had to be approximately 20 mgd.

4. These actions would balance the safe yield of the basin with the pumps, line capacities, and treatment facilities on the south side, pointing to a whole new system development as the next step in any major capacity increase.

The following recommendations were made:

1. The safe yield of the Swift Creek raw-water source should be increased to 16 mgd by building an upstream lake of about 2 billion gallon capacity, bringing the total safe yield of the two-basin, four-lake system to 19.6 mgd.
2. The Neuse River should be developed as a source of supply by 1971, as it was the largest, and therefore potentially the most dependable, source within reach of the community. This source was chosen because it was believed that by the time it could be tapped and made ready for use, its pollution would be cleared up.

As a result of the 1954 study, the City Council presented a bond issue to the people for the purpose of raising money for building the second Swift Creek Lake. The issue was approved and, a year or so later, the lake was completed and filled, bringing the stored-water volume to 4 billion gallons, with a safe yield of 19.6 mgd.

NEW PROBLEMS

For a couple of years the council could now look to other needs of the community. But all too quickly the rapid growth of the city increased Raleigh's area from 10 square miles in 1950 to 34 square miles in 1960, and its population of 64,000 to 94,000. The demand for water quickly increased, so that the City administration had to face up again to the water problem.

It may be of interest to note that the weak spot that showed first in the Southside system during the summers of 1961 and 1962 was its lack of ability to meet peak-hour and peak-day demand. There has not yet been any inadequacy found with the lakes and raw-water system. As was pointed out previously, this Southside system is fairly well-balanced and it did appear illogical to spend large sums strengthening a weak segment that would in turn create another weak segment.

USE OF NEUSE RIVER

Faced with a period of at least 3 years before additional supply could be realized, the author recommended to the City Council in September 1961, that an engineering study be started to outline a means for tapping the Neuse by constructing the first phase of a treatment plant with storage and feeder mains into the north side of the system.

Already, the US Corps of Engineers had been studying the Neuse River

basin for purposes of flood control. There had been considerable work on the Neuse development emanating from many sources of interest. The author was happy to realize that there appeared no question from anyone but that Raleigh should go to the Neuse for water, and go soon.

1962 STUDY

The Council asked a committee made up of the three major consulting firms in Raleigh to make a study and an estimate for the new system. The scope of the study was to include:

1. Determination of demand volume to be provided at the present time and a projected demand volume.
2. Proposed location of the intake point at the river taking into consideration possible construction and use before and after a large flood control dam was built.
3. Proposed location of the pumping facility, also giving consideration to the possible construction of a flood control dam.
4. Proposed location for a treatment plant, providing ample room for expansion.
5. Proposed distribution system and the location of ground-level or elevated finished-water storage.
6. Map location and required sizes of mains necessary to carry the volumes indicated between the above facilities.
7. A study of expected pressures and operating or system problems that might be encountered in merging the present and proposed systems.
8. Estimated costs of the various facilities, listing the cost of each facility and the cost of the raw-water and finished-water section of the lines.
9. Any other items or estimates believed needed to present a completed study preparatory to developing designs, plans, and specifications.

The report, dated November 1962, indicated that the city should request to have provided in the proposed US Army Corps of Engineers flood control dam a volume of water that would provide a safe supply of 100 mgd to the city. This figure was arrived at after projections of growth in the area by the Research Triangle Planning Commission, the committee of consultants, the City Planning Commission, and the US Department of Health, Education, and Welfare. This volume of 100 mgd will be about seven times the average daily summer demand.

1963 PROGRAM

This program for the beginning of the new north side water supply treatment and transmission to the city was included in a general bond issue of \$14,950,000, of which \$7,800,000 was designated for the water improvements. The whole program was approved by the electorate on Nov. 26, 1963. Rapid progress is being made in the design and plan development phase.

The program calls for the first treatment plant section to be of 12-mgd capacity with an area that can be expanded to 100 mgd. A 60' million gallon presettling reservoir, and 8 million gallon standpipe reservoir, and a system of 30- and 36-inch transmission mains, coming from the source and sweeping around the north of the city, is to merge into the present system.

Because of the overloading evident in the present plant and finished-water pumping, the 8 million gallon reservoir and line system to the city were placed under contract in the spring of 1965. This additional storage will let the city meet peak demands expected during the summers of 1965 and 1966. City officials hope they can meet the rapidly increasing demand in the meantime.

NECESSITY FOR PLANNING

A look back will show that just 10 years ago the average daily demand in Raleigh was 7.16 mgd, with maximum-day demand being 10.9 mgd. During the summer of 1964, Raleigh experienced a maximum-day demand of more than 17 mgd, while the average daily demand went to 12.5 mgd, with peak hourly demands at times exceeding 20 mgd for as long as a 10 hour period. Once again, rapid growth of the community is collapsing projected time estimates of the effective periods of plants, lakes and pipelines, and the City administration is concerned with further development.

The author hopes, in dwelling on the story of Raleigh's water problems over the past decade or so, that people in city administration might be made more aware of the great need for farsighted programs.

Raleigh had no planning department prior to 1950 and, therefore, lacked much of the data necessary to know the present and projected nature of the community. The Council has come to rely heavily on the studies and statistics gathered and analyzed by the planners in their efforts to learn the direction and rate of community change. Often, cities do not set their sights high enough. Instead, they dribble along in short-range steps, perhaps spending more in the long run. Even projections based upon the most dependable data all too often prove to be underestimating growth and needs. Cities must not take chances with water supply. They must be sure their growth and use projections are more than safe.

Water in abundance must be provided for, both to get cities through the long, dry periods and to keep them ahead of community growth. Abundant water supplies encourage good economic health in communities. Water must no longer be classified as a cheap product. It is a most valuable product and must be presented as such. The cost of providing an abundant supply of good water is and will be high, and water utility people must constantly advise their customers that whatever the cost, they cannot afford to be without it. If they question this truth, have them come and read Raleigh's story. (End of Article)

The decision taken by the City, after full evaluation of all other possible sources, to key in to the Falls Project was based on a history of recognized need, in-depth studies and Congressional approval of this project as part of the Neuse River Basin Program.

Following a series of disastrous floods as well as droughts in the Neuse River basin during the middle 1930's, the US Corps of Engineers began a study of this basin. Section 4 of the Flood Control Act of 1944, as amended in 1946, 1954 and 1962, provided basic legislation for the overall plan of development and utilization of the Neuse River. Public Law 89-298, enacted by the 89th Congress on October 27, 1965, authorized the comprehensive development of the Falls Lake Project—(Letter March 30, 1972, Dir. Water-Air Resources—Land Acquisition Falls Lake Project—US Army Engineers, May 1972.)

Further, to solidify and move this planned project into an accomplished status, Congress has appropriated thru June 30, 1973, \$7,936,000. The production stage reached is that of beginning land acquisition.

During this time, the new Northside or E. M. Johnson Water System was completed in November 1967. During the construction period of this system, there were some critical times when the Southside system was overloaded.

In 1968, a dry summer was experienced. The safe yield from the Southside lakes and treatment system was found to be about 14 million gallons per day (mgd) when Lake Johnson and Lake Wheeler were drawn down critically. Water use restrictions were called for upon all customers. Low flow in the Neuse fell to 12 mgd during which time the State Department of Water and Air Resources requested no more than 6 mgd be taken from the river.

The schedule for the completion of the Falls Project as projected by the US Corps of Engineers during the planning and development of the Northside system was 1972. However, because of inadequate funding and work scheduling in the late 1960's, this schedule was reset to 1975.

Because the City again was faced with an inadequate raw-water source, in January 1970, the N.C. Department of Mental Health agreed to a 5 year contract to sell 5 million gallons per day from their Camp Butner Lake. The cost was set at \$7,000 yearly for standby plus 4¢ per 1000 gallons. The cost to the City to install valving and meters was \$17,893. This contract, initially to terminate at the end of 1974, has recently, because of their serious concern, been extended to the end of 1977.

With the water supply projection still critical in April 1970, the City Council Committee made up of Mayor Pro-Tem Cherry, Councilman Bradshaw, and Councilman Strickland was appointed to determine how additional water could be provided pending Falls Project completion. The committee reported preliminary efforts of the City staff to obtain surplus water from Durham gave no results. The committee then turned to consideration of a lake on Upper Barton Creek, a tributary in the Falls Lake area. Considerable study was also given to the possibility of using one of the Crabtree Creek Flood Dams, with the conclusion that this was not a workable solution. Then another tributary in the Falls Project was looked at, evaluated and considered to have greater potential. This was the Beaver Dam Creek site.

The Council employed L. E. Wooten—Engineers to make a feasibility study. Out of which came a report, March 1971, reviewing:

1. Beaver Dam Creek site.
2. A low dam on the Neuse River.

Beaver Dam Creek was the chosen solution, so detail design, plans and specifications were ordered and were completed in August 1971.

The 1971 estimated cost of the Beaver Dam Lake, without land, is \$1,351,000. The US Corps of Engineers agreed to buy the land as part of their program. The yield would be 16.1 mgd, and construction time, 12–18 months.

Citizens authorized \$2 million in 1971 to provide water storage if the Council felt the Falls Lake would not be ready in time.

Concern by the Council as to whether to proceed with building was based on the hope for the Falls Lake to be ready by 1975 and no dry summers would occur.

During this period, the progress made by the US Corps of Engineers toward meeting the 1975 completion date was closely watched. Also, a new effort between Raleigh and Durham to build storage for Raleigh's short-range use and Durham's long-range use now involves a feasibility study with a report due about 70 days from this date. Durham agrees to help Raleigh temporarily. The whole program is based on the Falls Lake Project completion for Raleigh's long-range need.

In January 1973, the City Council was advised by the US Corps of Engineers that because of delays experienced in processing the new agreements by the Federal Government from the State of North Carolina and other elements, the project schedule has had to be moved from a December 1975 completion date to March 1978 completion date. It was pointed out that none of the delay occurred on the part of the State of North Carolina which has been most positive and active in pursuing the necessary action on their part to meet Federal requirements. The problem, budget control and manpower needs contributed to the slippage. (Summary of meeting—City Council/US Army Engineers—Wilmington, January 29, 1973.)

This new schedule now makes conclusive the necessity to obtain a more dependable volume of raw water than now available.

Only two possible sources are within early reach:

1. The Beaver Dam Creek Lake now (Feb. 1973) estimated to cost—without land—\$1,687,000. Safe calculated yield, 16.1 mgd. Time to make useful, 18 months. The plans/specifications are ready. The land acquisition dependent upon US Corps of Engineers moving to acquire as previously agreed.

2. Joint venture Durham-Raleigh to build new lake on Upper Flat River to supply short-range temporary water to Raleigh and long-range water to Durham. Feasibility study ready 70 days from this date. City of Durham agrees to help with make up water needs during the construction period.

The City of Raleigh's projected water available and needs are as follows:

WATER AVAILABLE, WATER CONSUMPTION AND WATER DEFICITS

Year	Available water supply ¹ (mgd)	Projected consumption ²	Water deficits	Projected maximum day consumption	Water deficits ³
1972.....	20	18.67	-----	25.98	-----
1974.....	20	26.75	6.75	34.5	14.5
1976.....	20	29.2	9.2	37.7	17.8
1978.....	20	31.5	11.5	41.5	21.5
1980.....	20	34.5	14.5	45.0	25.0
1982.....	20	37.5	17.5	49.0	29.0
1983.....	20	39.0	19.5	51.0	31.0

¹ During drought conditions and excluding water from Camp Butner.

² Average daily use during the 3-month period of maximum use.

³ Water deficit without storage.

No urban area can survive on a crisis to crisis water situation. The records clearly show that everything possible has been looked into and thoroughly evaluated in the very long and complicated trail to get for this region a long-range, ample and dependable water system. The citizens with the City Coun-

cils have taken every step within their ability to meet their needs, including agreeing to pay to the Federal Government, the full cost for water storage to be provided in the Falls Lake Project.

The dependency and trust placed in Congress through our representatives was great. Our lives and well-being are literally in their hands.

The Falls Lake Project must not be slowed or stopped for any reason. It is and will be essential to all the hundreds of thousands of people now and in the future in the region.

To stop the project, slow it, or attempt to change it, will add more years of delay in time and greatly increase the cost. We already have ample proof of this.

If this project is delayed further or not built, it will mean:

1. The City will continue to jump from crisis to crisis trying to build small storage ponds at a schedule not to run out of water and at a great cost.

2. If a City dam were now to be constructed to provide Raleigh with its long-range water needs, it would cost Raleigh's water customers a minimum of \$15 million (current estimate) instead of \$4.327 million as part of the Falls Lake Project which can be paid over a 50 year time. This would place an unbearable burden on the citizens of this area on top of the heavy burden recently added for waste treatment.

I urge you and all the citizens in this area and the Neuse Valley to become concerned and alarmed for this program. It will mean so much for so very many and may be taken away to satisfy a very few.

Respectfully,

W. H. CARPER,
City Manager.

Mr. Chairman, we have with us officials from surrounding towns. They would like to speak in support of our position. I would like to at this time call on Mr. Nathan Yelton, mayor pro tempore, Garner, N.C., for a very brief statement.

Senator SCOTT [presiding]. Mayor, the chairman had to leave for other business and has asked me to chair the meeting. We will be glad to hear from anyone who cares to appear before us. We do have a number of witnesses. I would suggest that they summarize, if feasible, their comments, and submit the balance for the record. But I am not going to make that an arbitrary rule. I just ask for your cooperation.

Mr. LIGHTNER. Thank you.

STATEMENT OF NATHAN YELTON, MAYOR PRO TEMPORE, GARNER, N.C.

Mr. YELTON. Mr. Chairman, my name is Nathan Yelton, mayor of a little town, Garner. Garner is a small town of approximately 6,000 population, 6 miles east of Raleigh.

We have a tremendous growth going on there. We have one development proposed of approximately 1,500 dwellings. We have a large shopping center coming up. We have built numerous schools. We are dependent entirely upon Raleigh for our water supply. Garner has no water supply, and we are quite concerned about this project. We don't want anything done that would delay it.

Our future in Garner and of the surrounding area depends upon an adequate water supply for our expansion. We believe the sooner this can be done the better it is going to be for us. We are going to be in a dilemma if something is not done in the near future so we will be able to go ahead with our expansion.

If not, it will curtail everything and it will be too bad for our town and surrounding area.

Thank you very much.

Senator SCOTT. Thank you, Mr. Mayor.

Mr. LIGHTNER. Next we would like to present Fred Bond, mayor of the city of Cary.

STATEMENT OF FRED G. BOND, MAYOR, TOWN OF CARY, N.C.

Mr. BOND. Thank you, Mr. Chairman.

The city of Cary lies southwest and adjacent to the city of Raleigh. In regard to our population, in 1960 we had a total population of 3,300 in 1970 we had 7,700, and in 1974 we have 13,500. We are estimated on a conservative basis that by 1990 the growth of our community will reach about 50,000 to 60,000 people.

You can see how important water is to this particular area of the county. Cary has short-range and long-range water needs which need to be supplied. For both the near-term and the long-term we are dependent upon the city of Raleigh to supply our water as are other suburban areas around the city of Raleigh and within Wake County.

In order that our short-range needs may be met, it is absolutely necessary that the dam on the Beaver Creek, which is within the Neuse project, be constructed at the earliest possible date. If our long-range needs are to be met, it is imperative that a much larger supply of water be provided at the earliest possible date.

The damming of the Neuse River offers a solution to the area water supply adequate to serve several generations to come. We do not know of any satisfactory alternative to solve the long-range water supply for the entire area. We therefore, urge the Congress to take immediately whatever steps are necessary to assure the speediest possible acquisition of lands within the Neuse basin. We do not have the technical knowledge to judge the size of the Neuse basin, but we do know that unless a speedy solution to the water problems of this area is found and found quickly, the economy of our area is going to suffer severely.

[Mayor Bond's complete statement follows:]

STATEMENT OF FRED G. BOND, MAYOR, TOWN OF CARY, N.C.

The Town of Cary lies southwest of and adjacent to the City of Raleigh. It lies about seven miles southeast of the Research Triangle Park.

The growth of the Town of Cary is influenced substantially by the growth of the City of Raleigh, since Cary is suburban to the City of Raleigh and the growth of Cary is also substantially influenced by the growth of the Research Triangle Park.

Recent population figures of the Town of Cary are as follows: 1960—3,300; 1970—7,700; 1974—13,500.

Estimates on future growth which we believe to be conservative are that by 1990, the population of Cary will be between 50,000 and 60,000 people.

Until the year 1967, the Town of Cary relied upon wells as its source of water. At that time Cary's need for water exceeded the capacity of its wells, whereupon Cary negotiated with the City of Raleigh to supply its water needs, and since that time has depended upon the City of Raleigh for all of its water supply.

The present consumption of water by the Town of Cary is approximately one million gallons per day. Because of the expected population growth and because of an anticipated growth in commercial development (of which Cary has very little at present), we believe that the water consumption of Cary by the year 1990 will exceed seven million gallons per day.

The quality of Cary's growth is also important. It is of such desirable quality that the continuation of the growth should be encouraged rather than discouraged. For example, the present employment in the Research Triangle

Park consists of 10,000 people and the payroll is over \$125,000,000 per year. A recent estimate by a reliable consulting firm stated that 57% of the existing personnel of the Park earn \$15,000 or more per year. 16.7% of the employees of the Research Triangle Park live in the Town of Cary.

Cary has short range and long range water needs which need to be supplied. For both the near term and the long term, we are dependent upon the City of Raleigh to supply our water as are other suburban areas around the City of Raleigh and within Wake County. In order that our short range needs may be met, it is absolutely imperative that the dam on the Beaver Dam Creek, which is within the Neuse project, be constructed at the earliest possible date. If our long range needs are to be met, it is imperative that a much larger supply of water be provided at the earliest possible date. The damming of the Neuse River offers a solution to the area water supply adequate to serve several generations to come. We do not know of any satisfactory alternative to solve the long range water supply for the entire area. We, therefore, urge the Congress to take immediately whatever steps are necessary to assure the speediest possible acquisition of the lands within the Neuse basin. We do not have the technical knowledge to judge the size which the Neuse basin should be but we do know that unless a speedy solution to the water problems of this area is found, the economy of our area is going to suffer severely.

We are informed (and we believe reliably so) that the prices of lands in the vicinity of the Neuse valley are rising rapidly as result of growth and demand on the northern perimeter of the City of Raleigh. We are confident that every month of delay in the acquisition of the property will result in increased costs on account of rising land prices. With whatever funds are available, land should be acquired at the earliest possible date until all of the necessary land has been acquired. To delay acquisition because funds for acquiring the entire valley are not available could easily prevent the impoundment of this water supply until the land prices are so high that the acquisition of the property becomes financially unfeasible.

Again, I would urge that whatever conclusion is determined, please let it be one which leads to the immediate acquisition of the land necessary for the reservoir.

Senator SCOTT. Mr. Mayor, do I understand that your testimony is in substantial support of Senator Helms' testimony?

Mr. BOND. Mr. Chairman, our position is simply this: we want to take whatever action needs to be taken, whether it be for this amendment or what, to assure the water supply.

Senator SCOTT. Whether it is the larger area or the reduced area?

Mr. BOND. It really makes no difference to us, Mr. Chairman. We are in dire need of water. As a matter of fact, we are rationing water now to our builders today. If this amendment will expedite, we are ready to support it. If it tends to stop it or delay it, we would be opposed.

Senator SCOTT. Thank you very much.

I have here a letter dated April 24, from the senior Senator from North Carolina, Senator Ervin, in which he adds his support for the project and indicates that he has supported it for some time. I would ask that the letter be included in the record in its entirety.

[The letter referred to follows:]

U.S. SENATE,
Washington, D.C., April 24, 1974.

HON. MIKE GRAVEL,
Chairman, Subcommittee on Water Resources, U.S. Senate,
Washington, D.C.

DEAR MR. CHAIRMAN: Although I am unable to attend the hearing of the Subcommittee on Water Resources this morning, I would like to reiterate my support of the Falls Lake Project.

As you know, this project was approved by the Corps of Engineers and authorized by Congress in 1965 to provide flood protection, local water supply,

water quality control, and recreation in the Neuse River Basin of North Carolina.

The City of Raleigh and surrounding areas are in dire need of the water supply which this project would provide in the years to come, and in February 1972 signed a water storage contract with the federal government to reimburse the federal government for its share of the cost.

Also, in September 1972, the recreation cost-sharing contract between the State of North Carolina and the federal government was signed.

I understand there are numerous officials and interested persons from North Carolina testifying on the proposal before you today. I would like, however, to express again my support for this project, and also express the hope that the Subcommittee will take no action which would jeopardize the entire project.

With all kind wishes, I am

Sincerely yours,

SAM J. ERVIN, JR.

Mr. LIGHTNER. Now I would like to call on the mayor of Apex, N.C.

STATEMENT OF HON. JAMES W. AUSTIN, MAYOR, APEX, N.C.

Mr. AUSTIN. We thank you for the opportunity of appearing here before you and we appreciate particularly the amendment or some of the points of the amendment that Senator Helms made.

Being from a small town, we are dependent for water from Raleigh and through Cary. We are located approximately 16 miles southwest of Raleigh. We have a limited water supply but right now we have in the ground not much money as far as maybe this committee is concerned, but to us it is a great amount.

We have about a \$150,000 project in process. Unless Raleigh gets some water we are going to have a dry line. There are a number of other communities that will be faced with this same situation.

I appreciate Senator Helms' position on trying to cut costs. I think that is something we should all look at. But if in the meantime this is going to change the priority of the project and delay it, I think we should also take the position of, is this delay going to increase the cost to offset the savings of \$1 million.

I think we have to take a look at that.

Mr. LIGHTNER. I would like to introduce Mayor Winford Medlin and Mayor pro tem, C. B. Tingen of Fuquay-Varina. These gentlemen would like to appear in support. They already have a statement on record and will not speak, but we wanted you to know they are here in support.

[The statement referred to follows:]

STATEMENT OF WINFRED E. MEDLIN, MAYOR, TOWN OF FUQUAY-VARINA, N.C.

The Town Fuquay-Varina supports the entire Neuse River Dam Project and is opposed to Senate bill S. 2668. The vital need for water supply, flood control and recreation facilities for our highly populated Piedmont area can most economically be accomplished in both time and money by proceeding with the existing project without reduction.

Mr. LIGHTNER. I would like to read a statement for the record from the mayor of the town of Wendell, Mayor Todd.

The town of Wendell, North Carolina, is located 16 miles east of Raleigh, North Carolina. The town of Wendell wishes to express support for the City of Raleigh's request for necessary legislation to expedite the Neuse water supply project.

The town of Wendell is a community of 2,000 people and is located in eastern Wake County. This community can speak specifically to the frustration of an inadequate water supply. Only in the past 12 months has this crisis situation been resolved by the town of Wendell. The City of Raleigh has also been cooperative, considerate and helpful of the neighboring communities in the entire region.

This spirit is exemplified by this region's EPA designation for the first pilot planning program in our nation. With this progressive approach, the town of Wendell is pleased to have the opportunity to support the City of Raleigh's request for a basic need.

It is signed by mayor of the town of Wendell.

At this time I would like to turn the microphone over to Mr. Howard Manning, attorney for the city of Raleigh.

STATEMENT OF HOWARD E. MANNING, ATTORNEY FOR THE CITY OF RALEIGH, N.C.

Mr. MANNING. Mr. Chairman, I have submitted a written statement. I think it would be best if I just explain exactly the problem we have involved.

Senator SCOTT. We will include your statement in the record.

[The statement referred to appears at p. 47.]

Mr. MANNING. First of all, Raleigh has a real problem on water. You will note on the chart the red which indicates water requirements beyond ability to produce, and the yellow to the left of it represents all water available. That yellow includes water provided by contracts or agreements between Butner and the city of Durham to give Raleigh water during periods of drought. These run out in 1977.

Actually, last summer Raleigh almost had to cut down on water because Raleigh didn't have enough under the contracts to provide for its needs. This is why Raleigh is so interested in securing this project and why this project is essential and that it be put through immediately and without delay.

The problem presented by Senator Helms' amendment, recognizing that no one likes to have a disagreement with a Senator from his own home State, relates to the deletion of an important part of the project and to the potential loss of the project due to its delay and changing of benefit cost ratio. I have had prepared an aerial photograph which shows the amount of park land that is involved and the type of land that is involved in the park land.

This aerial photograph shows the three areas that are holding up the proposed project. The acreage in these three areas is 4,450 acres out of a total of 43,000+ acres of land. The Corps of Engineers, even if this amendment is passed, will still need 900 some odd acres of the 4,450 acres to be deleted. The net saving in acreage will be 3,615 acres.

This is what this amendment is about. It would save 3,615 acres. The advantages of this amendment are only two: one, it will currently save \$1,100,000 in land cost by elimination of the acres; two, it will reduce the acreage by 3,615 acres which will permit the property owners who own that land to profit by its being adjacent to this project, and will deprive the project according to the estimates of the Corps of Engineers, 5 million visitations per year.

So the reduction in acreage will cause a considerable loss to the project, though it has an advantage.

The disadvantages of Senator Helms' amendment, to be listed very quickly, are as follows:

No. 1, while it will save \$1,100,000 at this time, the delay which the Corps of Engineers will have in redesigning the project by virtue of this deletion of land will result, according to their best estimate, in an increase in cost of the land for the project by \$2.5 million.

Second, it will increase Raleigh's cost in this project by the removal of the recreation facilities from \$5.2 million to \$7.2 million. So you have an immediate loss of \$4.5 million to save \$1.1 million.

Senator SCOTT. If I might interrupt, you are saying Raleigh will have to pay more?

Mr. MANNING. Yes.

Senator SCOTT. But the project is going to cost less. If Raleigh is paying more somebody else is paying less.

Mr. MANNING. I do not wish to disagree, but the project is going to cost \$1,100,000 less, but Raleigh has a contract to contribute percentage-wise to the overall allocation of costs. When you take the 4,500 acres out, the net of 3,615 acres out, you reduce the amount of recreational benefit actually from 1.5 to 1.2 to 1.

Raleigh's cost, according to the estimate of the Corps of Engineers, will increase from \$5.2 million to \$7.2 million for this project. So Raleigh will pick up an additional cost of \$2 million plus the \$2.5 million loss to the overall land cost that will be incurred by the redesign brought about by the reduction of this land.

The third problem of loss is that according to the estimate of the Corps of Engineers, the recreational portion of land which is to be eliminated by this amendment is necessary to get the full benefit in order to make secure the flood plain area, and also the water.

The removal of the recreational area will reduce the amount of annual visits from 7.8 million to 2.8 million, or a reduction of 5 million estimated visitors per year. Those are the disadvantages so far.

Then in addition to that, the estimated loss from flood damage each year from this project is approximately \$1 million, which will be held up by the redesign.

Senator SCOTT. Mr. Mayor, how much more time will you gentlemen take?

Mr. LIGHTNER. This is our final presentation.

Senator SCOTT. If it is going to take long, we would ask you to step aside and let the Senators speak. If it is only going to take a few minutes, go ahead.

Mr. MANNING. I will take less than 3 minutes.

If this amendment jeopardizes the project, and frankly we are concerned about the jeopardizing of the project because of the reduction in the ratio of benefit to cost, and Raleigh has to build its separate dam, it will cost the city of Raleigh between \$22 million and \$30 million to get this water. We must have water.

We feel that the flood control and the other items involved in this are such that the saving of \$1.1 million will be materially offset by the additional cost due to the delay.

While I did not wish to disagree with the Senator from North Carolina, I think the record should show exactly the problems involved in the saving proposed by the Senator.

It reminds me of the old saying that we all know that for the loss of a nail a shoe was lost and so it goes.

Senator SCOTT. Thank you very much.

Thank you, Mr. Mayor.

Let me assure you gentlemen that your testimony will be fully considered. We will talk further with the Senators and the Corps of Engineers and have the staff check any conflict between your testimony, the corps testimony and the Senators' testimony. Thank you for being with us.

[Mr. Manning's complete statement and additional statements and communications relative to Falls Dam and Reservoir follow:]

STATEMENT OF HOWARD E. MANNING, ATTORNEY FOR THE CITY OF RALEIGH, N.C.

Mr. Chairman, my name is Howard E. Manning and I am an attorney from Raleigh, North Carolina, representing the City of Raleigh, and on behalf of my client, I would like to speak on Senate Bill 2668.

The City of Raleigh supports the entire Project and opposes any amendment which delays or endangers the early completion of a project which will provide the City and the surrounding area its planned water supply.

As you know, the Falls Lake Project was authorized by Congress in 1965. In addition to the numerous pre-authorization studies, nine years of work by the Corps of Engineers have now gone into the planning since the Project was initially authorized. Because it is a joint-use project, considerable study has gone into coordinating of all aspects of the Project in an attempt to achieve the optimum benefits from the entire Project.

The City of Raleigh has entered into a contract with the Secretary of the Army under the terms of which the City would draw up to its projected requirement of one hundred million gallons of water per day from the Falls Lake Project. Raleigh's obligation under the terms of this contract calls for an outlay of four million three hundred twenty seven thousand (\$4,327,000.) dollars to be spread over a fifty-year period. Raleigh's water needs are critical and all of the recent engineering studies (three in the past twenty years) have concluded that the Neuse River is the source from which Raleigh must look to meet its raw water needs. The other alternatives have been thoroughly investigated and are simply not practical. Raleigh has concluded, therefore, that there must be a water storage dam at approximately the location of the proposed Falls Lake Dam.

The proposed Falls Dam and Lake will be a multi-purpose project. It will not only provide this necessary water supply storage but also will result in enormous flood control, water quality, and recreation benefits. Current estimates indicate that it will cost fifty nine million (\$59,000,000.) dollars to build the Project which has already been authorized and partially funded by Congress. But this cost is substantially less than the cost of building separate, single-purpose projects for water supply, flood control, water quality and recreation. Under present estimates, the City of Raleigh would have to spend twenty two to thirty million (\$22,000,000.—\$30,000,000.) dollars just to obtain the necessary water storage.

The benefits of this Project accrue from all four features of this multi-purpose project. Flood control and water quality benefits primarily affect downstream cities. In this short statement, we will, therefore, not review those. We would like to briefly mention the benefits of the recreation feature of the Project which is the subject of this bill.

The State of North Carolina now ranks fiftieth in terms of state park capita. Although this statistic is bad enough by itself, a close examination of the parks we do have indicates that most of our recreation areas are found in the mountains and along the seacoast—areas far removed from the population centers of our State. Separable recreational facilities have been included in this Project at a minimal cost. We strongly urge the retention of these recreational provisions in the Project.

Although the bill ostensibly deletes 4,550 acres of separable recreation land from the Project, 915 acres of this separable land would have to be re-included in the Project to provide access to the lake itself to receive the recreational benefits from that part of the Project. The effects of the deletion of this net acreage of 3,635 are far reaching and would result in the loss of the Falls Lake State Park, the Raleigh Peninsula Park and the Durham Park. In addition, 52 other recreation sites would be eliminated. The loss of facilities, access, and the land itself would result in the elimination of almost five million annual visitations to the lake and recreation areas. At a time when we are attempting to economize, we should carefully look at what savings have been accomplished by this massive deletion of recreational facilities and green space.

Current estimates show that these changes would result in a net savings of only 1.1 million dollars. This must be offset by any delay which would result from having to conduct the required engineering and design studies, thereby increasing land costs by an estimated ten per cent per year, or two million five hundred thousand (\$2,500,000.) dollars for the first year.

Passage of the proposed amendment would have the immediate effect of reducing the current benefit-cost ratio of 1.5 to 1.0 downward to 1.2 to 1.0. Should the passage of the amendment result in delays in the project and should the present trend in land costs continue, it is possible that the benefit-cost ratio could be further reduced and the entire Project endangered.

The City of Raleigh is concerned about the proposed loss of these park lands which are so greatly needed in this State and this region. We are very fearful that the deletion of these lands from the Project would do damage to the water supply we urgently need. Urbanization of the areas in close proximity to the impoundment, or even the use of this land for agricultural purposes, would be a threat to the quality of the water which Raleigh so desperately needs. Of greatest concern, however, is that the proposed amendment, coupled with the delays it might cause, would impair the economic justification of the Project in its entirety.

In conclusion, the bill proposes to delete an area of 3,635 acres and make it available for private development very close to the lake. Under existing plans, however, this acreage would be used as a state park, two city parks and 52 additional recreation sites with a resulting five million more annual visitations than are estimated if the park were built without this additional acreage. Even if there were no costs occasioned by delay, the cost of deleting these great benefits may far outweigh the \$1.1 million in savings which is all that would result from the passage of this bill.

Respectfully submitted,

HOWARD E. MANNING,
Attorney for The City of Raleigh.

ANALYSIS OF S. 2668

PASSAGE OF S. 2668 WOULD COST

Loss of 3,635 acres of recreation and park land:

Falls Lake State Park,
Raleigh Peninsula Park,
Durham Park,
52 additional recreation sites.

Loss of nearly 5,000,000 annual visitations from 7,763,000 to 2,800,000.

Increased land costs of up to \$2,500,000.00 caused by new engineering and design work and the resulting delay.

Any additional loss of time occasioned by having to renegotiate the contracts between the Secretary of the Army and the State of North Carolina and the City of Raleigh.

Loss of green space.

Loss in quality of water from urban run-off.

Opportunity to keep from being the 50th state in the Nation in state park acreage per capita.

PASSAGE OF S. 2668 WOULD SAVE

\$1,100,000.00.

3,635 acres remain in private ownership.

SUPPLEMENT TO THE STATEMENT OF HOWARD E. MANNING

Mr. Chairman my name is Howard E. Manning and I would like to put into writing my supplemental remarks to the written statement submitted at the Public Hearing on Senate Bill 2668.

Due to a critical need for water, the City of Raleigh has a definite interest in the immediate construction of the Falls of the Neuse Lake Project. At the present time, the existing water resources owned by Raleigh are inadequate to provide the minimum daily requirements. The City of Raleigh has contracts with Butner, North Carolina and with the City of Durham under which these two municipalities release water in the event of extreme drought periods. However, even if these contracts can be continued, the City of Raleigh's minimum requirements will exceed the additional water from these contracts by the year 1978. For this reason, the City of Raleigh is interested in expediting the Falls of the Neuse Project. As stated at the hearing, if the Helms Amendment should delay the Falls of the Neuse Project, the City of Raleigh would not be in favor of the Amendment.

I submitted at the hearing orally the following points which I would appreciate the Committee considering in its deliberations:

A. DISADVANTAGES OF THE HELMS AMENDMENT

1. An increase of an estimated \$2.5 million in the cost of land due to the delay caused by the redesign of the changed portions of the Project and with the resulting delay in the acquisition of land for the Project. This estimate is for a year's delay. Further delays could mean additional increases if the cost of land continues to rise.

2. Recreational loss is estimated to be at 5 million visitations per year, which has been conservatively valued at \$4,500,000.00 annually.

3. The immediate reduction from 1.5-1.0 to 1.2-1.0 of the benefit cost ratio of the Project. This disadvantage is of great concern to the City of Raleigh in that the estimated \$2.5 million plus all other additional land costs referred to in Item 1 would further reduce this ratio.

4. The public use of 3,615 acres which preserves that amount of green space and affords a control feature for the water impounded for the City of Raleigh.

5. Loss of annual benefits from each phase of the project: flood control, water quality, water supply and recreation for each year the Project is delayed because of the Amendment.

B. ADVANTAGES OF HELMS AMENDMENT

1. Net savings of approximately \$1.1 million in the land acquisition cost less access road design and cost due to the removal from the Project of approximately 3,615 acres.

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., April 11, 1974.

Hon. MIKE GRAVEL,
*Chairman, Water Resources Subcommittee,
Dirksen Senate Office Building.*

DEAR SENATOR GRAVEL: This is to acknowledge and thank you for your letter of April 9.

You were kind to confirm the information we had received from Mr. Wes Hayden of your staff on the April 24 hearing on S. 2668.

Our understanding is that a number of different persons representing a wide spectrum of views on the Falls Lake project will have the opportunity to testify, and I look forward to obtaining a written record of this hearing once it is printed. Because S. 2668 is before the Senate rather than the House, I am inclined not to testify on April 24.

I would like, however, for you and the other members of the Senate Committee on Public Works to know the shortage of water supply in the fast-growing Greater Raleigh area constitutes a major problem. This need must be met, and I am convinced that the Falls Lake project is the most viable alternative. It is my hope that any change in the project plans will not cause

any additional delay in completion of the land acquisition and construction of the dam and reservoir.

Should my schedule permit, I will try to attend the hearing, and of course will be pleased to render any additional assistance you or Mr. Hayden may need in the way of notifying prospective witness and otherwise preparing for the hearing.

With best wishes.

Sincerely,

IKE ANDREWS,
Member of Congress.

To: Senator Mike Gravel, Chairman,
Subcommittee on Water Resources.
From: Wallace Kaufman, President,
Conservation Council of North Carolina.
Subject: S. 2668 (Falls of the Neuse).

STATEMENT OF THE CONSERVATION COUNCIL OF NORTH CAROLINA

Unfortunately we cannot send a representative to your committee's hearing on April 24 concerning the above bill. We thank you for the opportunity to submit the following remarks for the record.

The Conservation Council is opposed to S. 2668 because the bill is fiscally and environmentally irresponsible.

First, while the city of Raleigh must have water, and that water must come from the Neuse River or tributaries, the project reduced in size and without strict land use control surrounding it would quickly become a polluted body of water, a financial burden and an environmental hazard. Development would not only pollute the water but destroy virtually all wildlife benefits the remaining acreage might have.

Second, in the absence of an overall growth plan for the area the proposed project will only stimulate more growth which will overburden the project and call forth bitter controversies in the future.

Third, without the full amount of land or strict land use controls the project will yield a negative cost-benefit-ratio, thus essentially asking the taxpayer to subsidize unnecessarily incomplete planning so that Raleigh might continue to grow unabated by concern for others.

The Conservation Council recommends that the bill be defeated. Raleigh is now beginning a temporary water impoundment on a Neuse tributary to solve its immediate problems. The Senate should wait on this bill and any others facilitating the Neuse project until the city and Wake County have demonstrated their ability and willingness to protect the taxpayer's investment by instituting the kind of planning that will assure the project's success.

WALLACE KAUFMAN,
President.

STATEMENT OF THE LEAGUE OF WOMEN VOTERS OF RALEIGH-WAKE COUNTY, N.C.

The League of Women Voters of Raleigh-Wake County has long supported programs for the protection of water quality and for the provision of public recreational lands. We recognize the need for an adequate water supply for Wake County. Our position on the Falls of the Neuse Project is one of support for the concept; however, we feel that the size of the project could serve the area better if it were reduced—the impoundment, not the recreational lands.

As the project now stands there is a cost-benefit ratio of only 1.4. Since recreation is a large part of the benefit, reducing it any appreciable amount would make the cost-benefit ratio so small that it probably would not meet the Corps of Engineers' requirements for a feasible project. The entire Triangle J Region needs the recreation facilities and water supply, and Smithfield needs the flood protection afforded by the current project.

Taking the separable recreation land from the project would have several detrimental effects. First, there would be far fewer safeguards on the development of that land if allowed to remain in private hands. As yet we do

not have a comprehensive plan for Wake County; as a matter of fact the entire county has not been zoned. Secondly, with private development there will probably be much more runoff from the land adding to the problem of maintaining water quality. At best with the current project there will be difficulties with water quality.

For these reasons the League of Women Voters of Raleigh-Wake County is *NOT* in support of S. 2668.

STATEMENT OF B. C. MANGUM, NORTH CAROLINA FARM BUREAU FEDERATION

We have been seriously concerned with some aspects of the Falls Lake Project for some time now. Our concerns have been expressed through many communications to our Congressional delegation, responsible State and Federal agencies and comments on the Draft Environmental Impact Statement. We will not attempt to reiterate those concerns at this time except to the extent that they bear on the subject at hand.

Our involvement centers around our concern for our member farmers, both within and without the project area, and those affected farm lands. These farm lands are most basic to the present and future well being of the State and Nation.

On December 29, 1972, our State Board of Directors asked for a reevaluation of the project recognizing many deficiencies in the project and discrepancies between benefits obtained and present needs.

Voting Delegates at the State Convention in 1972 adopted a policy stating that "... anyone having the power of condemnation of farmland should be required to prove the necessity of the project" and "... acquire only those properties necessary to meet absolute needs."

They recognized that investigations of present needs, design, alternating costs, and benefits were insufficient to determine the feasibility of the project as proposed.

Our staff has determined that the loss of farm and forest land productivity alone in the project area totals more than 2 million dollars per year, while down stream flood control benefits according to the Corps of Engineers draft E.I.S. are only \$819,000. Most of the losses down stream are attributable to damage of urban properties. Almost two-thirds of the benefits derived from this project have been attributed to recreation (\$2,003,000). The Corps of Engineers contends that this much recreational emphasis is necessary. We have difficulty reconciling this view when we consider the fact that plans upon which the benefits were based amount to almost twice the number of campsites that presently exist in the fifty-five State and Federal Parks located in North Carolina.

We are justifiably concerned with the size of the project, in that recreational emphasis is a significant factor in its present scope and losses in farmland production exceed recreational benefits. In this respect Senator Helms proposal in S. 2668 would reduce the aforementioned farm losses and we would tend to support this action for that reason. However, we do question how and why the decision was made to eliminate these specific lands. These may or may not constitute a portion of the total changes that may be needed to better this project.

Many other determinations of necessity, best design alternatives and other data is needed in order to rationally determine the most beneficial project design to serve the best public interest.

We appreciate this opportunity to present our views on this matter.

STATEMENT OF NEUSE VALLEY ASSOCIATION

Mr. Chairman, committee members, The Neuse Valley Association is a non-profit voluntary, unincorporated association of approximately 1,000 citizens and landowners who reside in Durham County, Granville County, and Wake County, North Carolina. The association is dedicated to the conservation and protection of the upper Neuse River basin, the preservation of the environmental character of the area in which the Falls Project is situated, and to the application of sound economic and social policies in determining and providing for water supplies, water quality control, wildlife management, flood

control, and land use within the upper Neuse River basin. Therefore, we felt it most important that we present to you our response to Senate Bill 2668 sponsored by Senator Jesse Helms.

Senator Helms' bill calls for the reduction in the size of the Falls Lake Project by removing from the project the "separable recreational land"; that is, the land used solely for recreational development. We totally and wholeheartedly support Senator Helms in his efforts to pare this project down to less gargantuan size by reducing the amount of land to be taken for recreational purposes.

However, although Senator Helms' bill is a long awaited step in the direction of reason, it does not go far enough. Simply stated, the amount of land to be reduced by this bill is not sufficient. Even if this bill is passed, the project will still be too big. The project as planned encompasses 42,259 acres, with only 4,550 acres specifically set aside for public used recreation. Thus, the removal of this recreational acreage would still leave the project of enormous size, e.g. 37,709 acres.

This project will be enormously expensive; even the Corps of Engineers estimates the cost to be more than \$50 million. The Corps in 1973 acquired 10 tracts of land in the Falls Lake Project area for an average price per acre of \$2,447.60. If all of the land required for this project costs this much, the land acquisition *alone* will cost \$103 million. Any price per acre for the Falls Lake Project that even approaches the price paid to date will push the project cost far above the current estimated costs. If all of the land required for this project costs this much, then a reduction in project size of 4,550 acres would represent a savings of \$11,136,558.00.

As Senator Helms has stated, a smaller project would naturally have a less damaging effect on the environment, yet could be of sufficient size to meet the water supply needs of the area. A project of 37,700 acres would be less damaging to the wildlife habitat, less destructive to woodlands, and less destructive to farm lands than would a project of 42,250 acres.

Therefore, for the above mentioned reasons, the Neuse Valley Association is in favor of and supports Senator Helms' attempt to decrease the size of this project by reducing the amount of recreational land to be taken, but further reiterates its position that an even smaller project is much more desirable.

RUSSELL DEW,

Chairman, Neuse Valley Association.

SIERRA CLUB, JOSEPH LECONTE CHAPTER,

Raleigh, N.C., April 22, 1974.

Senator MIKE GRAVEL,

Chairman, Water Resources Subcommittee, Senate Committee on Public Works, Dirksen Building, Washington, D.C.

DEAR SENATOR GRAVEL: The following brief statement expresses the position of the Research Triangle Sierra Club on S. 2668. We ask that this statement be accepted by the Water Resources Subcommittee as part of its review of this bill.

The Research Triangle Sierra Club endorses the concept of a reduction in the size of the Falls of the Neuse Reservoir project. We thus support S. 2668.

Our support for the concept of a smaller project as expressed in S. 2668 is, however, contingent upon

(1) a cost-benefit of the Falls project by the General Accounting Office establishing the amount by which the cost of the Falls project should be reduced,

(2) a modification of the Falls project which includes a reduction in the size of both the permanent and flood control pools.

Sincerely,

CLYDE A. KEISLER, Jr.

Raleigh, N.C., April 20, 1974.

Mr. WES HAYDEN,

Water Resources Subcommittee Staff, Dirksen Office Building, Washington, D.C.

DEAR MR. HAYDEN: I understand that on Wednesday, April 24, 1974, a public hearing will be held relative to the construction of the Falls of Neuse Reservoir

on Neuse River near Raleigh, Wake County, North Carolina. This reservoir is badly needed to furnish water for Raleigh, the Research Triangle Area and adjacent towns and villages in Wake and Durham counties. Most people who are interested in the growth and development of Raleigh, Durham, Chapel Hill and adjacent areas are aware of the importance of the proposed reservoir on Neuse River to this growth and development and hope that the reservoir can be built without too much delay.

As the project now stands there is a requirement that 4500 acres of land adjacent to the reservoir be acquired and set aside for park and recreational uses. Senator Jesse Helms of North Carolina has introduced Senate Bill 2668 which would eliminate these 4500 acres of Joint Federal-State Recreation Lands. This would reduce the cost of the project by some eighteen to twenty million dollars which the tax payers can ill afford to spend for frosting on the cake during these times of inflation and increasing costs.

As a tax payer who has spent twenty four years as state geologist of North Carolina and is familiar with local conditions in this area and the need for the reservoir as a source of water for growth and development, I recommend that the 4500 acres of recreation and park lands be eliminated and the reservoir be completed as fast as possible.

Sincerely yours,

JASPER L. STUCKEY.

STATEMENT OF DON HAISINGH, PRESIDENT, WAKE ENVIRONMENT, INC.,
A STATEMENT REGARDING S. 2668

Wake Environment, Inc., is a citizen-interest organization committed to preservation and development of a high quality environment for all citizens of Wake County, North Carolina, and of the region. WE, INC., is a non-profit entity duly incorporated under the laws of the State.

The Falls Dam and Reservoir in Wake County is a Federal multiple purpose project whose benefits include water supply, water quality control, flood control and recreation. S. 2668, introduced by Senator Helms, would modify the project "to provide that the Secretary of the Army . . . shall not acquire any Federal interest in land to be devoted exclusively to recreational development and fish and wildlife enhancement at the project: Provided, That nothing contained herein shall preclude the Secretary (of the Army) from acquiring interests in land determined by the Chief of Engineers to be necessary for the Falls Reservoir project and to be used jointly for authorized project purposes, including recreational development and fish and wildlife enhancement and from acquiring necessary lands for access to the recreational development."

Wake Environment supports the early completion of the Falls Lake Project and generally concurs with the official State position with respect to each of the purposes for which the project is to be constructed.

Unquestionably, water supply for this rapidly growing area is of first importance. Low flow augmentation storage for water quality control is important from the standpoint of offsetting the adverse effects of non-point pollution as well as an alternative to costly advanced waste treatment. While Wake Environment concurs in the need for flood control storage, it will encourage—as it has in the past—local and State government to push for flood plain management and controls necessary to prevent further ingress into flood prone areas. The 1973 Federal Flood Insurance legislation will be useful in these efforts.

Wake Environment differs with Senator Helms with respect to the recreation and fish and wildlife side of the project. The pace of development and the lack of land use controls in Wake County are such as to raise serious doubts as to the availability of land for these purposes in the future unless included in the Falls Lake Project. Lands to be devoted exclusively to fish and wildlife enhancement and recreational development presently total 4500 acres. Whether all of this is required is a moot question. The need exists, however, and the opportunity is presented only through the project. It is the position of Wake Environment that while this might be subject to some reduction, a substantial portion should be retained as an integral part of the project.

Unless S. 2668 can be amended to provide for reduced acquisition of land consistent with needs specified by the State Department of Natural and Economic Resources, Wake Environment must oppose enactment of the Helms bill.

STATEMENT OF HON. DAVID N. HENDERSON, A REPRESENTATIVE IN CONGRESS FROM
THE STATE OF NORTH CAROLINA

Mr. Chairman, I appreciate the opportunity to present a statement regarding S. 2668, introduced by Senator Helms, to provide for a reduction in the size of the recreational portion of the Falls of the Neuse Dam Project previously authorized by Congress.

I represent Johnston and Wayne Counties, two large agricultural counties downriver from the site of the dam.

In all frankness, I will say that my primary interest is not in the recreational benefits or the water supply for the City of Raleigh. It is, instead, for the flood control benefits which will accrue in these two counties which I represent.

However, I would want to make it clear that I am cognizant of the fact that only if a project has a favorable benefit-cost ratio will it be authorized and funded by the Congress. This project, as it now exists, has been found to have such a favorable ratio.

The Senator believes that it will still have a favorable benefit-cost ratio with the recreational benefits deleted and that, by reducing the amount of lands to be included in the project for recreational purposes, a substantial savings to the government will result.

If the Senator is correct in his assumption, I would support his resolution strongly, but I make the following observations: (1) There is a substantial question in my mind as to whether this project will be as economically viable without the recreational benefits as it is with them. (2) That the delay, which will inevitably result from prolonging this project even to the extent of making this determination, will probably increase the cost of the land which is to be acquired and the cost of construction in an amount equal to or greater than any savings from a reduction in recreational lands.

I join with the City Council of Raleigh in opposing any change that will jeopardize the completion of the project or delay its construction.

The damage to crop lands in the flood plain of the river in Johnston and Wayne Counties is a continuing one and the longer the project is delayed, the greater the damage from flooding. Being able to permanently reclaim low-lying lands for agricultural production immediately upon completion of the project will be of great economic value to my constituents.

I thank the committee for this opportunity to express my views on this vital project.

CLINTON PARKWAY, KANSAS

Senator SCOTT. Senator Pearson.

STATEMENT OF HON. JAMES B. PEARSON, U.S. SENATOR FROM THE
STATE OF KANSAS

Senator PEARSON. This is Senator Dole's bill, Mr. Chairman, and I wonder if perhaps it wouldn't be more appropriate to ask him to go ahead.

Senator DOLE. Please proceed.

Senator PEARSON. Mr. Chairman, it is a pleasure to support the proposed Clinton Parkway. I commend my colleague, Senator Dole, for proposing this legislation. I also would like to commend the civic and business leaders from the city of Lawrence and Douglas County who are also testifying in favor of this proposal.

It is the continued and determined efforts of local leaders like these that help give strength to our Federal reservoir program.

This bill, S. 3141, authorizes the Corps of Engineers to construct a 4.1-mile roadway between 23d and Iowa Streets in Lawrence, Kans., to the Clinton Dam site. The Federal share for this project would be 70 percent.

The need for this road is abundantly clear. The experience of Tuttle Creek reservoir near Manhattan, Kans., the site of a major

State university like Lawrence, exemplifies the stress which will be placed on access roads to Federal lakes.

Between 1950 and 1970 the average daily traffic count between Manhattan and Tuttle Creek increased from 830 to 6,950. And I should point out that Lawrence is even closer to major population areas, including metropolitan Kansas City and Topeka. In fact, Lawrence is within 1½-hour drive of roughly 11½ million people.

But Clinton and Tuttle Creek are only two examples of similar situations at other Federal lakes in Kansas and across the Nation. So while I support this particular bill, I am also very much committed to a whole new national policy to deal with access roads to public recreation areas at Federal lakes.

Indeed, as you may recall, Mr. Chairman, in 1972 the Senate unanimously adopted an amendment that I had offered to the Federal Aid Highway Act which provided for a national policy of Federal aid to assist hard-pressed local areas in developing adequate access roads to Federal lakes.

Unfortunately that provision did not ultimately become law. However, the need for a program to deal with the problems of traffic congestion, highway safety, and environmental conditions along access routes clearly remains.

These problems grow as more Americans take their campers, trailers, boats, and recreation equipment to Federal lakes across the country. In 1971 the corps estimates that over 300 million 1-day visits were made to some 340 corps-operated lakes. By 1973 this total had climbed to 344 million 1-day visits.

But the statistics show only the surface of the problem.

In day-to-day terms, they mean an increasingly heavy flow of vehicles, traveling in a concentrated period of time, over country roads built before the lake construction took place. In all too many cases, these roads have remained unimproved because neither the county, State, nor local taxing authorities have been able to raise the necessary revenues to improve them—although many have tried.

And, of course, the task of raising additional funds for these roads is complicated by the fact that the very existence of the Federal reservoir has removed considerable property from the tax rolls.

The problem of improving access roads leading to these Federal lakes "falls through the gap" between Federal and local authorities. State highway plans too often fail to give adequate priority for these access roads, because they lie in remote areas which have little influence over the establishment of highway priorities—although many of the users are indeed residents of highly populated urban centers nearby.

So, Mr. Chairman, I am hopeful that we can pass this bill, but I am also hopeful that we will continue to strive for a national program to deal with this problem.

As I said, these roads do fall in the gap, and it doesn't make a lot of sense to spend on multipurpose Federal lakes and not provide a feasible and sensible way for people to get in and out. I am very hopeful that that would be sort of the long-term solution that this committee might view favorably.

I thank the Chairman.

Senator SCOTT. Thank you, Senator Pearson.

If agreeable with you, perhaps we could hear the testimony of Senator Dole and then have you respond jointly to any questions of Senator Stafford and myself. I realize that Senator Dole appeared before an executive session of our subcommittee some months ago in an effort to get this measure included in an omnibus public works project that we had.

He has been pushing the measure for some time.

Senator Dole, it is good to have you with us again.

STATEMENT OF HON. BOB DOLE, U.S. SENATOR FROM THE STATE OF KANSAS

Senator DOLE. Thank you Mr. Chairman and Senator Stafford.

I want to first of all commend Senator Pearson because I, too, feel that we are in a need for a policy change. He permitted me to co-sponsor that legislation which would address itself to the problem of providing adequate access to all multipurpose projects. It seems the height of folly to spend \$60 million on a reservoir and then not provide a way to reach it safely and conveniently.

That is, in essence, what we are talking about insofar as the Clinton Lake in Douglas County, Kans., is concerned. I, too, would hope that the committee might look favorably upon this legislation, not because it is mine but because they are anticipating 1 million visitors, many from the Kansas City area, many from outside the State of Kansas, which we appreciate. But without the proper access it will be very difficult.

As the chairman recalls—I am certain he was on the floor at that time—when we considered the 1974 Water Resources Act, my senior colleague, Senator Pearson, and myself raised this question. At that time the chairman of the committee, Senator Randolph and the ranking majority member, Senator Gravel, indicated that hearings would be held.

That was confirmed by the distinguished Senator from Virginia, Senator Scott, so we are pleased to be here on that basis. We are serious about the hearings. We believe there is a need. I have read the Corps of Engineers' statement and can understand, in part, their opposition. Having served on this committee, I recognize that they need some authority. I don't believe they are opposed to the concept.

I do believe they understand the problem. But I believe on the basis of the legislative authority they have now they have really no alternative than to oppose the project.

The major or multipurpose Clinton Lake project is now under construction. We expect the impoundment of water to begin in 1975. It is going to be a major attraction, not just for the city of Lawrence, but for the entire area of northeast Kansas. We hope to attract 1 million people a year. That is one of the purposes of it.

Of course, as Senator Pearson pointed out very well, one of the real problems is access, access routes to the project, particularly from the southwestern portion of Lawrence at the intersection of two major highway from the south and east of the city. At the present time we have a two-lane road and that is all. It leads from this intersection to the project area. There was a very compelling analysis made in an editorial published in the Lawrence Daily Journal-World,

and I ask that it be printed as part of my statement, if there is no objection.

Senator SCOTT. Without objection, it is so ordered.

[The editorial referred to appears on p. 58.]

On the question which was raised with regard to general Federal policy by both of the Senators from Kansas, it is a matter that will be considered by this subcommittee this spring. It does seem that we need to develop a rational approach that will enable all projects to be treated fairly.

I would like to include in the record at this point a section of the Senate committee report on the legislation which did become Public Law 93-251.

[The material referred to follows:]

COMMITTEE CONSIDERATIONS

* * * * *
The Committee received testimony concerning the developing problems of providing safe and adequate highway access to Federal lakes and recreation areas. In many cases the attractive features of Federal water resource projects draw large numbers of visitors to these areas annually, but existing roads, bridges and highways which lead to the projects are often inadequate to handle such traffic.

The Committee recognizes that these Federal projects have substantial impact beyond their geographical limits, and when local resources cannot cope with them, there is a legitimate public interest in having the Federal government cooperate in working toward solutions.

Rather than continuing to deal with these problems on a case-by-case basis, after authorization or perhaps even construction of a project, it is the intent of the Committee that the need for such access be considered in project development and included as part of the initial project authorization. The Committee intends to review the question of what might be an appropriate resolution of this problem on existing Corps projects.

* * * * *
Senator DOLE. Mr. Chairman, I would ask that my complete statement be made part of the record and also ask permission for Congressman Winn to have a statement included in the record at this point.

Senator SCOTT. Without objection.

[The statements referred to and the editorial from the Lawrence Daily Journal-World referred to by Senator Dole follow:]

STATEMENT OF HON. BOB DOLE, U.S. SENATOR FROM THE STATE OF KANSAS

Mr. Chairman, it is a pleasure to appear before your subcommittee today. And at the outset I wish to express my appreciation for the Public Works Committee's response to the problem of providing safe and adequate access to Clinton Lake in Douglas County, Kansas.

At the time the 1974 Water Resources Act was considered in the Senate, this problem was brought up and discussed with both the subcommittee chairman, Senator Gravel, and with Senator Randolph, the chairman of the full committee.

They were most understanding of the problem, but since it had not been considered before, an amendment at that time was not felt to be advisable. However, Senator Randolph and Senator Gravel both gave their assurances that this matter would receive thorough and detailed consideration by the committee at an early date.

I introduced S. 3141, authorizing construction of the Clinton Parkway in an effort to stimulate this effort and the resolution of the problems facing the residents of Lawrence and Douglas County.

Therefore, today's hearings are a most welcome opportunity for me and for those who are directly involved in this matter at the local level to provide the committee with the facts and information it needs.

By way of further explanation, I would like to provide the committee with a narrative description of the access problem which has developed in connection with the Clinton Lake project.

This major multipurpose Corps of Engineers project is now under construction, with impoundment of water expected to begin in 1975. When completed, it will be one of the major attractions for the city of Lawrence and for the entire northeast area of the state. Millions of people are expected to visit the lake each year to enjoy its waters, its shores, and many other attractive features associated with it.

The problem, however, lies in the lack of adequate access routes to the project—particularly from the southwestern portion of Lawrence at the intersection of two major highways from the south and east of the city. At the present time only a two-lane road leads from this intersection westward to the project area, and it is entirely inadequate to carry the traffic which is expected to be going to and from the project.

A very compelling analysis of the area's plight was contained in an editorial published in the Lawrence Daily Journal-World. And I ask that it be printed at the end of my statement.

I am sure that the representatives of Douglas County and the Lawrence community will be able to furnish a great deal of valuable information to the subcommittee. They have lived with this problem for some time and have been actively seeking a workable, practical solution to this problem. It affects not only their local interests, but the safety, wellbeing and convenience of the millions of visitors who are expected to come to Clinton Lake each year.

I want to commend them for their concern and desire to cooperate in dealing with this problem.

I am especially appreciative of the special effort they have made to be here today, and I am pleased to present them at this time.

[From the Lawrence Daily Journal-World]

CLINTON PARKWAY

Immediate action is necessary at the city, county and state level to get work started as soon as possible on the Clinton Parkway route. Water is scheduled to be impounded in Clinton Reservoir starting in 1975, yet some local officials are talking about not contracting the road work until 1976, and one spokesman speculated the project might take eight years to complete. Lawrence and Douglas County cannot afford to stumble around, twiddle their thumbs and do nothing.

Whether the Corps of Engineers, the Environmental Protection Agency, the Department of Interior or some other office has thrown the city, county and state a curve relative to making new requests for information about the impact of the roadway, it is essential that action be taken to get the necessary reports prepared as soon as possible and quit talking about the project taking eight years to complete.

The Corps of Engineers predicts three million visitors a year shortly after Clinton is opened, and evidently one study talked about 10,000 vehicles a day using the Parkway. Imagine what Twenty-Third Street and the already dangerous roadway now providing access to the Clinton Reservoir area will be like in only a few years with 10,000 additional vehicles a day.

Were local officials negligent in not providing complete information for the various state and federal agencies who now demand more facts and studies before they place their stamp of approval on the Parkway project? Something has gone wrong somewhere, and it should be corrected. According to reports, the County Commission was informed in July, 1972, that a comprehensive study would be required because the road would pass through federally owned land. The report was due to be completed by early 1973, but evidently there have been numerous delays.

Now an official who talks about it possibly being another eight years before the project might be completed says, "That's the way the Federal government does things. There is no way to push it along."

This sounds like a defeatist attitude and the city, county and state should join forces and start "pushing" as hard as possible right now! There might be surprising results.

The roadway is badly needed and cannot be put off for a 1982 completion date.

STATEMENT OF HON. LARRY WINN, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF KANSAS

Mr. Chairman and members of the Subcommittee, I want to thank you for this opportunity to submit a statement in support of S. 3141, a bill to authorize construction of the Clinton Parkway in Douglas County, Kansas.

This 4.1-mile road from the city of Lawrence to Clinton Lake will cost an estimated \$6 million, and local officials are concerned that it cannot be funded through regular channels before impoundment of the lake begins in 1976. All State and Federal highway funds in Kansas are pre-programmed for a number of years, and the lake will be in use before the State can provide enough money for the parkway. Therefore, if the Clinton Parkway is to be funded, to be ready when the lake is, money must come through special legislation.

While it is difficult to know exactly what the relationship of the proposed Clinton Lake and the city of Lawrence will be, it is anticipated that since the social, economic, and education features of Lawrence and Manhattan, Kansas (where Tuttle Creek Lake is located) are similar, the impact of the water recreational facilities would be similar. Both cities have large enrollments at major State Universities and both cities have access to major highways. The traffic on K-177 (between Manhattan and Tuttle Creek) carries a high percentage of vehicles pulling boat trailers and camping trailers and single vehicle campers; traffic counts on this highway should provide conservative forecasts of traffic between Lawrence and Clinton Lake on the proposed Clinton Parkway. In addition to students and residents in Lawrence, persons from urban areas of Topeka and Kansas City will be coming to the lake.

I am well aware that there are many hurdles in the path of a successful completion of the entire project, but funding seems to be the main obstacle. It is also obvious that there has to be a cooperative effort. I assure you that local officials (both city and county) stand ready to work with state highway department officials and the Federal Highway Administration.

It is my hope that the Subcommittee will act favorably upon this bill.

Senator DOLE. We have a number of witnesses who have very brief statements. The county commissioners are here, all three county commissioners, Walter Cragan, I. J. Stoneback, and Arthur Heck. The city commissioners are represented by Mayor Rose and the chamber of commerce by Chuck Fisher. They have very brief supportive statements.

Senator SCOTT. The Chair would be glad to hear from them.

Might the Chair ask everyone who is a commissioner who is in favor of the project if they would stand, even though they don't need to come to the microphone?

Senator DOLE. There are three county commissioners in Douglas County and they are all in favor of this project.

Senator SCOTT. Would you gentlemen give your names, please, who are not going to testify?

Mr. STONEBACK. My name is I. J. Stoneback.

Mr. HECK. I am Arthur Heck.

Mr. SCOTT. Both of you are in favor of the project?

Mr. STONEBACK. Yes.

Mr. PENCE. I am Fred Pence, City Commissioner.

**STATEMENT OF WALTER R. CRAGAN, CHAIRMAN, BOARD OF
COUNTY COMMISSIONERS, DOUGLAS COUNTY, LAWRENCE, KANS.**

Mr. CRAGAN. Thank you, Mr. Chairman.

First, as chairman of the group appearing before you today, I want to express my appreciation for your willingness to hear our request. We have a small delegation and we will be brief.

Douglas County, Kans., has a population of 59,000. Most of the population is in the city of Lawrence which has 48,000 people, including approximately 19,000 students at the University of Kansas, and 900 American Indian students at Haskell Junior College representing 90 tribes from 26 different States.

Eighteen months ago, the Corps of Engineers began construction of the 7,000-acre Clinton Lake in our county, only about 4 miles from Lawrence city activity. The lake, to be completed in December 1976, will serve a valuable purpose in flood control, water supply, and for recreation. Some observers believe it will be the most beautiful recreation spot in the State. Much effort is being made by all agencies involved to assure proper and orderly development of surrounding land.

Now we find we have a near isolated lake as far as traffic is concerned. The nearest paved highway serving the populous areas of extreme east Kansas and much of the Lawrence community is U.S. Highway 59 which is 4 miles from the lake site. To serve this populous area with a satisfactory trafficway to and from the lake, engineers maintain a four-lane paved highway is essential. When I say engineers, I am referring to our consulting engineers.

The county cannot fund its city-county share of the estimated total cost of this roadway. Statutorily it is not possible to make funds of this magnitude immediately available by property tax levy, which would be the only source of local funds available to the county. It is literally impossible to consider allocating all available county road funds to this project for 5 to 7 years as this would not only result in most inefficient and delayed construction schedules, but would leave no funds for normal county obligations.

State commitments, involving State and Federal lands, have been designated for other projects and we are convinced that any dependence upon such help would lead only to disappointment and frustration.

The city, which has corporate limits extending about 1½ miles along the parkway already, has high bonded indebtedness to meet necessary in-city improvements and any bond issue of the size necessary to insure a parkway would cripple other needed extensions and improvements for some time in the future.

The lake will soon be a reality and it is highly essential that this access road be available. We request your most sincere consideration of the fact that along with the many community enhancements which accrue from a lake such as Clinton come certain definite community responsibilities. We welcome and we will meet those responsibilities within our capabilities.

We are convinced after much study and consideration that the Clinton Parkway construction overtaxes local capabilities. Because Clinton Lake is a federally designed and financed project, we are

hopeful your committee will recommend that the Corps of Engineers be authorized to complete the project by planning a roadway that can be financed by Federal funds.

Thank you.

Senator SCOTT. Does any other member of the board of commissioners care to make a statement?

I understand you are all united in favor of this project. Senator Dole indicated this. Let me say that this is not the first that I have heard of the project because Senator Dole has mentioned it individually or privately a number of times. He has been before our committee previously as I mentioned earlier. I take it everybody in Kansas favors this project. We haven't heard anything to the contrary.

Senator Stafford, have you a comment?

Senator STAFFORD. Thank you, Mr. Chairman.

My only comments would be that I think both of the Senators from Kansas have, as usual, well and eloquently served the interest of their State by bringing this project more forceably to the attention of this subcommittee. I am sure the subcommittee will very seriously consider and report on it at the proper time to the full committee.

Thank you, Mr. Chairman.

Senator SCOTT. Senator Dole, would you like to join your commissioners at the table so that perhaps we could ask a few questions?

Senator DOLE. Mr. Chairman, Jack Rose does have a short statement.

Senator SCOTT. We would be happy to have him submit it for the record or have the gentleman present his statement.

Senator DOLE. Jack is the mayor of Lawrence and very interested in the project.

Senator SCOTT. We don't mean to cut anybody out at all.

Go right ahead.

STATEMENT OF JACK ROSE, MAYOR, CITY OF LAWRENCE, KANS.

Mr. ROSE. In the interest of time and on the advice of Senator Pearson, I would enter my statement into the record. I would comment that the people of Lawrence are very pleased with the progress of the Clinton Reservoir. We are concerned about providing access from the highway to the lake because we anticipate a tremendous amount of traffic coming out of the metropolitan Kansas City area. We therefore request that you view this favorably.

I would also say that I know of no local opposition. This makes this almost unique among Corps of Engineers projects. If there is some opposition, it certainly has been silent and has not come to our attention.

[Mr. Rose's statement follows:]

STATEMENT OF HON. JACK ROSE, MAYOR, LAWRENCE, KANS.

Mr. Chairman and members of the committee, my name is Jack Rose, and I am the Mayor of Lawrence, Kansas. I am here along with City Commissioner Fred Pence, to represent the citizens of Lawrence. There are others in our delegation who will speak for the County of Douglas, Lawrence Chamber of Commerce, and Wakarusa Watershed District. We will talk about a

very vital road which is needed for our community if Clinton Reservoir is used to the fullest for recreation, as proposed at the inception of the project. We will refer to this road as the Clinton Parkway Project.

First, you will see on our map the needed roadway is part in Douglas County and part in the City of Lawrence. During the past several years the county has attempted to have this road placed on the Federal Secondary Highway system. We are informed by the State of Kansas Highway Commission that funding this new facility is impossible with the present allocation of F.A.S. funds to Kansas. The Federal Aid Highway Act of 1973 eliminated the use of F.A.S. funds within a corporate city and created the Urban Fund. In Kansas, this Urban Fund amounts to approximately 6.6 million dollars and urban areas between 15 and 49 thousand are allocated 24% or \$1,654,000. These funds will be allocated to more than a dozen cities for traffic operation, mass transportation, and realignment of street systems. I believe the Committee can readily see that funding of our project will require consideration if we are to provide a road system for the users of Lake Clinton.

I wish to express appreciation to the Committee for your support in funding the construction of Clinton Dam. The lake will be an asset to all of Eastern Kansas but we will need a good road if we are to adequately serve the users of the lake. The Clinton Parkway Project would provide a safe and comfortable route for citizens of our City and the thousands of visitors expected from Johnson County and the Kansas City Metropolitan Area. We are concerned that the existing narrow townships roads will be a terrible hazard for drivers.

We have had a Mini-Comprehensive Plan prepared for the area to compile data and provide an inventory of needs and expectations. The Mini-Plan shows us the basic need for the Clinton road system of which the Clinton Parkway Project is the backbone.

We have come to you with the support of Senator Bob Dole and Senator James Pearson to present our needs. The funding for a project of this size is not possible through state or local sources. As this project is sized to serve the greater Kansas City area, which is in both Kansas and Missouri, we feel it is appropriate for us to appear for Federal funds to pay for part of its cost. We feel it would be a tragedy to have a beautiful lake such as Clinton that was served by an inadequate road system.

We appreciate you listening to our proposal and urge you to support S. 3141 which will authorize funds for the Clinton Parkway Project.

On behalf of the citizens and the City Commission of Lawrence, Kansas, I wish to thank you for your courtesy at this hearing and your support of the project as proposed.

Senator SCOTT. Senator Dole, what is the current status of the road system that will serve this project?

Senator DOLE. Currently, in this particular area, we have a two-lane road. I want to emphasize that when we raised this matter at the executive committee meeting last year, I think there was some question about precedents for this.

This is a valid question because it has never been done before, or has the corps ever built access roads to projects which are not totally within the project boundaries. That is the question. That is the objection raised by the corps.

But I submit there has been similar legislation passed. I can think of one example in the State of Kansas, the Perry Reservoir, where there have been roads constructed. The Flood Control Act of 1970, section 230, authorized the Secretary of the Army to pave about 5 miles of road from U.S. 24 to Kansas Route 92.

So we have precedents in our own State. We are going to do a little checking in other States. I assume it isn't a unique first time happening, though I understand the corps needs the authority.

Senator SCOTT. Senator, perhaps Mr. Cragan will tell us how many cars can the present road handle so we can get the picture between what you now have and what you contemplate under this project. How wide is the road? What is its condition? How many cars will it handle as it exists today?

Mr. CRAGAN. Mr. Chairman, I would answer you thusly: We speak of a road existing to the destination, which we don't have. There is this 2-lane road going out there, which is a county road. It extends about 2 miles, or a fraction thereof. We have to acquire new land and build an entirely new road from there on out to road A, which comes down to another highway, a corps built road.

Senator SCOTT. You do not have a road at this time that goes all the way to the project?

Mr. CRAGAN. No, sir. I want to clarify that. We don't have an existing road. The road we have is a typical county road. I would hesitate to make an estimation of the amount of traffic it could handle. I would suppose several hundred cars a day without much problem.

But we do have to build a road from what we call Dragstrip Road, which is a township road, on through an area where there is no road.

Senator SCOTT. You would build a road under this project just slightly over 4 miles?

Mr. CRAGAN. I believe it is 4.1 miles.

Senator SCOTT. And it would be a 4-lane highway?

Mr. CRAGAN. Median, 4-lane. We might have to put barriers up, we don't know.

Senator SCOTT. You feel that to accommodate the people who will be coming to the reservoir area you will need more than a 2-lane road?

Mr. CRAGAN. That is right. This is rather unique in itself, that the lake is so close to the town. From 23d and Iowa Street, in a westerly direction, it is 4.2 miles.

Senator SCOTT. And that is Lawrence, Kans.?

Mr. CRAGAN. Yes.

Senator SCOTT. How large a community is that?

Mr. CRAGAN. The county is 59,000 and the city of Lawrence is about 48,000.

Senator DOLE. Mr. Heck might demonstrate the real problem, Mr. Chairman.

STATEMENT OF ARTHUR A. HECK, MEMBER, BOARD OF COUNTY COMMISSIONERS, DOUGLAS COUNTY, KANS.

Mr. HECK. The city limits of Lawrence is approximately 2 miles from the damsite. Shown on the map is the University of Kansas with some 18,000 students. Proceeding east, you go to Kansas City, Mo., and we know those people will use Clinton Lake recreational areas whether or not we have proper access.

This indicates the need for what we are asking.

Senator SCOTT. Senator, as you know, ordinarily in projects of this nature there is a 50-50 sharing, for recreational purposes. I believe you are asking for a 70-30 ratio of Federal sharing. Is the

State of Kansas or the local jurisdiction in a position to construct a highway on a 50-50 cost-sharing basis? Would you comment?

Senator DOLE. We were advised that they were not. That is why we made it 70-30, but the best witnesses are here, particularly from the county and the city. We don't have a representative from the State. We were informed that the 70-30 would be difficult but they would try to live with that.

The chairman of the board of county commissioners said that even a 30 percent would extend them.

Senator SCOTT. I am told by counsel that it is customary when we are talking about recreational roads to have a 50-50 sharing of the cost between the Federal Government, the State and the local governments, and this would be a departure from the normal rule. We would be glad to hear any comments that any of the gentlemen might have as to why we should depart in this instance.

Senator DOLE. I might say for the record, of course, that we were aware of the 50-50 principle. I think perhaps the mayor could respond or the chairman of the board.

Mr. ROSE. I would only comment this way, Mr. Chairman: Coming up with 50 percent would be tremendously expensive for the city of Lawrence because we are talking about building a highway which is something that the city does not do.

We build city streets. When we build these city streets we assess them against the adjacent property, but when we do that we have to give unlimited access to the property owners because they, in fact, pay for them.

In this case what we are trying to do is build a limited access highway. Therefore, we cannot assess property owners as we don't propose to give them access.

Senator SCOTT. Let me ask this: Is this highway within the city or is it in the county?

Mr. ROSE. The map, sir, is incorrect. The city limits extend out now about 1½ miles. Part of this highway is in the city and part in the county.

Senator SCOTT. Roughly how much is in the city?

Mr. ROSE. Right at 1½ miles is within the city limits. This must be an old map we have.

Senator SCOTT. In Kansas, do you have a State Department of Highways, where the State builds the roads, or do the counties build the roads? In Virginia, the State constructs all the road.

Mr. ROSE. It depends on the type of roads. Highways are constructed by the State and the counties build the county roads in our State.

Mr. CRAGAN. I think where the State is involved, it has to join with another State highway. This would not be true in this case.

Senator SCOTT. As I understand, we are talking about \$6 million or thereabouts for the total cost?

Mr. CRAGAN. The minimum estimate is \$5 million and the maximum is \$6 million.

Senator DOLE. If I might interrupt, I have just been reminded that the city is adding the fifth lane to 23d Street.

Mr. ROSE. We are improving K-10 where it comes into the intersection. We are widening the road to the east to provide better access to this point.

Senator DOLE. And that is costing how much?

Mr. ROSE. We are getting \$50,000 from the State and I think it will total \$150,000.

Senator SCOTT. That is a parallel road?

Mr. ROSE. It is the road that goes east, at 23d Street. We are widening highway K-10, and then the parkway picks up from the west of that and goes on out to the lake.

Senator SCOTT. Can we go back a moment on the change from 50-50 to 70-30. Would there be anything any of you gentlemen would like to add that would justify a departure from the regular rule with regard to recreational roads?

Mr. ROSE. The only thing I would say, Mr. Chairman, is the reason we are asking for Federal funds on this to begin with is that we view this as a highway, not as a city street. In other words, we are not going to allow access onto this except every half or quarter mile, thereabouts. This will not replace any city streets.

We are going to still have frontage roads and all that. From our point of view, this is a highway designed primarily to service the load that we anticipate out of Metropolitan Kansas City.

Senator SCOTT. The committee understands this, Mr. Mayor. The thing is an access road to a recreational area ordinarily is shared on a 50-50 basis. In this case it would be 70-30 and I just wanted to give all the witnesses an opportunity to say why we should make an exception in this case.

Mr. CRAGAN. Mr. Chairman, I might add that as we look at the highways on the map we have 4 lanes of highway running north and south and we will also have a 4-lane coming in from the east. This would all dump up the traffic into a 2-lane county road.

Mr. HECK. Mr. Chairman, I believe it comes down to the local capability. This is not a part of the State highway system. It is not designed to be, and there is no indication it will be. So it comes down to a local capability. It comes down, as a matter of fact, that Douglas County cannot supply that kind of funding. It is going to tax us to supply the 30 percent. It is going to be very taxing. I think it really comes down to what we can do.

[The following additional information was subsequently supplied:]

The following costs have been incurred by the city of Lawrence on 23d Street projects:

1. Overlay -----	\$20,452.60
2. Signals:	
23d and Haskell-----	4,759.81
23d and Ousdahl-----	3,793.00
3. R/W acquisition—East-----	28,784.00
 Total cost incurred-----	 57,789.41

The following is an estimate of cost for pending projects on 23d Street.

1. 5th lane-----	\$163,415.00
2. Signals:	
23d and Naismith-----	6,000.00
23d and Iowa (re-work)-----	13,333.74
 Total estimate of cost-----	 182,748.74
Grand total-----	240,538.15

Senator SCOTT. Once the road is built, though, the county will maintain it, or the State?

Mr. HECK. Absolutely.

Senator SCOTT. There will be no further Federal obligations to maintain it?

Mr. HECK. That is correct.

Senator SCOTT. Can you explain the basis for this estimated cost? Is there some way that we can reduce the cost somewhat? Is that a rather firm estimate that you have, in the neighborhood of \$6 million?

Senator DOLE. I want to ask that the study by Finney & Turnipseed, consulting engineers, be made part of the record. It will show the anticipated car count.

Senator SCOTT. We will make it a part of the record.

[The study referred to may be found at p. 69.]

Senator DOLE. I can recall a couple of instances in Kansas now law where it is 70-30. I am talking about roads at Melvern and Pomona. That is the law. It is 70-30.

Are they recreational?

Mr. HECK. Yes. You have the same precedent there. I think it is the only county in Kansas where you have two large lakes in one small rural county. You have taken a great deal of land off the tax rolls. It was just a question of the county not being able to absorb the 50-50 proposition. It is much the same in this instance where it is not part of the State highway system.

It is left to the county and city financing. That is why we extended the 70-30 proposal.

Mr. STONEBACK. I might add something else, that in Kansas we are on a tax lid. We can only raise the property taxes 5 percent each year. We have a rate of inflation of 10 percent. This makes it extremely hard for us when we can't raise the property tax to help pay for a facility like this.

Senator SCOTT. We need something like that for the national debt. I think that is very good.

Would any of you gentlemen have anything further to say with regard to the project?

Mr. CRAGAN. We just hope you give us favorable consideration.

Senator SCOTT. It is nice to have a united group to come in from the local level and the State level. I want to assure you that your Senators have been letting us be aware of the feeling of the people of Kansas.

Senator DOLE. I would only say in conclusion that we, of course, will study the statement made by General Kelly. I will meet with him personally in an effort to see if there can be some reconciliation of the differences with the corps.

We will again go back and review the cost sharing, the 70-30 question. Very candidly, if it can be increased locally, I will report that to the committee. I think these gentlemen pretty much reflect the view of the city of Lawrence and the county of Douglas. They are pretty much extended now.

Senator SCOTT. We appreciate the predicament you are in.

Thank you very much, gentlemen.

Mr. Fisher, did you want to testify?

STATEMENT OF CHARLES F. FISHER, CHAIRMAN, HIGHWAY AND ROADS COMMITTEE, LAWRENCE CHAMBER OF COMMERCE

Mr. FISHER. Mr. Chairman, I would like to make my statement a part of the record.

Senator SCOTT. Without objection, that will be done.

[Mr. Fisher's statement, statements of the Wakarusa Watershed Joint District No. 35, Douglas County Landowners Association, and the study previously referred to by Senator Dole follow:]

LAWRENCE CHAMBER OF COMMERCE,
Lawrence, Kans., April 24, 1974.

HON. SENATOR MIKE GRAVEL,
Chairman, Water Resources Subcommittee of the Public Works Committee,
U. S. Senate.

DEAR SENATOR GRAVEL AND COMMITTEE MEMBERS: The Lawrence Chamber of Commerce supports the statements presented to you by the governing agencies of Douglas County, the City of Lawrence, and the Wakarusa Watershed District urging federal funding for the construction of Clinton Parkway.

Sited 3 miles west of Lawrence in a region of wooded hills and cultivated valleys, Clinton Lake promises to be a primary nucleus for recreational development and activity for the entire Greater Kansas City Regional Area. It is anticipated that more than a million visitor-days will be experienced annually at Clinton by the end of the first 3 year operating period. In addition to its highly accessible location, the east-west alignment of the lake in a region of prevailing north-south winds will make it an unparalleled attraction for water-skiing and sailboating, as well as for fishing, swimming, picnicking, camping, motor-boating, hiking and sight-seeing. The University of Kansas and Lawrence High School currently plan to maintain natural research areas at the lake as well.

The cooperation and responsibility demonstrated by Lawrence and Douglas County citizens, their governing bodies, and the U. S. Army Corps of Engineers in every facet of the Clinton Lake project has been most heartening. That cooperation has assured that the lake's local transportation needs will be met through local initiative. But, as outlined above, the lake will also be utilized by a very significant number of non-local visitors every year.

In order to meet the transportation needs created by this extensive non-local utilization, we consider federal funding for the Clinton Parkway to be crucial to the project's success. We therefore urge your support of Senate Bill No. S. 3141.

Thank you for the opportunity to appear before you and for your interest in the Clinton Lake project.

Sincerely,

CHARLES E. HAVERTY,
President.

CHARLES F. FISHER, *Chairman,*
Highway and Roads Committee.

WAKARUSA WATERSHED JOINT DISTRICT No. 35,
Overbrook, Kans., April 17, 1974.

Hon. Senator MIKE GRAVEL,
Chairman, Water Resources Subcommittee of the Senate Works Committee.

DEAR SENATOR GRAVEL AND COMMITTEE MEMBERS: I am writing in support of the Bill asking for federal funds for the construction of the Clinton Parkway Road.

The Wakarusa Watershed District has a flood detention structure under construction between the City of Lawrence and the Clinton Lake. The Watershed structure has a 50 acre permanent pool of water and is located on the North boundary of the proposed Clinton Parkway.

With the attraction of the Clinton Lake, the area will continue to develop tremendously and without the proposed Clinton Parkway, construction will not only be a traffic bottleneck due to a poor secondary road, but a safety hazard from the increased traffic to the Lake.

To expedite maximum use of the Clinton Lake, there must be a good access road from the East. The proposed Clinton Parkway will provide such a road and will provide access to the detention site development as well as to other development in the area.

With the construction of the Clinton Lake, the federal government has created a tremendous traffic problem for Lawrence. The Corps of Engineers builds replacement roads, but cannot provide adequate highways for general use. Lawrence is a fairly large city with its own street problems and Lawrence, Douglas County, and the State of Kansas cannot be expected to siphon off money from other highway needs to meet a problem resulting from a federal construction project.

Sincerely,

CARTER ANDERSON,
Manager.

DOUGLAS COUNTY LANDOWNERS ASSOCIATION,
Lawrence, Kans., May 1, 1974.

U.S. SENATE PUBLIC WORKS DEPARTMENT,
Senate Office Building,
Washington, D.C.

GENTLEMEN: The Board of Directors of the Douglas County Landowners Association has directed that a letter be written to express the feelings of the group relative to the Clinton Parkway proposal involving an extension of Twenty-third Street, a part of the City of Lawrence.

A local newspaper quoted one of the County Commissioners to the effect that no organized group in the community opposed the plans for this expressway. This letter is to correct that impression.

We believe the Twenty-third Street extension is impractical and that, if pursued, will cause an intolerable traffic situation. Published statistics indicate this to be one of the most dangerous streets in Lawrence, and especially the intersection with Hgy. 59.

We believe a further study of proposed roads which were planned to leave Highway 59 much further to the south would provide a more scenic and much safer access to Clinton Lake.

The Board asks for endorsements from other County organizations.

Very truly yours,

DON PALMATEER,
Chairman, Board of Directors.

CLINTON PARKWAY

(CALLED 23RD STREET PROJECT IN THIS REPORT)

ROAD A , CLINTON LAKE
to
U S 59 HIGHWAY

LAWRENCE , KANSAS
&
DOUGLAS COUNTY, KANSAS

REVISED FEBRUARY 1, 1974

~~DECEMBER-1971~~

FINNEY & TURNIPSEED
CONSULTING ENGINEERS
TOPEKA , KANSAS

32-510 157

February 1, 1974

TO WHOM IT MAY CONCERN:

Enclosed is a copy of the report on the 23rd Street project, prepared by Finney and Turnipseed, consulting engineers. Cost estimates have been revised to reflect current prices as of this date. The report indicates that the cost of the project, exclusive of rights-of-way and sound barriers, to the County will be \$2,397,000, and to the city \$1,876,000. It is impossible for the County to commit this amount for the project, without encumbering the County Road Fund for the next seven years. The City of Lawrence's only recourse is one of continuing to increase property taxes by using long term debt to pay it's share of the improvement.

Financial assistance by the Federal Government through the Army Corps of Engineers or any other agency which you might deem appropriate, is necessary to develop this Clinton Lake access road.

The Kansas Highway Commission is, at the present time involved in developing the U.S. Highway 59 By-Pass and bridge on the east side of Lawrence and reconstruction of U.S. Highway 59 South of Lawrence. They have indicated that they will not add the above mentioned project to the State Highway system. Therefore, we are looking to you as a possible resource in helping us find funds in some of the Federal Programs that be available for this project.

Clinton Parkway

Date: October 4, 1973

Finney & Turnipseed Estimate (Revised)

City	1.5 mile	\$1,670,000
Rural	2.5 miles	<u>2,210,000</u>
		\$3,880,000

Sound Barriers - Between \$125,000 - \$250,000

Plus Right of Way

Plus Bicycle Path

Dean Sanderson's Estimate (Contract in 1976)

Conservative Estimate \$5,000,000

Maximum Estimate \$6,000,000

32-310 159

WEST TWENTY-THIRD STREET
CITY OF LAWRENCE & DOUGLAS COUNTY, KANSAS

In 1967 the Board of County Commissioners of Douglas County, Kansas, retained the services of Finney & Turnipseed, Consulting Engineers, Topeka, Kansas, to make preliminary field surveys, preliminary studies, and construction cost estimates for the improvement of West 23rd Street to near the proposed location of the dam for the Clinton Reservoir. At that time the City of Lawrence was expanding to the west and to the south and, with the possibility of the Clinton Reservoir, it was imperative that roadway widths, preliminary profile grades, and right-of-way requirements be established. The preliminary study also furnished construction cost estimates.

The proposed improvement would begin at an intersection with the Corps of Engineers Access Road "A" and run in an easterly direction to the current intersection of Iowa Street and Twenty-Third Street in the City of Lawrence, Kansas. Iowa Street from this intersection to the east is the route of Kansas highway K-10 connecting this area with the urban area of Kansas City. Also, the Lawrence area is served by east-west Federal highways designated as I-70, US-40 and US-24 and by the Kansas Turnpike. Iowa Street is the route of the north-south Federal highway US-59 and provides access to the West Lawrence Interchange with the Kansas Turnpike. See Exhibit I for graphic illustration of the existing highway system which would feed traffic to the lake area by way of the proposed improvement. See Exhibit II and Exhibit III for traffic flows on existing highway facilities.

Since Kansas has had only minor lakes providing recreational facilities for aquatic sports, it was difficult to assess the impact of large Federal reservoirs. However, with the completion of Tuttle Creek Lake, Pamona Lake, Milford Lake, and Perry Lake, certain pertinent data is becoming available in sufficient coverage to permit forecasting future traffic volumes. As an example, K-244 serving Milford Lake had a 1970 count of 500 vehicles per day, and it is currently estimated this number will increase to 1295 ADT by 1975 and to 1670 ADT by 1980. K-268 serving Pamona Lake had a 1962 count of 1460 vehicles per day, and it is currently estimated that the count will increase to 1830 ADT in 1972 and to 2240 ADT in 1982. The 1970 count of K-237 serving Perry Lake indicated 1095 ADT and it is estimated that the count will increase to 1425 ADT in 1980 and to 1760 ADT in 1990.

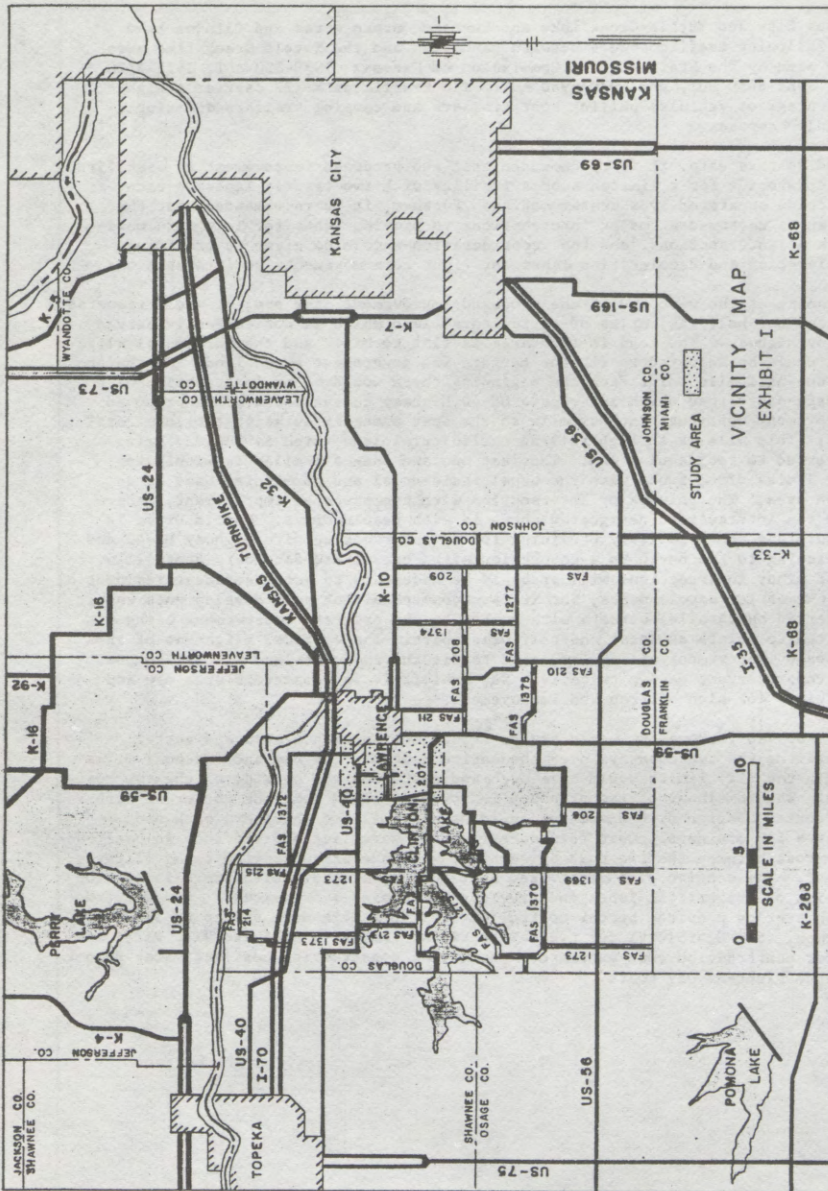
The relationship of Milford, Perry, and Pamona Lakes with urban areas is entirely different than the expected relationship of the proposed Clinton Lake and the City of Lawrence. Since the social, economic, and educational features of Lawrence and Manhattan, Kansas are similar, it is considered that the impact of water recreational facilities also would be similar. Both cities have large enrollments at major State Universities and both cities have access to major highways. It is believed that the traffic counts on State highway K-177 between Manhattan and Tuttle Creek should provide for conservative forecasts of traffic between Lawrence and Clinton Lake. In addition, consideration should be given the distance differential between the urban areas of Topeka, Lawrence, and

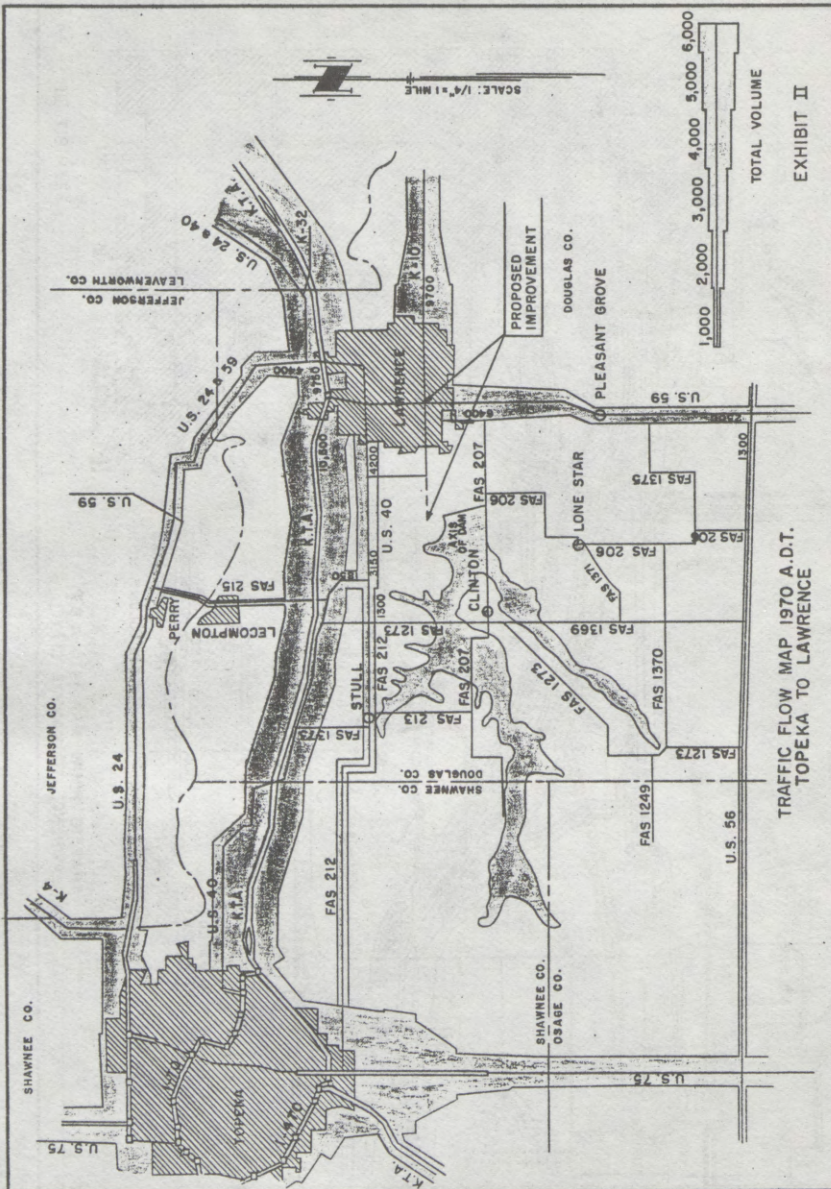
Kansas City and Tuttle Creek Lake and the same urban areas and Clinton Lake. The following traffic counts between Manhattan and the Tuttle Creek Lake area were made by the State Highway Commission of Kansas: 1950-830 ADT, 1956-2320 ADT, 1965-6450 ADT, and 1970-6950 ADT. The traffic on K-177 carries a high percentage of vehicles pulling boat trailers and camping trailers and single vehicle campers.

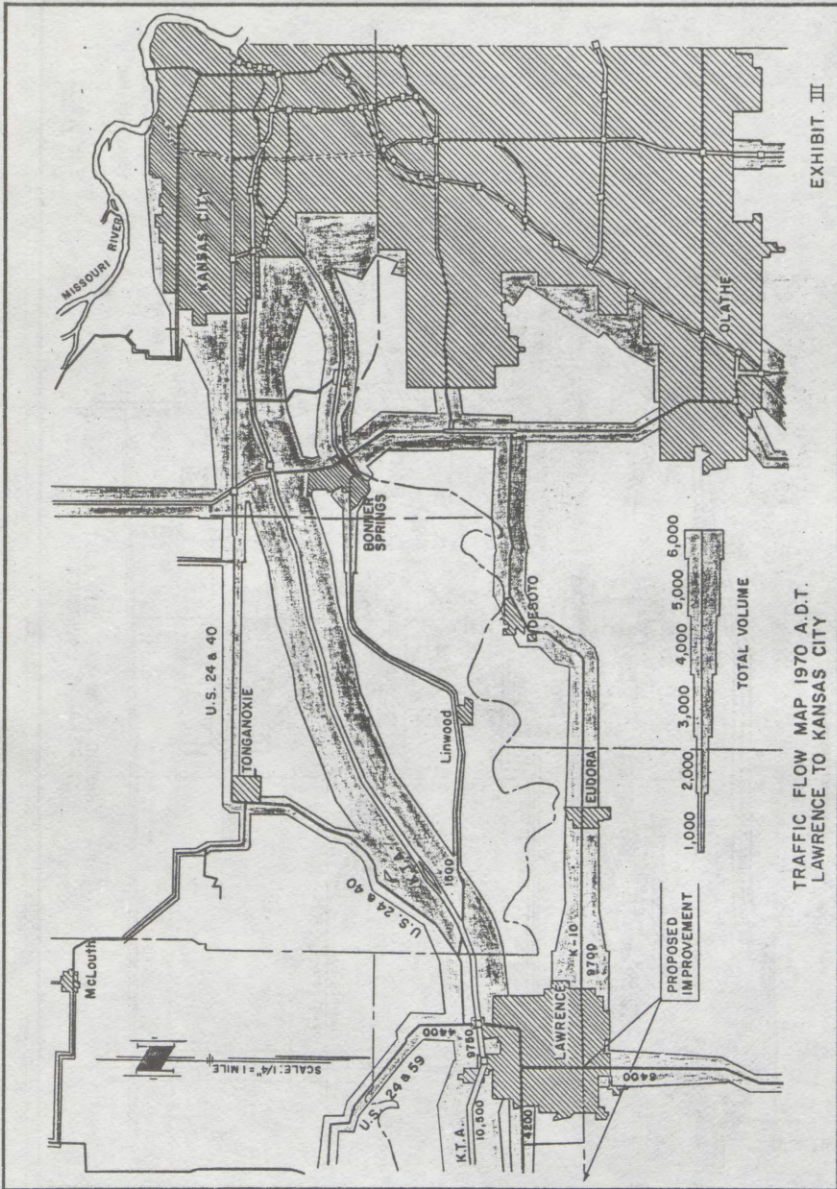
Based on this data, it is recommended that the proposed improvement of West 23rd Street provide for a limited access facility with two traffic lanes in each direction separated by a center median. Further, it is recommended that the median be narrowed at major intersections to provide lanes for left turn movements at intersections, and that consideration should be given to providing acceleration and deceleration lanes for right turn movements at intersections.

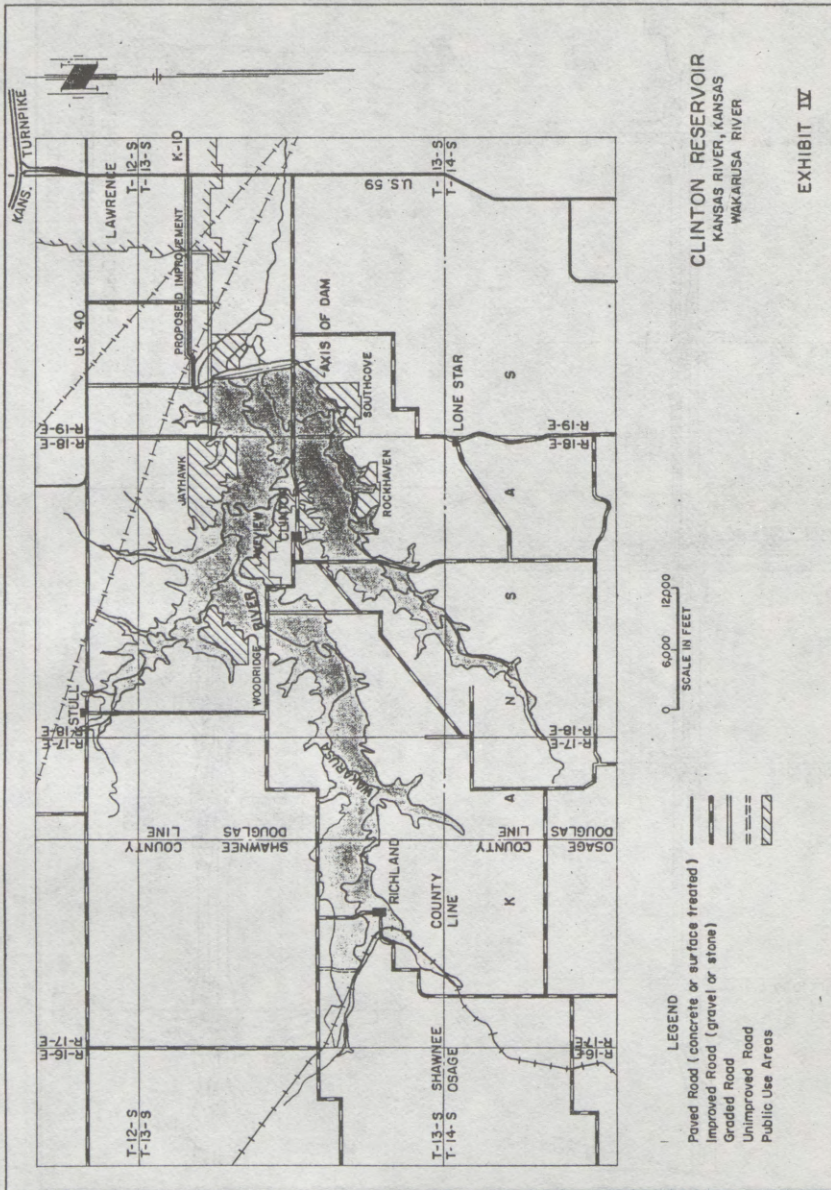
Beginning at the west end of the proposed improvement, the project would traverse one and one-half (1½) miles of agricultural land which is not currently served by any highway. The land in this area is flat to hilly and the horizontal alignment would be adjusted to fit the terrain and government owned land. At the one and one-half mile point from the beginning there would be an intersection with a north-south road which intersects US-40 highway to the north. The proposed improvement continues another mile to the east along an existing two lane rural road. This mile is through rolling agricultural land which is rapidly being converted to residential use. The last one and one-half miles is within the City limits of Lawrence with the usual residential and commercial uses of an urban area. The only major intersection with the proposed improvement, other than the intersection designated above is with Kasold Drive. Kasold Drive is a four-lane urban facility providing for an intersection with highway US-40 and continuing to the north to a connection with Federal Aid Secondary Route 1275. Other minor intersections will probably be necessary to serve adjacent residential and commercial developments, but it is recommended that such developments should be served by parallel streets with access to the proposed improvement being limited to points at least one-half mile apart. The vertical alignment of the proposed improvement will be adjusted to fit the adjacent land insofar as possible under current design criteria. See Exhibit IV for Reservoir area map and Exhibit V for plan of proposed improvement.

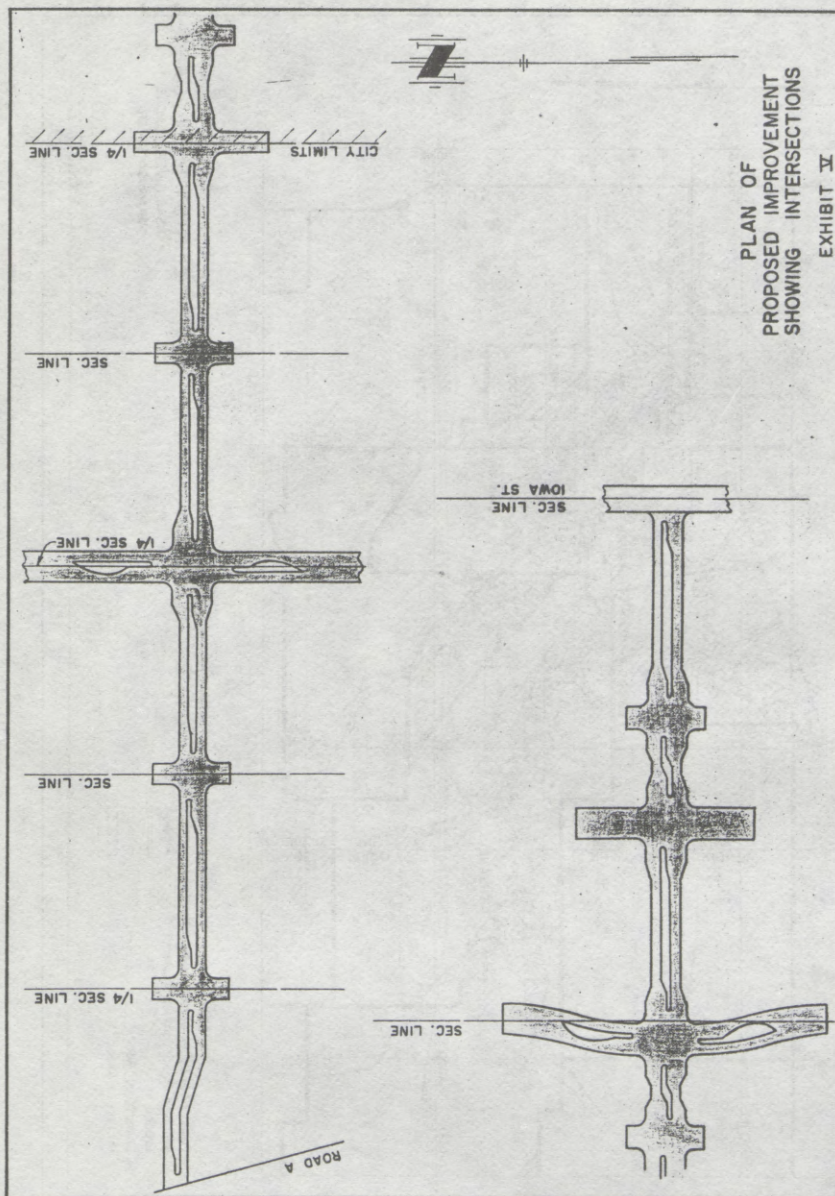
The proposed improvement would have a raised median with a curb and gutter separating the two roadways over the entire length. The one and one-half miles within the city limits would have curb and gutter on the outside of the two roadways. The remainder of the proposed improvement could continue the urban curb and gutter section or the section could have stabilized shoulders with side ditches for drainage. Cost estimates indicate very little difference in construction cost between the two roadway sections with the urban section being slightly higher. The section with stabilized shoulders permits disabled vehicles to stop outside of the traffic lanes and provides for easier snow removal. However, the urban section provides better control of erosion and is much easier to landscape and mow. See Exhibit VI for typical sections. Refer to Exhibits VII, VIII, and IX for construction cost estimates. Note that construction cost estimates do not include right-of-way costs.

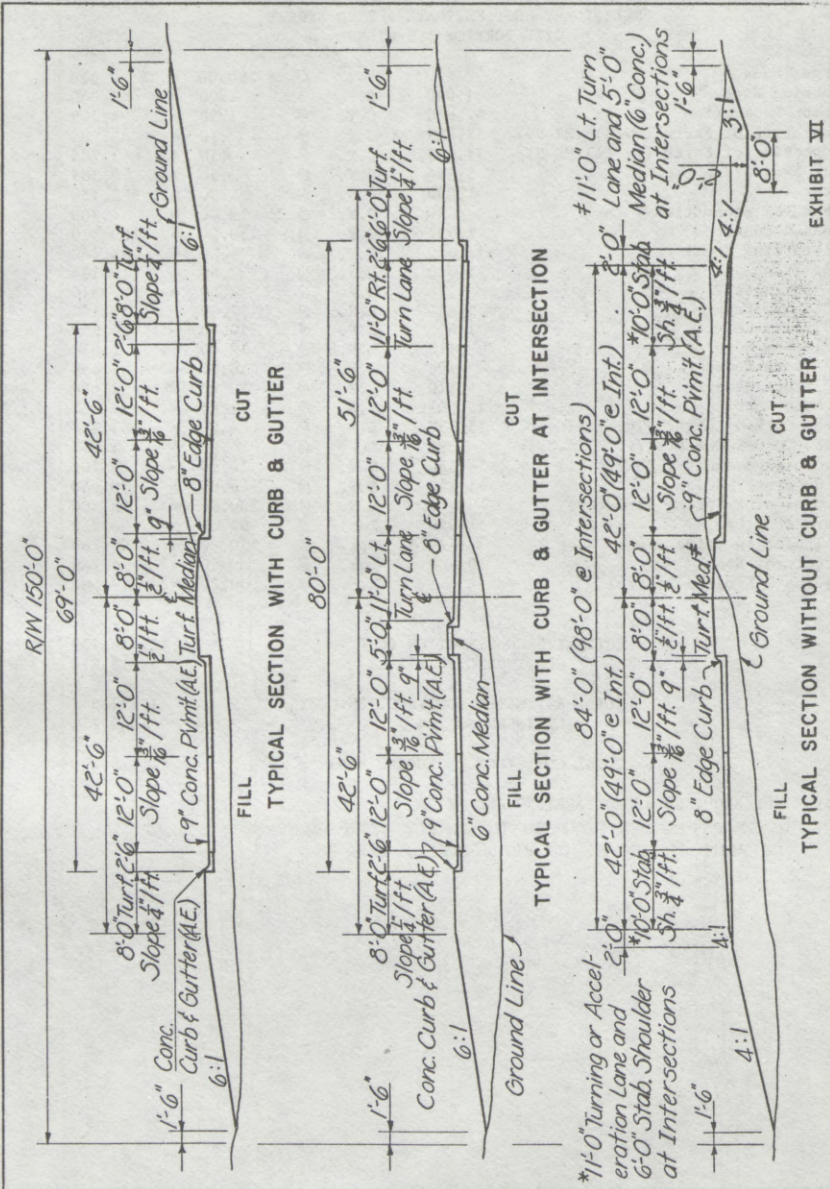












PRELIMINARY COST ESTIMATE - 23RD STREET
CITY PORTION 1.5 MILES

Large Trees	29	Ea.	@ \$ 80.00	= \$ 2,320
Grubbing Hedge	1,040	L.F.	@ 1.00	= 1,040
Common Excavation	62,910	C.Y.	@ 1.50	= 94,365
Compaction of Earth (Ty.B) (MR-90)	37,849	C.Y.	@ .10	= 3,785
Compaction of Earth (Ty.AA) (MR-5)	37,849	C.Y.	@ .10	= 3,785
Rock Excavation	3,354	C.Y.	@ 2.50	= 8,385
Water	1,050	M.G.	@ 3.00	= 3,150
Class III Excavation	630	C.Y.	@ 10.00	= 6,300
Class A Concrete	2,927	C.Y.	@ 130.00	= 380,510
Reinforcing Steel	311,600	C.Y.	@ .30	= 93,480
Cast Iron	31,940	Lbs.	@ .60	= 19,164
24" Entrance Pipe	24	L.F.	@ 9.00	= 216
15" Storm Sewer	2,444	L.F.	@ 7.00	= 17,108
18" Storm Sewer	1,668	L.F.	@ 10.00	= 16,680
24" Storm Sewer	318	L.F.	@ 12.00	= 3,816
30" Storm Sewer	106	L.F.	@ 16.00	= 1,696
36" Storm Sewer	110	L.F.	@ 22.00	= 2,420
8" Edge Curb	15,341	L.F.	@ 1.25	= 19,176
Comb. Curb & Gutter (Ty.I) (A.E.)	15,832	L.F.	@ 4.00	= 63,328
Comb. Curb & Gutter (Ty.II) (A.E.)	392	L.F.	@ 4.00	= 1,568
Concrete Pavement (9"UN) (A.E.)	54,320	S.Y.	@ 10.00	= 543,200
6" Concrete Median	1,310	S.Y.	@ 8.00	= 10,480
Removal of Existing Structure		L.S.	@ 2,500.00	= 2,500
Hydrated Lime	1,050	Ton	@ 65.00	= 68,250
Manipulation (Lime Treat. Subg.)	79.6	Sta.	@ 330.00	= 26,268
Structural Steel	10,400	Lbs.	@ .60	= 6,240
Seeding & Erosion Control		L.S.	@ 19,500.00	= 19,500

ESTIMATED CONSTRUCTION COST	\$1,418,730
CONTINGENCIES 15%	212,810

TOTAL ESTIMATED CONSTRUCTION COST	1,631,540
ENGINEERING 15%	244,730

TOTAL COST (NOT INCLUDING R/W)	\$1,876,270
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NOTE: ANY REQUIRED SOUND BARRIERS ARE EXTRA
COST ESTIMATES REVISED TO COMPLY WITH
CURRENT PRICES AS OF FEBRUARY 1, 1974

PRELIMINARY COST ESTIMATE - 23RD STREET
RURAL PORTION 2.5 MILES - CURB & GUTTER & STORM SEWERS

Large Trees	210	Ea.	@	60.00	=	\$	12,600
Grubbing Hedge	600	L.F.	@	.75	=		450
Removing Stone Fence	2,280	L.F.	@	1.00	=		2,280
Common Excavation	80,000	C.Y.	@	1.00	=		80,000
Rock Excavation	117,300	C.Y.	@	2.00	=		234,600
Compaction of Earth (Ty.B)(MR-90)	121,800	C.Y.	@	.10	=		12,180
Compaction of Earth (Ty.AA)(MR-5)	59,505	C.Y.	@	.10	=		5,951
Water	1,738	M.G.	@	3.00	=		5,214
Class III Excavation	1,210	C.Y.	@	10.00	=		12,100
Class A Concrete	845	C.Y.	@	130.00	=		109,850
Reinforcing Steel	101,700	Lbs.	@	.30	=		30,510
Structural Steel	18,820	Lbs.	@	.60	=		11,292
Cast Iron	41,500	Lbs.	@	.60	=		24,900
15" Storm Sewer	8,652	L.F.	@	7.00	=		60,564
18" Storm Sewer	720	L.F.	@	10.00	=		7,200
24" Storm Sewer	1,320	L.F.	@	12.00	=		15,840
30" Storm Sewer	1,930	L.F.	@	16.00	=		30,880
36" Storm Sewer	358	L.F.	@	22.00	=		7,876
8" Edge Curb	26,400	L.F.	@	1.25	=		33,000
Curb and Gutter	26,400	L.F.	@	4.00	=		105,600
Concrete Pavement (9"UN)(A.E.)	81,020	S.Y.	@	10.00	=		810,200
Removal of Existing Structure		L.S.	@	2000.00	=		2,000
Steel Handrail	138	L.F.	@	10.00	=		1,380
Hydrated Lime	1,738	Ton	@	65.00	=		112,970
Manipulation (Lime Treat. S.G.)	132	Sta.	@	330.00	=		43,560
6" Concrete Median	900	S.Y.	@	8.00	=		7,200
Seeding & Erosion Control		L.S.	@	32,500.00	=		32,500

ESTIMATED CONSTRUCTION COST	\$1,812,697
CONTINGENCIES 15%	271,905

TOTAL ESTIMATED CONST. COST	2,084,602
ENGINEERING 15%	312,690

TOTAL COST (NOT INCLUDING R/W)	\$2,397,292
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NOTE: ANY REQUIRED SOUND BARRIERS ARE EXTRA
COST ESTIMATES REVISED TO COMPLY WITH
CURRENT PRICES AS OF FEBRUARY 1, 1974

PRELIMINARY COST ESTIMATE - 23RD STREET
RURAL PORTION 2.5 MILES
CURB AND GUTTER SECTION ON EAST .75 MILE
GRADED DITCHES ON WEST 1.75 MILES

Large Trees	210	Ea.	@	\$	60.00	=	\$ 12,600
Grubbing Hedge	600	L.F.	@		.75	=	450
Removing Stone Fence	2,280	L.F.	@		1.00	=	2,280
Common Excavation	88,880	C.Y.	@		1.00	=	88,880
Rock Excavation	138,000	C.Y.	@		2.00	=	276,000
Compaction of Earth (Ty. B) (MR-90)	149,600	C.Y.	@		.10	=	14,960
Compaction of Earth (Ty. A) (MR-5)	59,505	C.Y.	@		.10	=	5,950
Water	1,738	M.G.	@		3.00	=	5,214
Class III Excavation	575	C.Y.	@		10.00	=	5,750
Class A Concrete	705	C.Y.	@		130.00	=	91,650
Reinforcing Steel	86,700	Lb.	@		.30	=	26,010
Structural Steel	7,620	Lb.	@		.60	=	4,572
Cast Iron	4,720	Lb.	@		.60	=	2,832
18" Entrance Pipe	112	L.F.	@		7.50	=	840
24" Cross Road Pipe (R.C.P.)	240	L.F.	@		9.50	=	2,280
10.2 Sq.Ft. Cross Road Pipe (R.C.P.H.E.)	100	L.F.	@		28.00	=	2,800
15" Storm Sewer	1,952	L.F.	@		7.00	=	13,664
18" Storm Sewer	298	L.F.	@		10.00	=	2,980
24" Storm Sewer	894	L.F.	@		12.00	=	10,728
30" Storm Sewer	1,191	L.F.	@		16.00	=	19,056
36" Storm Sewer	358	L.F.	@		22.00	=	7,876
8" Edge Curb	21,266	L.F.	@		1.25	=	26,583
Curb and Gutter	8,516	L.F.	@		4.00	=	34,064
Concrete Pavement (9"UN) (A.E.)	81,020	S.Y.	@		10.00	=	810,200
Concrete Ditch Lining	5,600	S.Y.	@		15.00	=	84,000
Removal of Existing Structure	L.S.		@		2,000.00	=	2,000
Steel Handrail	138	L.F.	@		10.00	=	1,380
Hydrated Lime	1,738	Ton.	@		65.00	=	112,970
Manipulation (Lime Treat. S.G.)	132	Sta.	@		330.00	=	43,560
Seeding & Erosion Control	L.S.		@		45,500.00	=	45,500

ESTIMATED CONSTRUCTION COST	\$1,757,629
CONTINGENCIES 15%	263,644
TOTAL ESTIMATED CONST. COST	2,021,273
ENGINEERING 15%	303,191
TOTAL COST (NOT INCLUDING R/W)	\$2,324,464

NOTE: ANY REQUIRED SOUND BARRIERS ARE EXTRA
COST ESTIMATES REVISED TO COMPLY WITH
CURRENT PRICES AS OF FEBRUARY 1, 1974

CANOE-KAYAK SLALOM COURSE, MELDAHL LOCK AND DAM, OHIO

Senator SCOTT. Senator Taft, we will be glad to hear from you at this time.

STATEMENT OF HON. ROBERT TAFT, JR., U.S. SENATOR FROM THE STATE OF OHIO

Senator TAFT. Mr. Chairman, I am pleased to have this opportunity to testify in support of legislation I have introduced. S. 3262 directs the Secretary of the Army, through the Chief of Engineers, to provide a facility for a white water canoe-kayak slalom course on the Ohio River.

Canoeing and kayaking have boomed as popular sports in recent years. For a long time, these modes of travel and sports were relegated to Boy Scouts, youth camps, and a handful of nature lovers.

In the 1950's fiberglass revolutionized boatbuilding, Europeans developed skills and boats envied by Americans, and river running in the United States was born as a new pastime.

The small number of Americans who were competent paddlers gained followers when millions watched the white water races in the 1972 Olympics on television. The public saw the extremely light kayaks and canoes being driven around boulders, against walls of rushing water and through huge waves.

Another surge of enthusiasm for canoe river running came as a result of the book and movie "Deliverance". The white water and river running industry has become a \$25 million proposition and has brought Americans back to their rivers, lakes, and streams for recreation.

The slalom course proposed by this legislation would consist of a serpentine, obstacle-laden, 36-foot wide, 2,000-foot long, artificial channel passing landward of the Captain Anthony Meldahl Locks and Dam on the Ohio River.

It would be provided by the Army Corps of Engineers and would be a loop of 1½ miles and run from the Ohio River through man-made channels through Bear Creek and back. It would end at a road which leads from U.S. 52 to the dam, thus providing access for participants and spectators.

In his letter of August 9, 1973 to me, the director of the Ohio Department of Natural Resources, William Nye, said that flows through the course can be varied to adapt to the standard of ability of the user, thereby providing a multipurpose facility suitable for novice or beginner canoeists as well as competitive events for skilled athletes.

The controlled conditions that would be provided by this course could be expected to attract new adherents to this form of outdoor recreation, to appeal to the increasing number of canoe and kayak enthusiasts who have difficulty finding challenging waterways, and to provide a training facility that might enhance the success of future athletes interested in national or international competition.

The Meldahl site offers a ready-made water supply and available land which can easily be modified to accept the slalom course, according to the Board of Commissioners of Clermont County, in which the course will be constructed.

The convenient location to U.S. 52 also provides excellent availability to population centers. Cowan Lake State Park, Stonelick State Park, and the East Fork State Park under construction will provide a large number of recreation areas which will complement the Meldahl location.

In addition to the endorsement of the Ohio Department of Natural Resources and the commissioners of Clermont County, the executive committee of the U.S. Canoe Association, its elected representatives and assembled membership, the man-made slalom committee, and the U.S. Olympic committee support this proposal. I have also received petitions containing 43 signatures from enthusiastic supporters.

The facility is estimated to cost about \$5 million. A problem pertaining to potential development concerns the Federal policy of requiring non-Federal cost sharing of recreational development at completed projects of the Corps of Engineers.

The Ohio Department of Natural Resources has an interest in the facility but does not feel able to assume the cost-sharing responsibility at this time. However, Mr. Nye has indicated that the U.S. Bureau of Outdoor Recreation has recognized the national and possibly international significance of the proposal and therefore it seems appropriate that all costs be made a Federal responsibility.

The Army Corps of Engineers conducted a feasibility study of the proposed project in March 1973, and concluded that: the artificial slalom course would meet a real need for this growing sport of white water racing on a regional and national scope.

A preliminary analysis of the environmental effects does not reveal any substantial adverse environmental effects or issues as a result of the proposed project.

In addition, Dr. Stanley Hedeon, Miami Group Sierra Club conservation chairman and professor of biology and ecology at Xavier University in Cincinnati, Ohio, has stated that he does not foresee any consequential negative environmental impact from the canoe-kayak-slalom course as presently proposed.

The corps' 1973 study concluded that construction of the proposed man-made slalom would be engineeringly feasible, economically justified, and adaptable to the selected location.

Although further studies should be conducted to more fully evaluate and determine some of the technical solutions and certain aspects relative to the planned operation and maintenance of the facility, the corps has stated its feeling that because of the relationship of the facility to the Olympics and other events, the total development and other costs should be borne by the Federal Government.

Representatives of the U.S. Olympic White-water Committee and the Army Corps of Engineers can elaborate further on this point.

In addition to the slalom course's potential use as a training facility for the U.S. white water team, it will serve as a local canoe and kayak recreational facility for the region to be used for local water sports, such as inner tubing, rafting, swimming, as a safety training facility, for fishing and other recreational pursuits. The banks may be developed for picnicking purposes.

I believe the course will turn a part of the Ohio River into a mecca for the growing number of canoe and kayak enthusiasts. Hopefully, with some fast decisionmaking, the course could be completed by 1976 for our Olympics team training.

This would be a unique facility and would meet a real need for this growing sport. I hope the subcommittee will report favorably the legislation to provide it.

Mr. Chairman, I believe that the committee should have already a copy of the feasibility study prepared by the Corps of Engineers.

Senator SCOTT. The committee has that.

Senator TAFT. I also have received or have here today a publication entitled "U.S. White-water—1974", which includes national paddler rankings and the 1974 race schedule, which I think might be helpful in giving the committee some idea of the very general interest and the high degree of organization of this sport on a nationwide basis.

Senator SCOTT. The committee will be glad to have that, not for part of the record but as a reference for the committee.

Senator TAFT. Mr. Chairman, that completes my testimony. I think there are other witnesses to speak here today. I would be glad to answer any questions.

Senator SCOTT. We are glad to have you with us, Senator.

You referred to the uniqueness of the project. I am told by staff that there is no similar project anywhere in the country. I am just wondering on the payment, having the Federal Government pay the cost of this rather than have it privately or locally financed.

I understand that the authorization bill that you have introduced does not make any provision for payment. I am wondering if there is any sort of a user fee, if there is some way that it could be a self-sustaining project so that it would pay for itself.

Senator TAFT. I believe that user fees could be charged. I see no inconsistency in charging user fees. I doubt very much whether user fees would be adequate for a practical period of computation to meet the total cost we are talking about. The bill we have introduced proposes only an authorization of \$175,000 at this time for the secretary.

Senator SCOTT. What is the total cost? At one place in your testimony it is \$5 million.

Senator TAFT. That is our estimate at this time of what the total cost would be. The authorization, however, is for a study at only the \$175,000 cost to get further data from the Secretary of the Army for this facility.

I would point out that, by its very nature, the control of the project must be with the Corps of Engineers.

Senator SCOTT. I understand this is 15 or 20 miles from the city of Cincinnati?

Senator TAFT. At least that. It is about 30 miles upstream.

Senator SCOTT. How many people would you contemplate would make use of this or to what extent would it be utilized if and when it is completed?

Senator TAFT. There may be witnesses who have more specific data in that regard. I point out the Corps of Engineers does have a map showing the location with various population circles.

It is in a favorably situated population area so far as the entire central portion of the United States is concerned. It is impossible to consider at what particular rate canoeing and kayaking may increase in the country.

This is probably a vital consideration in trying to answer your question accurately. I would say it would have heavy use.

Senator SCOTT. What level of fee would have to be set if we proceeded on the basis of the project being self-sustaining? Do you feel the initial capital cost could be paid off by a user fee?

Senator TAFT. As I have indicated, I have no figures to sustain that, but I have considerable doubt whether the kind of fees that you could charge for this type of facility would be sufficient to amortize the entire cost of the project over a considerable period of years.

That isn't to say, however, that a reasonable user fee should not be charged. In talking about user fees, it seems to me, and this is my personal impression, that user fees really ought to be related to operating costs rather than to the initial installation cost.

I don't think we are being practical if we think we can amortize the entire cost over a reasonable period.

Senator SCOTT. If it is true that this is unique, that there is nothing like it in the country, would you see this as a precedent that other States, other localities around the country would want something of a similar nature, or would it remain unique?

Senator TAFT. We certainly can make a pretty good case, that there ought to be just one national facility financed related to our participation internationally in this particular sport.

Obviously, any project of this kind has special implications for the area involved, but it is a matter, I think, of choosing an area which is well suited from the point of view of all of the physical characteristics that we have been able to study for this particular type of project.

There are natural white water rivers elsewhere, obviously, which can be used for these purposes, but it wouldn't be under the type of controlled setting that you would have with this particular facility.

Senator SCOTT. Senator, recreational costs, as I understand it, are usually shared on a 50-50 basis with the local sponsors on a Corps of Engineers project. Would you believe that the local people would be willing to share in the cost of the project?

Senator TAFT. I frankly don't know. I think that there is such interest in it that some degree of sharing may well turn out to be appropriate and practical. What the Department of the Army suggests, if we go ahead with this study, certainly should be taken into consideration. I do point out that it isn't merely a State facility.

It is on a river which is an interstate boundary. It is very closely located, of course, to the State of Kentucky and not far from the State of West Virginia and even parts of the State of Virginia.

Senator SCOTT. Let me commend you for bringing this matter to our attention. You can be assured that it will be given every consideration by the subcommittee.

Is there anything further that you might want to state for the record?

Senator TAFT. I believe I will leave the remainder to the other witnesses we have here today.

Senator SCOTT. Thank you very much.

Senator TAFT. Thank you.

Senator SCOTT. The next witness will be Mrs. McEwan.

We are glad to have you with us. If you have anything you want included for the record, please feel free to include that. Just tell us whatever you have to say in support of the project.

STATEMENT OF MRS. MAY McEWAN, U.S. OLYMPIC KAYAK AND CANOE COMMITTEE

Mrs. McEWAN. I am May McEwan, a competitive slalom paddler, the current Senior National Women's Champion, the mother and coach of Jamie McEwan, who won the 1972 Olympics, and coach of our local Canoe Cruiser Association, the largest white water club in the Midwest. We have been a paddling family.

Jamie first got his boat at the age of 9 and started competing at 15. At that time he was among a very small elite group of paddlers, all of whom knew each other. In 1971 he made the U.S. team which paddled in Italy, came out 17th and that was considered very good for an American.

He made up his mind, though, that he was going to try out for the Olympics and try out for a medal, not to be just satisfied with making the team. He started his training by training first of all by setting up a little camp by himself down on the river in western Pennsylvania, not too far from Ohio.

He trained there in the summer. Then when his brother was available to train with him he moved to western Maryland and trained there until the snow chased him away.

Then he moved down to another river and trained through the months of November, December, and January. Then he went to Kernville, Calif., where Tom Johnson set up a training camp and trained for 2 months there.

He came back to the east coast and competed in the East Races. When he won the National Championship in May, he decided that he still didn't know enough and that there were not good enough facilities for him to train in order to paddle on the Olympic course, so he spent the next month in Europe training.

I want to point this out to show really what we could do here instead of sending our kids to Europe. He came back and spent the last 5 weeks before the Olympic trials training on the Potomac River, setting up his own gaits and I held the stopwatch for him.

When he was competing in the Olympics, an East German was being congratulated and photographed and interviewed while Jamie was running down the course and was told "You have won the Bronze Medal.

"All left to paddle is an American and Frenchman and they can't beat you." This shows what the Europeans think about the type of paddlers we have.

Before the Olympics there were about 15 slalom races a year in this country. This year, our race schedule, which Senator Taft mentioned, lists 47 slalom races and apparently there are a few missing in the schedule. Racers also in this schedule are rated in A, B, C and D categories.

From a mere 100 rated in 1969 we now have 800 slalom competitors listed and ranked. Last weekend I was up in Pennsylvania and there were paddlers from Ohio, the Midwest, from the South, from the East, but in addition to that race which was being held, on the same weekend was one in Delaware, one in New Hampshire, one in Maine, and two on the west coast, which is quite different from what we have had in the past.

Before the Olympics there were six to eight races a year on the east coast, two or three races in the Midwest, and three or four on

the west coast. Now every weekend almost there are two, three or five races throughout the country all spring.

Our club has sent paddlers to Europe to train since 1969 and it is about time we set up a training course here instead of sending our people to Europe to train. I think that you will find that the number of slalom paddlers who will use this course is greatly underestimated.

I think we will have to schedule our training time. We will have to give different clubs or different people times that they could use the course, as is done in Europe. Another concern that some people seem to have is that during parts of the year the water will be rather moderate.

I don't think this will make any difference in training. Jamie, in his last 5 weeks before trying out for the Olympics, traveled on moving water. It was not big, heavy white water. He used it to improve his speed, precision and endurance. His skills in heavy white water had already been developed. It is a good idea while they are training.

This type of training that Jamie did, to be able to paddle down a course, not get out of the course, and paddle back up again. During the time when the water is not too heavy, it will be a good type of training for that paddling. White water slalom canoeing is one of the most amateur sports in this country.

Nobody has ever made any money from paddling, including the coaches. The racers usually make their own boats and equipment because there hasn't been any. They set their own course, judge their own race, and at this point in history they leave the areas cleaner than they found them.

I was at the Savage River 3 or 4 years ago and I happened to stay over on Monday when the people were sent to a park to clean up. The workmen came and sat under the trees and said, "We don't have to work when we clean up after you canoeists, there is nothing to do."

The question of the use fee was brought up. Racers do pay their own costs of going to Europe to train, or it is paid by their local clubs. Most of them, I feel, would be very happy to pay a far lesser fee to be able to paddle in Ohio rather than to fly across and spend their summer in Europe.

Right now 400 or 500 top paddlers of the year would use this. The Potomac River here in Washington probably has somewhere between 3,000 and 5,000 paddler days a year on the area between Great Falls and Chain Bridge.

There are areas above also used by paddlers. The Americans, since the Olympics and since their present paddling, will never again be looked upon without respect. It is now time, I feel, that we have a white water course where we can hold the world championships here in our own country.

If we build a facility such as this it would be possible. World championships are held every other year and I think we could probably aim to hold the championships here in this country in another 4 or 5 years. The next world championships will be held in Yugoslavia in 1975.

With the growing number of paddlers since I have been in the sport and have coached in the sport has grown so tremendously, by leaps and bounds, I think it will continue to grow. I think if a

facility is built outside of Cincinnati it will become a mecca for paddlers.

A lot of people who don't do white water paddling now in that area will if the area is available. So many people paddle in Washington. One reason we have such a large club is because we are in the area where there is white water.

These Washingtonians who drive to New Hampshire, who go to Atlanta, Ga., will certainly be just as happy to go to Cincinnati for training and races. If we have a really set course they will be more than happy to do it. That is all I have. Thank you.

Senator SCOTT. We are glad to have heard from you and to note your enthusiasm.

Mrs. McEWAN. If you have any questions, I will be glad to answer them.

Senator SCOTT. I have no questions.

Thank you for being with us.

[The views of the Department of the Army follow:]

DEPARTMENT OF THE ARMY,
Washington, D.C., May 13, 1974.

Hon. JENNINGS RANDOLPH,
Chairman, Committee on Public Works,
U.S. Senate.

DEAR MR. CHAIRMAN: This is in reply to your request for the views of the Department of the Army on S. 3262, 93d Congress, a bill "To direct the Secretary of the Army, acting through the Chief of Engineers, to provide a facility for a whitewater canoe-kayak slalom course adjacent to the site of Captain Meldahl locks and dam, Ohio River."

The purpose of the bill, as stated in its title, is limited by a proviso that the phase I design memorandum stage of advanced engineering and design shall be first completed and the results and recommendations concerning the extent of local sharing of costs and other responsibilities be reported to the Senate and House Public Works Committees for approval before proceeding further. The bill would authorize to be appropriated not to exceed \$175,000 for the studies, including model studies, proposed therein.

Widespread interest in this type of canoe-kayak slalom course has been generated by the 1972 Olympics, and preliminary studies conducted by the Corps of Engineers have indicated the appropriateness of further study regarding the engineering feasibility and economic justification of such a facility adjacent to the site of Captain Meldahl locks and dam. It would be appropriate, therefore, that the Secretary of the Army be authorized to conduct a survey and prepare a subsequent report for timely presentation to the Congress on the feasibility of and justification for constructing such a facility adjacent to the site of Captain Meldahl locks and dam. This report would, of course, include our recommendations on the extent of local cost sharing and other local responsibilities which should be assumed and if the report's findings are favorable to the project, it could form the basis for full construction authorization of the project at that time.

Accordingly, the Department of the Army opposes the bill's phase I authorization approach as being inappropriate but does favor the implementation of a Department of the Army survey authority of this project as previously outlined.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

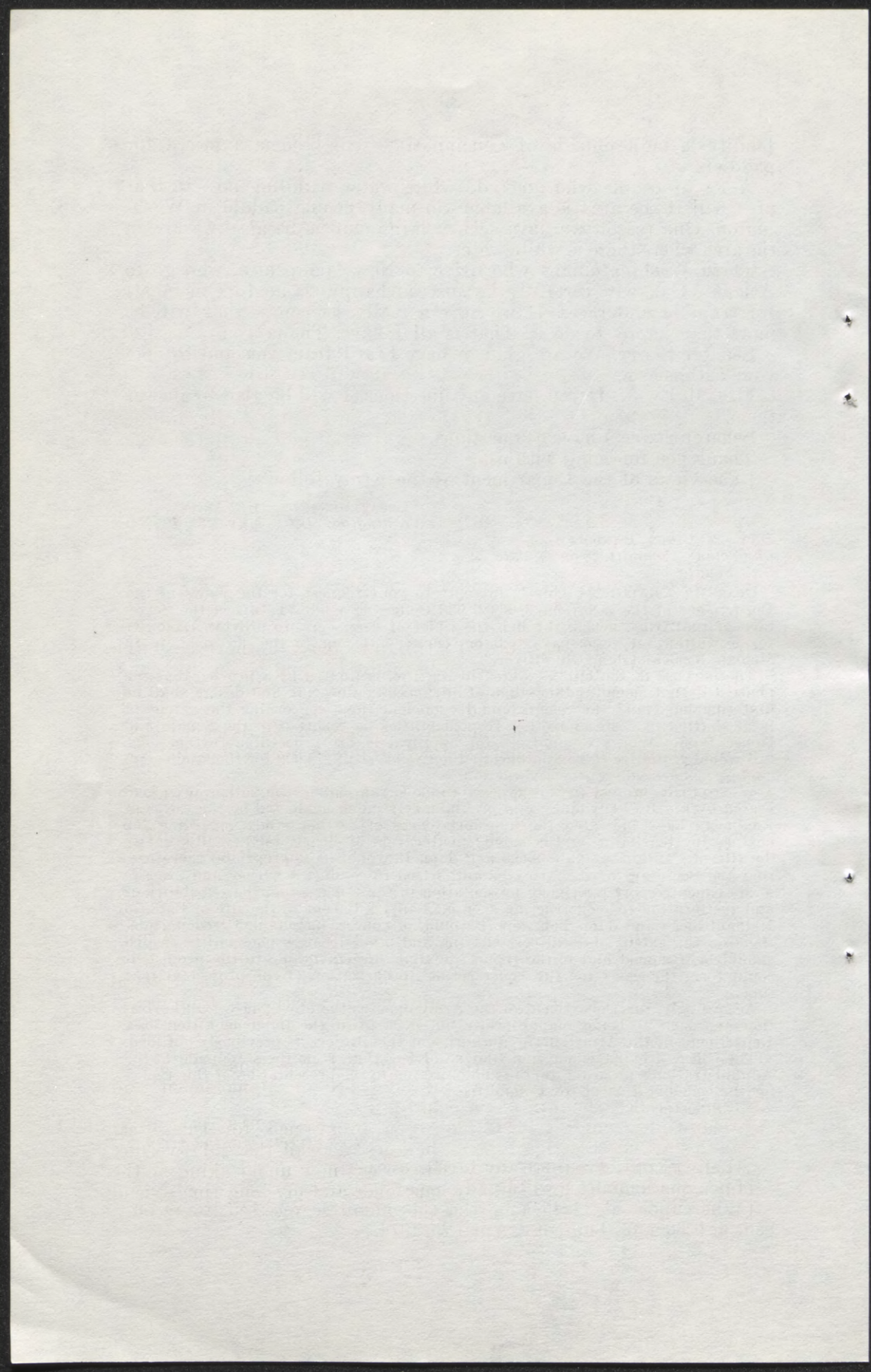
Sincerely,

HERMAN R. STAUDT,
Acting Secretary of the Army.

Senator SCOTT. Are there any further witnesses.

If not, the committee will be adjourned.

[Whereupon, at 11:45 a.m., the subcommittee recessed, to reconvene at 9:30 a.m., Thursday, April 25, 1974.]



PENDING WATER RESOURCE PROJECTS

THURSDAY, APRIL 25, 1974

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
SUBCOMMITTEE ON WATER RESOURCES,
Washington, D.C.

The subcommittee met at 9:30 a.m., pursuant to call, in room 4200, Dirksen Senate Office Building, Hon. Mike Gravel (chairman of the subcommittee) presiding.

Present: Senators Gravel and Clark.

OPENING STATEMENT OF HON. MIKE GRAVEL, U.S. SENATOR FROM THE STATE OF ALASKA

Senator GRAVEL. The subcommittee will come to order.

Good morning, ladies and gentlemen.

As you are aware, today's hearing by the Water Resources Subcommittee will address itself to two previously authorized public works projects which require additional examination by reason of substantial changes which have occurred since the proposed developments were originally approved.

The first of them is the combined Portugues and Bucana Rivers project in Puerto Rico, conceived as a comprehensive plan for flood control.

Heading a list of distinguished witnesses who will shortly be testifying on that proposal is my very good friend, the Hon. Jaime Benitez, who is accompanied by a fine delegation from Puerto Rico, and who is doing an outstanding job here as Puerto Rico's Resident Commissioner.

In advance of his appearance and that of his associates, I will confine myself to an explanation of the reason that the project is back before this subcommittee now.

In short, it is primarily a matter of projected cost escalation. When the development was first authorized in 1970, the Federal share was estimated at about \$41 million. Now, with only the phase I design memorandum stage having been completed, it is anticipated that the cost may rise considerably above that.

As a result of that, the Corps of Engineers has submitted a post authorization change proposal to the Office of Management and Budget to reflect the revised outlook.

Meanwhile, money which had been programed for this fiscal year to start construction is being held up to await the OMB verdict and the results of the review which we are now undertaking at the joint request of the Resident Commissioner and my long time friend

Governor Hernandez-Colon for the purpose of establishing a basis for the increase.

The other proposal which we are bringing up for review is the Willow Creek Dam and Reservoir project in Oregon, originally authorized in 1965 as a multipurpose development for flood control, municipal and industrial water supply and storage, channel improvement and irrigation.

Changing conditions in the area during the ensuing years, however, have accentuated the flood control requirements but at the same time have diminished or eliminated entirely the other project objectives.

In light of that, the Corps of Engineers has concluded that the proposal should be reexamined and the revised concept formally approved by Congress before construction is initiated.

Both Oregon Senators—Mark Hatfield and Bob Packwood—are strong advocates of the revamped project and we will be hearing from them later this morning on the subject. Municipal authorities from the Heppner area where the project is centered are likewise to appear as witnesses.

In advance of hearing from supporters of the two projects, however, we will receive testimony from Brigadier General James Kelly, Deputy Director for Civil Works, Office of the Chief of Engineers, and from members of his staff.

They are to give us the Corps evaluation of the issues involved, based on their technical knowledge and experience.

We look forward to their presentation and to that of the project proponents. With a word of welcome to each of you here, I now call on General Kelly as the opening witness.

Would you introduce your associate, General?

**STATEMENT OF BRIG. GEN. JAMES L. KELLY, DEPUTY DIRECTOR
OF CIVIL WORKS, U.S. ARMY CORPS OF ENGINEERS, ACCOMPANIED BY IRVIN REISLER, CHIEF, PLANNING DIVISION**

PORTUGUES AND BUCANA RIVERS, PUERTO RICO

General KELLY. I am accompanied by Mr. Reisler, Chief, Planning Division.

It is my pleasure to be here this morning to respond to the invitation to testify on the increased cost of the Portugues and Bucana Rivers project.

The project was presented in House Document No. 91-422, 91st Congress, 2d Session, and authorized by Section 201 of the Flood Control Act of December 31, 1970. The local sponsor is the Puerto Rico Department of Transportation and Public Works.

The authorized project is located in south-central Puerto Rico. It consists of channel modifications through the city of Ponce and two multiple-purpose lakes for flood control, water supply, general recreation, and fish and wildlife enhancement.

The cost of the authorized project was estimated at \$49,900,000 based on 1969 prices. The cost presented to Congress in July 1972 was \$69,560,000. Most of this increase was due to price level changes.

The current cost estimate of \$121,120,000 (July 1973) represents

an increase of \$51,560,000 over the July 1972 estimate. This change includes an increase of \$6,715,000 for higher price levels and \$44,845,000 for other changes as described below:

PONCE CHANNEL

a. Channel lining

The previous channel design consisted of earthen sections riprapped as necessary. Current topographic information, refined hydraulic design, and right-of-way restrictions indicate that concrete lining would be necessary at certain points of high velocities and constricted sections.

The current design provides for concrete lining of two reaches of the Portugues River channel and of three reaches of the Bucana River channel. The total length of concrete-lined channel is 2.046 miles.

The concrete lining represents a cost increase of \$5,590,000 over the cost of riprap earthen channel for the same reaches.

b. Debris basins

The previous design did not include debris basins at the upper ends of the improved channels. Further design studies determined that they are needed to retard the movement of boulders, bedload material, and other debris into the improved channel.

The passage of large debris loads into the channels could impair their hydraulic efficiency and also result in excessive maintenance costs through erosion and structural damage to the concrete-lined reaches. The debris basins represent an added cost of \$4,960,000.

c. Drop structures

The previous design included no intermediate water control structures along the channels. Advanced hydraulic analysis determined that it is necessary to control the effective flow gradient along the upper Bucana River channel in order to avoid channel erosion from excessive velocities.

The best and most economical method of accomplishing that goal would be through the provision of four concrete drop structures. The structures would also serve as collector points for irrigation diversions. The drop structures represent an added cost of \$2,720,000.

d. Fencing

The previous design did not include safety fencing at structures and along high-velocity reaches of the channels. The current design does include some 110,000 linear feet of such safety fencing for an added cost of \$790,000.

e. Bucana River jetties

The previous design did not include jetties at the mouth of the Bucana River. Local interests have since constructed a jetty on the west side of Bucana River.

Studies indicate that further control over deposition is required to aid in the passage of flood flows. Therefore, the present design provides for modification of the existing jetty and for construction of a second jetty on the east side of the river mouth. The cost of the jetties would be \$130,000.

f. Riprap design

Further geologic studies and hydraulic analyses resulted in a thickening of the riprap, however, the current design will require about 10 percent less total riprap since a portion of the channel will be concrete-lined. The lower volume will still result in an estimated increase of \$3,170,000, because detailed studies indicated higher unit cost for riprap.

g. Lower Portugues River

The Commonwealth has a continuing program to keep the mouth of the river open for reasons of health, aesthetics, and navigation. The previous plan did not include works for the lower Portugues River. Preliminary studies indicate that the diversion of flood flows from the Portugues to the Bucana River will interrupt the periodic flushing of deposited material from the river mouth. Local interests are desirous that the current project include facilities needed to maintain an open river mouth. Accordingly, the current plan provides for limited channel excavation and for construction of two small jetties at a cost of \$170,000.

h. Higher excavation costs

Estimated unit costs of excavation in the channel increased from \$0.36 per cubic yard to \$1.58 per cubic yard. The corresponding cost increase for the channel project is \$7,070,000.

i. Lands and relocations

The current cost estimate is \$2,110,000 higher than the previous estimate for lands and relocations. That increase is due to improved appraisals reflecting better data, and to costs for resettlement under the Uniform Relocation Act.

j. Highway bridges

Project-induced costs for the current estimate increased by \$990,000. The increase reflects design refinement in the advance engineering design stage.

LAGO DE PORTUGUES

a. Water supply storage

Capacity was increased from 10,000 acre-feet under the previous design to 14,000 acre-feet for the current design. Local interests desire and need maximum development of the water supply potential of the basin.

The increase in storage capacity results in an increase in dependable yield of from 14.9 to 17.2 cubic feet per second. The height of the dam increased from 558 feet to 579 feet, mean sea level. Dam and lake costs increase by \$4,405,000 due to the increased dimensions and higher unit costs.

b. Lands and relocations

Costs increased by \$130,000 as a result of resettlement provisions in the Uniform Relocations Act, and higher land appraisals.

c. Recreation facilities

Relocation of these facilities, and the addition of fishing piers and overlook areas resulted in an increase in cost of \$615,000.

LAGO DE CERRILLOS

a. Water supply storage

Capacity was increased from 10,000 under the previous design to 20,000 acre-feet for the current design. Local interests desire and need maximum development of the water supply potential of the basin.

The increase in storage capacity results in an increase in dependable yield of from 30.0 to 35 cubic feet per second. The heights of the dam increased from 536 feet to 618.6 feet, mean sea level. Dam and lake costs increase by \$8,022,000 due to the increased dimensions, relocation 0.4 mile upstream, and higher unit costs. The site was moved to obtain more favorable abutment conditions.

b. Lands and relocations

Costs increased by \$3,212,000 as a result of resettlement costs—Uniform Relocations Act—and higher land appraisals.

c. Recreation facilities

The recreation area had to be relocated in conjunction with re-siting of the dam. Additional recreation facilities, including fishing piers and overlook areas, were included in the current design. As a result of these changes, costs increased by \$761,000.

[Project descriptions follows:]

PORTUGUES AND BUCANA RIVERS

PUERTO RICO (H. DOC. 91-422)

Location: The Portugues and Bucana River Basins consist of an area of 53.3 square miles in south central Puerto Rico. The city of Ponce with a 1970 population of 159,000 is the only urban community in the drainage basin. Ponce occupies an area along the lower reaches of both rivers.

Authority: The projects for flood control and other purposes were authorized as Lago de Cerrillos, Lago de Portugues, and Channel Improvement of Ponce by Section 201 of the Flood Control Act of 1970, Public Law 91-611.

Existing Projects: There are no authorized Corps of Engineers flood control projects in Puerto Rico. There is a navigation project for Ponce Harbor, authorized by the River and Harbor Act of March 1945 and prior Acts.

Needs: There are 6,660 acres subject to flooding by the standard project flood. Approximately 60% of this land is in urban development, 24% in agricultural useage, and 16% undeveloped. The average annual flood damage of \$5,137,000 represents damages to urban and rural structures. Agricultural areas are frequently submerged, but very seldom for a duration resulting in significant losses to the sugar cane production. There is a need for additional water supplies for this region of Puerto Rico because of population growth and expansion of the petrochemical and other heavy water-using industries. Unfortunately this is the area of Puerto Rico with the least rainfall and the most limited natural supply. Major sources of water quality pollution present in the area include industrial, agricultural, and domestic wastes, with industrial waste posing the most significant problem. In some areas of Ponce, sewers discharge untreated wastes directly into the rivers or sea. Sedimentation and erosion also pose problems. During the seasonal heavy rains and high flow, the stream banks are undercut and eroded, adding a heavy sediment load, that decreases water quality and increases the flood threat because of deposition in the lower river reaches. Existing wildlife and fishery resources are negligible. The Commonwealth of Puerto Rico is interested in providing a fishery in any water made available. Water-based recreation is not now significant even though some local reservoirs are present and recreation needs are unmet. Water contact recreation is limited by the presence of the blood fluke *Schistosoma mansoni* which is parasitic on man and which occurs in most rivers and lakes in Puerto Rico.

Alternatives for Satisfying Needs: Flood control needs could be met through reservoir storage, levees, channelization and flood plain management. Water supply needs could be met with single purpose reservoir projects; by the Toa Vaca project, which proposes tunneling through the mountains to bring large quantities of water from the moist north side of the island to the dry south coast; by desalinization; or by reclaiming wastewater. Water quality needs could be met with additional treatment facilities. Sedimentation and erosion problems could be alleviated with streambank protection measures. Water-based recreation could be provided with additional development of existing reservoirs in conjunction with measures to control the parasite *Schistosoma mansoni*.

Environmental Impacts Related to Alternatives: Any structural plan for meeting the needs would require committing lands, materials and human resources. The degree and impact of these commitments would vary depending on the alternative. Reservoir and channel works would change the character of the stream resource from a natural setting and involve clearing with a consequent loss of stream and wildlife habitat. Levees would require some displacements of residents and development. Nonstructural plans for achieving flood damage reduction would require the evacuation of flood prone areas with consequent changes of land use and relocation of development and residents.

Recommended Plan of Improvement: The authorized plan of improvement consists of two multipurpose lakes, diversion of Portugues River to Bucana River, and channel improvements on both rivers. The plan would provide essentially standard project flood protection, a dependable surface-water supply for Ponce and surrounding area, and recreational facilities for full public use of the lakes. The dams would be rock-filled, with uncontrolled overflow spillways. Outlet works would include an intake tower and outlet conduit. A diversion dam with a gated culvert for maintaining low flow would be provided in Portugues River just downstream of the diversion canal. The Ponce channel improvements include enlargement of about 5.7 miles of the Bucana River; enlargement of about 2.1 miles of the Portugues River; and a diversion channel about 1.3 miles in length connecting the Portugues River to the lower Bucana River. Debris basins are included at the upper ends of the improved channels, and drop structures would be included along the channels. Jetties are recommended for the mouth of the Bucana River to minimize deposition of sediment at the mouth of the river.

Estimated cost (July 1973) :

Federal	¹ \$93, 380, 000
Non-Federal	² 27, 740, 000
Total	121, 120, 000

¹ Includes \$26,311,000 for water supply and \$1,390,000 for recreation (a total of \$27,701,000) to be reimbursed by local interests. Recreation total includes discount cost of \$480,000 for future recreation development.

² After reimbursement, Federal cost will be \$65,679,000.

³ After reimbursement to the Federal Government for water supply and recreation, the non-Federal cost will be \$55,441,000.

Project economics (Interest rate 5½ percent) :

Annual benefits:	
Flood control	\$8, 975, 000
Water supply	2, 900, 000
Recreation	763, 500
Redevelopment	320, 500
Total	12, 959, 000
Annual economic cost	8, 096, 000
Benefit-cost ratio	1. 6

Local Cooperation: House Document 91-422 recommends the construction of the improvements, generally in accordance with the plan of the District Engineer and with such modifications thereof as the Chief of Engineers may deem advisable, provided local interests furnish assurances satisfactory to the Secretary of the Army that they will meet the local cooperation requirements. These requirements include providing all lands, easements, rights-of-way, and relocations required for the projects; reimbursements to be made by the United States for the joint land costs allocated to recreation and for one-half of the separable land costs allocated to recreation. Local interests must also operate and maintain all the works after completion in accordance with regulations prescribed by the Secretary of the Army; a reduction to be made in the reimbursement required for

water supply to compensate for the Federal joint-use operation and maintenance costs allocated to recreation. Local interests must repay the construction costs allocated to water supply in accordance with the Water Supply Act of 1958, as amended; and in accordance with the Federal Water Project Recreation Act, pay, contribute in kind, or repay, with interest, one-half of the separable cost allocated to recreation and fish and wildlife enhancement. Assurances are required that discharges of inadequately treated sewage and other pollutants will be prohibited in the project lakes and channels, in accordance with applicable laws. Local interests must also provide guidance and leadership in the prudent and economical future development of the flood plain areas to prevent encroachment on downstream channels to reduce future flood losses and to provide for effective operation of the projects.

The initial local cost is estimated at \$27,740,000. The reimbursable local cost is \$27,701,000, \$26,311,000 for water supply and \$1,390,000 for recreation. Recreation total includes discount cost of \$480,000 for future recreation development. The total local cost will be \$55,441,000 after payment of the reimbursables.

Environmental Impact: a. *Land use.* Initially, the finished project would provide the residents, business community, and agricultural interests of Ponce with a high degree of protection from periodic floods which, on the average, result in annual damages of about \$5 million. The same protection would extend to the unassessable effects of the recurring floods in terms of human misery, inconvenience, occasional loss of life, and threat to health.

A change in land use would appear likely in the flood plain with increased urban, commercial, industrial, and residential development and a corresponding decrease in idle or underused land and in agricultural acreage. Growth and urbanization is occurring and is expected to continue with or without the project. A reduction of ground-water recharge due to the conversion of land use, will result in salt-water intrusion and loss of wells. Increased demand for water for industrial and municipal use would require additional supply sources and facilities. Under the proposed plan, the Cerrillos and Portugues Lakes would provide an estimated 34 million gallons a day to assist in meeting these needs. Increased growth also would put additional burdens on the inadequate sewerage system but remedial measures and new facilities now under construction or planned can prevent water quality and sanitary conditions from serious deterioration. A change in existing water-use patterns from irrigation of sugarcane acreage to other uses could affect water quality. Salt-water intrusion is not considered serious at present, but an increase in ground water usage and/or a decrease in the irrigation that provides most of the area's ground water recharge could disrupt the existing balance and result in serious salt-water intrusion.

b. *Effects of channel modifications.* The proposed project encompasses nearly 6 miles of the lower Bucana River and slightly more than 2 miles of the Portugues River, together with construction of the 1.3 mile diversion channel between the Portugues and Bucana Rivers, will result in the loss of some marginally productive land. Some increase in drainage of ground water to the sea is likely to result from the work and the tidal reach in the streambed would be extended about 3,000 feet further upstream. The increase in drainage probably would cause a landward shift of perhaps 1,000 feet of the fresh water-sea water transition zone in the upper part of the aquifer in the coastal area. A few shallow, low-capacity wells in the vicinity of the lowest mile of the river would be subject to serious salting. The Bucana Channel work will affect 300 homes and 2 commercial establishments. The Portugues Channel modifications and diversion channel together will affect 188 homes and 3 commercial establishments. Relocation or compensation would be required.

The channel works should alleviate the sedimentation problems associated with the rivers. Each river will have a debris basin located at the intersection of the upstream end of the channels to prevent bedload sediment from shoaling the low-velocity reaches of the channels.

c. *Lakes.* Construction of the planned dams and lakes on the Portugues and Cerrillos (upper Bucana) Rivers will result in the inundation of a maximum of 742 acres (during flood conditions) with 564 acres inundated when the conservation pool is at its highest level. A total of 600 acres will be cleared. Also, some homes, commercial and public structures will be removed since they would be subject to inundation by flooding of the conservation and flood storage pools of the two lakes. A total of 55 homes, 13 commercial establishments and one school will be affected in the Lake Portugues construction. Lake Cerrillos impoundment will affect 25 homes, 24 commercial establishments, one school and one

church. In addition, a minimum amount of clearing will be done around the lakes to allow recreational development. The hillsides over which the spillways would discharge would be stripped of overburden, including vegetative cover. The work would cause the loss of some habitat now utilized by birds and small rodents but construction of the lakes also would offer new habitat for fish and possibly some species of aquatic birds. The additional water areas created by the lakes would offer potential habitat for the snail which serves as an essential intermediary host for the parasite that causes Schistosomiasis. The degree of fluctuation indicates an unfavorable environment for development and maintenance of the littoral zone necessary to the food chain for a viable lake fishery although the possibility of utilizing the lakes as a sports fishery, by means of periodic stocking for example, is not precluded. Sedimentation, siltation, and recurrent turbidity are expected in the lakes and could constitute adverse conditions for lake biota. There is insufficient information at this time to determine a precise sedimentation rate for the lakes. Quality of the water to be impounded in the lakes is considered to be generally good. Sampling stations established in 1969 at points immediately upstream of the proposed lakes during a survey recorded low coliform counts and high oxygen levels. Alkalinity and hardness characteristics also were high.

d. *Recreational plan.* The land area required under current proposals for public park and recreation development totals about 140 acres with 90 acres allocated to the Portugues Reservoir and 50 acres to the Cerrillos Reservoir. Because of the problem posed by the disease Schistosomiasis, endemic in Puerto Rico and transmitted through contact with parasite-infected fresh water, the recreation program would be divided in two stages. Initial development would consist primarily of clearing and landscaping, construction of access roads and parking areas, and providing picnicking facilities. Eventually, when efforts to control the disease are successful, other facilities suited to water-contact sports, such as boat ramps, swimming beaches, etc., would be constructed. Implementation of the proposed recreational plans would have a favorable impact on the existing physical and social environment of the study area where recreational facilities are limited.

e. *Water quality.* As now proposed a portion of the conservation storage would be used as a means of helping improve downstream sanitary conditions and water quality by periodic or continuing release of impounded water to flush the lower Bucana and Portugues Rivers. Due to the intermittent flow characteristics of the rivers, the downstream streambeds seasonally dry up and leave pools of stagnant water. In addition, under current practice some residents of urban Ponce divert sewage to the streambeds and utilize them for trash disposal of all kinds. Flushing of the streams with water from the lakes would reduce pollution and mosquito-breeding problems.

f. *Water rights.* The proposed plan could affect the water rights on the Bucana and Portugues Rivers. Investigation is underway by the Commonwealth government to determine the exact extent of these rights. The impact of the proposed plan and need for special measures will be determined.

g. *Associated construction.* In addition to the streambed and lake construction contemplated under the proposed plan, there would be associated construction which would have an impact on the environment. The plan calls for bridge alterations or replacements, highway relocations, access roads, and parking lots, all resulting in the loss of a small amount of vegetative cover.

h. *Construction methods.* No unusual or severe environmental impacts are expected from construction of the project. Blasting would be followed and, apart from a temporary disruption of the living patterns of birds in the vicinity, no permanent adverse effects are expected.

i. *Archeological and historic sites.* There are no known historic or archeological sites in the area of the proposed project. However, all work will be coordinated with the proper authorities to insure that no valuable sites were disturbed.

j. *Summary.* In summary, the proposed project would provide major favorable environmental impacts in the form of flood control, water supply, and potential recreational opportunities. In addition, some reduction in pollution, mosquito breeding and other factors harmful to public health could be secured, primarily by provision of periodic flushing of dry streambeds with impounded lake waters. The adverse effects appear to center around the possible landward shift in salt water intrusion. The loss of some shallow fresh water wells in the vicinity of the streambeds could be expected. Small dams may be required in the channel to allow water-right diversions. These measures would tend to offset changes in the

existing balance between fresh water and sea water in the aquifer. The loss of a certain amount of vegetative cover and wildlife habitat (about 600 acres will be cleared for the two lakes and 742 acres inundated during flood storage conditions) will be minimal, especially in view of the opportunity for new favorable aquatic habitat for fish and waterfowl. Growth and urbanization is occurring and is expected to continue with or without the project resulting in the reduction of ground-water recharge due to the conversion of land use. Subsequently, an increase in salt-water intrusion and the loss of wells will occur with or without the project. Excavated material from channel modification and the reservoirs will be utilized for the most part in construction of levees, revetments, dams, and access roads. A minimum amount of spoil areas will be needed and those will be graded and replanted. Removed vegetation will be burned.

Status: A Phase I GDM has been approved subject to review comments by the Office of the Chief of Engineers and the Board of Engineers for Rivers and Harbors. The Environmental Statement has been finalized and transmitted to the Council on Environmental Quality. Data sheets presenting information on post authorization changes were forwarded to the Office of the Secretary of the Army and subsequently to the Office of Management and Budget on 28 March 1974.

Senator GRAVEL. I understand, General, that OMB has approved the postauthorization changes. What does that mean in terms of construction for which appropriations has been held up? Will construction now proceed?

General KELLY. Sir, at the present time there are no funds available to this project. Therefore, it is not being held up at this stage. It would require funding by the Congress for work to proceed. As far as I understand, there are no other problems.

Senator GRAVEL. Will it require a new authorization?

General KELLY. No, sir, there should not be any authorization required. To clarify any questions that might exist as to the reasons for the increased costs was the purpose of this testimony, and it would be dependent upon the action of the Congress in appropriating those funds necessary to commence construction.

Senator GRAVEL. Under the new cost figure, how do you feel about the prospect for maintaining a favorable benefit-cost ratio?

General KELLY. The cost-benefit ratio, with the increased cost, is at 1.6 to 1. So it is still a very viable project. Benefits have also increased as costs increase. The scope of the project, particularly the reservoirs, has been increased in size.

Senator GRAVEL. And that has permitted the increase in benefits also.

General KELLY. Yes, sir.

Senator GRAVEL. I have no other questions. I think the task now remains to get through the appropriations process.

Would you proceed with the Oregon project, please?

WILLOW CREEK LAKE, OREG.

General KELLY. Yes, sir.

I appreciate the opportunity to testify on behalf of the Chief of Engineers on the status of the Willow Creek Lake, Oreg., project. The project was authorized by section 204 of the 1965 Flood Control Act and consisted of a multiple-purpose reservoir on Willow Creek just upstream from the town of Heppner, Morrow County, Oreg. Also included was limited-channel improvement through the town.

At the present time we have essentially completed our advanced engineering and design studies. Initial construction funds were appropriated in the current—1974—fiscal year.

As a result of our recent studies we have concluded that some changes must be made in the project at this time so that it will meet the current and future needs of the region.

Some of these changes can be accomplished under authority delegated by the Congress to the Secretary of the Army or the Chief of Engineers; however, some of the more significant changes can only be accomplished by congressional action.

I will now briefly discuss the adjustments to the authorized project we believe should be made with particular emphasis on those changes that we feel require congressional approval.

Our postauthorization studies reaffirm an urgent need for protection of the city of Heppner from the catastrophic type of flooding and high loss of life it has suffered in the past. Additional flood control storage to provide this higher degree of protection has been included in the project. This storage was found to provide flood protection more economically than the authorized channel enlargement through Heppner.

Present land practices and market conditions do not make immediate use irrigation storage justified at this time. However, marketing feasibility studies made by the Bureau of Reclamation indicate that use of such irrigation storage will be needed about the year 1990. Accordingly, it has recommended that opportunities for the inclusion of this purpose at such later date not be foreclosed. Therefore, we have made the necessary provisions for storage and operation of the project for this purpose in the future. Full use of this storage will be made initially to provide for additional much-needed flood protection and ultimately will serve, jointly, the needs for irrigation as well as flood control.

Storage for the authorized purposes of water quality control and municipal and industrial water supply is no longer needed. In the case of water quality control, elimination of pollution at the source will remove the need for augmented flows downstream through the city of Heppner.

With regard to water supply for municipal and industrial purposes, the city of Heppner has found an alternative source adequate for its needs at a more economical cost. Consequently, the city has withdrawn its request for such storage in the project.

A permanent pool for environmental and esthetic concerns similar to that in the authorized project would be provided. Storage for sedimentation requirements remains the same.

In summary, the project presently envisioned provides for considerably more flood control storage than the authorized project; eliminates the need for downstream channel enlargement; provides for future irrigation in accordance with the request of the Bureau of Reclamation with utilization of the storage for flood control in the interim period; and the necessary storage for sedimentation and esthetic reasons. The physical capacity of the project, 11,500 acre-feet, remains the same as the authorized project.

Several of the proposed changes in the project are of concern to the Chief of Engineers.

a. It is felt that the deletion of municipal and industrial water supply as a project purpose is a matter requiring congressional action.

b. In accordance with the authorization of the project, construction of the project cannot be initiated nor can construction funds be expended for any purpose until such time as the Secretary of the Interior obtains contracts for reimbursement of the costs of the irrigation storage. This requirement means that the urgently needed flood control must wait until the local irrigators are ready to buy into the project unless this requirement is waived by the Congress.

c. Our studies have shown that additional storage for flood control is more economical than provision of the authorized improvement of the downstream channel through Heppner. This feature of the project should be deleted.

d. Construction of the project will require the relocation of a water storage tank and approximately 2 miles of water line belonging to the city of Heppner. To accommodate its expanding population, the city, on December 1, 1973, passed a bond issue to expand and upgrade its water supply system.

The authorized amount of the bond issue was based on the assumption that the city would be reimbursed by the Federal Government for replacement-in-kind of that portion of the system affected by the project.

The city has scheduled initiation of construction in June of this year with the system to be operational by June 1975.

Should the city be forced to proceed on its own, subsequent relocation of those improved facilities affected by the Willow Creek project will be more costly to the Federal Government. Presently estimated cost of the Government's share of costs in the expansion-relocation program is \$528,000. Subsequent relocation of the improved facilities will cost the Government an estimated additional \$190,000.

Therefore, it would appear to be in the best interest of the Government to reimburse the city of Heppner now for the Federal share of the cost for those elements of the city's water supply system that must be relocated due to Willow Creek Lake, all in advance of initiation of actual construction of the Federal project. The corps does not presently have the authority to do so.

Presently estimated cost of the Willow Creek project is \$13,100,000, all costs of which are Federal since the channel improvement downstream of the project is no longer required. Local interests, however, would be responsible for reimbursement of one-half of the separable costs for recreation facilities, their share presently estimated to be \$83,000.

They have indicated their willingness and ability to participate. Based on our most recent evaluation of project benefits and costs, the benefit-cost ratio is 1.4 to 1.

That, Mr. Chairman, concludes my statement. I shall be pleased to answer any questions you may have and to furnish any information you may feel desirable in the committee's deliberations on this matter.

[A project description follows:]

WILLOW CREEK LAKE, OREGON

LOCATION

The project site is located in the Willow Creek drainage in Morrow County, Oregon, and would be located just upstream of Heppner, Oregon. Willow

Creek drains an area of 890 square miles in north central Oregon and flows into Lake Umatilla, an impoundment created by the John Day Lock and Dam on the Columbia River.

AUTHORITY

The Willow Creek Lake project was authorized for construction by the Flood Control Act of 1965, Public Law 89-298, 89th Congress. The applicable portion of the Act reads as follows:

"The project for flood protection on Willow Creek, Oregon, is hereby authorized substantially in accordance with the recommendations of the Chief of Engineers in House Document numbered 233, Eighty-ninth Congress, at an estimated cost of \$6,680,000."

EXISTING PROJECTS

There are no Corps of Engineers water resource developments in the Willow Creek Basin although the reservoir created by the John Day Dam on the Columbia River will extend about 2 miles up Willow Creek. Works constructed for beneficial use of water are limited to a CCC-constructed ditch which diverts about two square miles of the John Day basin drainage in the vicinity of the headwater of Ditch Creek into the Willow Creek basin. The cities of Heppner, Lexington, and Ione have made minor improvements to the Willow Creek channel over a period of years. The city of Lexington has constructed some channel improvements and dikes to reduce the probability of flood discharges from Blackhorse Creek entering the business district. There are numerous small private irrigation diversions, the construction of some of which has been partially financed with Federal funds under the Agricultural Conservation Program of the Agricultural Stabilization and Conservation Service.

NEEDS

The needs of the basin upon which formulation of the authorized plan was based are quoted from the project document as follows:

"In any comprehensive water resource plan for this basin, the problem of controlling potential devastating floods of cloudburst-storm origin must be a prime consideration in view of the basin's past history of flood damages and loss of life from such flooding. The total water supply of the basin is not sufficient to meet all needs, but major improvements in utilization of the available water supply could be realized by works which would redistribute seasonal streamflow in accordance with need. Any acceptable solution to the basin's water resource problems must provide a high degree of flood control, satisfy known irrigation and other consumptive needs, provide water-based facilities for recreation, sports fishing enhancement, and minimum streamflow for water quality control to the fullest extent feasible." Flood problems and the need for irrigation have not changed significantly from project authorization. The Environmental Protection Agency has indicated that adequate treatment of wastes from the Heppner Sewage treatment plan can be achieved by elimination of discharge to Willow Creek. Therefore, storage for flow augmentation for assimilation of the wastes cannot now be included in the project. The city of Heppner had requested 100 acre-feet in the authorized project for municipal and industrial water supply; however, during post-authorization investigations the city retracted their request for M&I water supply storage. The need still exists in the Willow Creek basin for a well-rounded outdoor recreation facility and for some types of fishery and wildlife enhancement areas.

THE ALTERNATIVES CONSIDERED AND THEIR ENVIRONMENTAL IMPACT

a. No action. Leaving things as they are will mean that the flood plain inundation and the potential for loss of life will be unchanged. Irrigation, recreation, and fish and wildlife benefits will not be realized.

b. Relocation of Heppner. Since the major part of the flood damages in the past have occurred in Heppner, and urban damages will continue to be the major portion of the total damages in the future, consideration has been given to relocating the vulnerable part of the city of Heppner to higher ground. Environmental impacts of this alternative would primarily relate to changed land use and to neighborhood development. With the exception of bridge crossings, the streambanks and creek flows would remain essentially

unchanged, except as the flood plain area might be cleaned up and converted into public open space or developed for informal recreation use not subject to flood damage. Major problems with this course of action would include a lack of suitable sites for relocation, costs, and public opposition.

c. Levee and local protection works. The possibility of levee development and channel enlargement as an alternative to the flood control function of the proposed project has been considered as a possible solution to local flooding problems. Local protection works would have to be of large capacity and resistant to high velocity flows to be effective against this type of flooding. The environmental impact of such a plan would include a major disruption of the community and would result in an adverse visual alteration of the present stream channel. No alteration of the area of the proposed lake would be involved with this plan.

Levee and channel work along all or part of the 45-mile channel of Willow Creek below Heppner and 20 miles of Rhea Creek above its confluence with Willow Creek to provide flood protection to rural areas and to Lexington and Ione was not found to be economically feasible. In most cases protection would require large capacity revetted channels, the costs of which would far exceed benefits to be derived from rural and suburban flood protection. Environmental impact would involve removal of riparian vegetation along one or both banks of each creek channel. This would have an extensive adverse effect upon wildlife resources over the 65-mile length. Flows in the stream would remain as they are now. This alternative would also be accompanied by adverse visual impacts.

d. Storage reservoir alternatives. In addition to the storage project which is being proposed for construction, several possible alternate plans utilizing either a different size storage reservoir or including a storage reservoir as part of the plan were considered. Consideration was given to constructing a reservoir and a channel through Heppner. Impacts of the same nature as the proposed project would occur with this alternate plan, plus there would be a rather thorough disruption of the natural stream channel through town. There were various sizes of reservoirs studied as possible alternates during the planning process. The basic environmental impacts among all of the sizes considered would have been the same as those discussed, although the absolute magnitude of the impacts might have changed. Basically, the same type of environmental impacts would have occurred with any of the reservoir sizes studied.

e. Regulation of flood plain use. Regulation of flood plain use by local ordinance prohibiting construction within the flood plain of major improvements susceptible to serious potential damage and loss of life would be partially effective in the area just below Heppner. Although regulation might be a supplemental measure in Heppner, it is not considered to be a solution of significance to the basin flood problems since major problems already occur with existing structures. Flood plain zoning would not involve any immediate change in the environmental setting as now exists. Even with the proposed project there will be value in flood plain zoning in and below Heppner to prevent development of the streamside land which will still be subject to flooding as a result of flood input from the tributary streams below the damsite.

AUTHORIZED PLAN

a. The authorized plan provided for construction of a multiple-purpose reservoir on Willow Creek, directly upstream from the town of Heppner in Morrow County, located in eastern Oregon, together with limited downstream channel improvement. Authorized project purposes included flood control, irrigation, recreation, fish and wildlife enhancement, water supply, and water quality control. At maximum controlled elevation 2098, the lake would have a surface area of 224 acres. The storage at minimum lake elevation 2042 would be 1,900 acre-feet with a surface area of 76 acres.

b. The main features of the project were: (1) a rockfill dam about 155 feet in height with an overall length of approximately 1,700 feet; (2) a 300 foot wide ungated spillway located in a rock cut in the left abutment designed to pass a flow of 72,000 cubic feet per second (cfs); (3) a flood control outlet consisting of a 37 foot wide slot located in the center of the spillway to automatically release up to 1,500 cfs from the exclusive flood control storage space; (4) an irrigation outlet to provide downstream releases of up to

60 cfs; and (5) improvement of the Willow Creek channel through the city of Heppner by means of clearing, widening, and bank protection to provide a channel capacity of 1,500 cfs.

RECOMMENDED PLAN OF DEVELOPMENT

a. The authorized plan of development has been modified as a result of post-authorization findings to provide a project for greater protection in the interest of flood control, a lower degree of recreation development and fish and wildlife enhancement, reduced storage for future irrigation, and elimination of water supply and water quality control as project purposes. The plan provides a storage reservoir of the same gross capacity as the authorized project but with an increased assignment of space for exclusive flood control use. Limited recreation facilities are included in the recommended plan. Outlet works have been added to the end of the diversion conduit which will permit automatic evacuation of exclusive flood control storage space, controlled releases for future irrigation, and allow complete drainage of the entire reservoir, if desired or necessary.

b. The storage allocation of the reservoir has been changed from the authorized project as shown in the following tabulation:

Project function	Recommended project-AF		
	Authorized project-AF	Initial development	Ultimate development ¹
Exclusive.....	1,300	9,500	6,000
Joint use (flood control, irrigation, wildlife, sport fishing and recreation).....	7,900	-----	3,500
Water quality control.....	300	-----	-----
Municipal and industrial water supply.....	100	-----	-----
Permanent inactive pool for environmental and esthetic concerns.....	500	600	600
Sediment, A-F.....	1,400	1,400	1,400
Total acre-feet.....	11,500	11,500	11,500

¹ At such time as irrigation storage becomes economically feasible.

c. During the initial development phase, the recommended project will maintain a constant year-round lake level except when flood flows enter the reservoir. During those infrequent periods, the lake will rise to a level that will control that particular flood. Releases will be automatic through the uncontrolled outlet until the minimum lake storage of 2,000 acre-feet is reached. With ultimate development the lake will fluctuate approximately 18 feet from the beginning of the summer to the end of the irrigation season because of releases from the lake for irrigation.

d. The project will limit flood control releases from the dam to 500 cfs when the pool is at the spillway crest. Existing channel capacity is adequate and the previously authorized channel improvement is not needed.

Estimated cost (price level of July 1973) :

Federal	\$13,100,000
Non-Federal	-----
Total	13,100,000

Project economics (interest rate of 3¼ percent).

Annual charges	Federal	Non-Federal	Total
Interest and amortization.....	\$460,800	-----	\$460,800
Operation, maintenance and replacement.....	20,700	\$5,300	26,000
Total.....	481,500	5,300	486,800

Annual benefits:

Flood damage reduction.....	\$554, 000
Irrigation	37, 000
Recreation	19, 000
Fish and wildlife.....	13, 000
Area redevelopment.....	54, 000
Total	677, 000
Benefit-cost ratio	1. 39

Local Cooperation. Significant changes in the project purposes have been made between the authorized project and the recommended project. These changes will be discussed briefly.

a. *Flood Control.* The recommended project does not include the improvement of the channel through the city of Heppner as was authorized. The only local cooperation required for flood control in the authorized project was for rights-of-way and utility relocations for the channel improvement; therefore, the recommended project will require no cost sharing for flood control.

b. *Irrigation.* The authorizing document recommended that prior to construction, the irrigation water users make contracts for repayment of the project costs allocated to irrigation under the provisions of Reclamation Law. Now that the use of project waters for irrigation is deferred until sometime in the future and contracts will not be negotiated until that time, the project authority must be modified to permit construction to proceed without contracts now and at the same time leave the Chief of Engineers the authority to reallocate storage at a future time when irrigation storage is feasible.

c. *Recreation.* Under the provisions of the Federal Water Project Recreation Act (PL 89-72), the authorized project would require local interests to share in separable costs allocated to recreation and fish and wildlife enhancement to the amount of \$100,000 and an annual OM&R cost for these purposes in the amount of \$5,000. Because of the poor water quality expected in the nominally sized project pool, the scope of the recreation facilities and the fish and wildlife enhancement provisions has been reduced in the recommended project. The separable costs allocated to recreation which would be repaid by local interests is now estimated at \$83,000 while the annual costs assigned to local interests for OM&R are estimated to be \$5,300 for recreation and fish and wildlife. Morrow County, by letter dated 18 July 1973, provided assurances of participation in the cost sharing for recreation. The Oregon Game Commission, by letter of 18 June 1973, provided assurances of carrying the cost of attempts to establish a resident trout fishery in the lake.

d. *Municipal and Industrial Water Supply.* The city of Heppner had requested a reservation of 100 acre-feet of storage for water supply in the authorized project. The recommended project does not have this water supply storage as the city of Heppner has indicated the city is no longer interested in water supply storage as they have found a more economical source.

Environmental Impact. Construction of the Willow Creek project will cause the loss, through permanent inundation, of short lengths of Willow Creek and Balm Fork. Additional lengths of these streams will be temporarily inundated during operation of the project to reduce flood damages downstream. However, whenever the storage of flood waters causes the level of the lake to rise, the normal lake will be regained as rapidly as possible by passage of water through an uncontrolled outlet pipe which has the capability of passing a flow compatible with downstream channel capacities. This temporary inundation should not cause too great an adverse impact on these areas. When the lake begins to be used as a source of irrigation water, a revised environmental impact statement will be prepared to discuss the impact of such a change, specifically with regard to the severe water level fluctuations during the irrigation season.

Willow Creek Lake will provide for lake oriented, outdoor recreation in an area where this type of experience is a scarce commodity. Water quality conditions are likely to be such as to place limits on utilization of the lake, especially during the late summer months. The limited size of the permanent pool, 88 acres, will also tend to restrict its recreation use. The lake is also expected to increase the fishing opportunities available in the area. A trout fishery will

be established in the lake through annual plantings. Should this attempt fail, the lake would still have the potential for the establishment of a warm water fishery. The lake will also cause the loss of riparian habitat but it will increase the waterfowl hunter use.

The process of project construction will cause some impacts on the area around the damsite; however, construction standards minimize such impacts. There will also be some adverse social and economic impacts on the local area from project construction; however, the project will remove the threat of flooding to Heppner from both Willow Creek and Balm Fork and will have significant impacts in reducing the possibility of flooding in downstream areas. Also, the threat of major loss of life will be significantly reduced.

COORDINATION

a. Post-authorization planning studies included coordination with regional offices of Federal agencies and with State and local agencies regarding their respective interests in current water resource needs, the adequacy of proposed solutions, and the cost sharing requirements that would be involved in the recommended plan. As a result of review by the U.S. Bureau of Reclamation and the U. S. Environmental Protection Agency, project plans were revised to defer the irrigation function and to delete the water quality function. Other Federal agencies contacted were the Fish and Wildlife Service, the Department of Commerce, the National Park Service, Bureau of Outdoor Recreation, and the Department of Health, Education and Welfare. The State of Oregon Water Resources Board, the Fish and Game Commission, the Department of Environmental Quality, and the Department of Human Resources reviewed and commented on project plans.

b. All aspects of planning were closely coordinated with the city of Heppner, including the relationship of scheduled project relocations to the city's plans for expansion of its water supply system. The water supply function was deleted from the project plan at the city's request. Recreation planning was coordinated with Morrow County which will provide the cost sharing for recreation and the annual operation, maintenance, and replacement costs for recreation and fish and wildlife as required under Public Law 89-72, as amended. Necessary contractual arrangements will be made with the county prior to initiation of construction.

Senator GRAVEL. I have no questions, General. Senator Scott could not be here today, but will be submitting questions to the corps at a later time.

General KELLY. We will be pleased to respond.

[The questions and answers follow:]

QUESTIONS SUBMITTED BY SENATOR SCOTT

PORTUGUES AND BUCANA RIVERS PROJECT, PUERTO RICO

Question 1. How much has been spent to date on this project? How much remains to be spent before construction can begin?

Answer 1. \$890,000 has been spent to date. An additional \$25,000 will be expended before construction can be initiated.

Question 2. Why has the per-yard estimate on excavation costs risen so sharply, from 36 cents to \$1.58?

Answer 2. The Survey Report estimates reflect the Jacksonville District construction experience in Florida. Construction experience on large scale flood control projects in Puerto Rico was not available. The Commonwealth of Puerto Rico recently completed a large channel project on the Northern coast of Puerto Rico. This experience and further design studies by the Corps of Engineers indicated that the higher excavation cost should be used.

Question 3. Your testimony indicates that the channelization work will cause some salt-water intrusion, which the reservoir flows will then overcome. If this is so, are any benefits ascribed to the reversal of that salt-water intrusion? How much?

Answer 3. Preliminary studies indicates that the channelization will result in fairly limited losses of groundwater in the range of 100-200 acre-feet per year. A slight increase in salt-water intrusion will also occur. The base flow provided by the reservoirs will offset these effects, to an unquantified extent, in the early years after reservoir completions. Eventually the water supply usage will reach a level such that the offsetting effects will no longer occur. Project benefits were not ascribed for this temporary reversal of salt-water intrusion.

WILLOW CREEK, OREG.

Question 1. Has the size of the dam been changed at all under the new plan?

Answer. No. There has been no change in the physical size of the project.

Question 2. What was the latest estimated cost of the project as now authorized? How much of that would have been Federal cost? How much would have been contributed by local interests?

Answer. The latest cost estimate for the authorized project, based on July 1973 price levels, is \$14,319,000, of which \$14,300,000 is Federal cost. Lands and damages and relocation costs, amounting to \$19,500, would be the responsibility of local interests. In addition, local interests would be required to reimburse the Federal Government for one-half the separable construction costs for recreation and fish and wildlife enhancement in accordance with PL 89-72, estimated to be \$100,000.

Question 3. Has there been any loss of life from flooding in Heppner since the tragic 1903 flood?

Answer. No further loss of life has occurred at Heppner since the 1903 flood. Heavy property damage has occurred on numerous occasions and the potential for high loss of life is ever present.

Question 4. I notice that the project spillway is designed for a flow of 72,000 cfs. The channel through Heppner, however, would have a capacity of only 1,500 cfs. Will this difference lead to considerable flooding in the Heppner area?

Answer. The purpose of the spillway is to act as a safety valve to prevent overtopping and possible failure of the dam during an extremely rare or combination of rare flood events should the storage capacity of the reservoir be exceeded. The spillway capacity of 72,000 cfs is based on safely passing the largest possible flood that could be produced by the worst possible combination of meteorological events in this portion of the country. The possibility of such an event happening is so rare its frequency is speculative. Any damage to the city of Heppner resulting from discharge of flood flows over the spillway from such a rare event would be small in comparison to what would have occurred naturally without the existence of the reservoir.

Question 5. What would be the cost-benefit ratio on the proposed project if costs were discounted at 5% percent? At 6% percent?

Answer. Normally, the relationship between project costs and benefits is expressed as the benefit/cost ratio. For 5% percent, that ratio is 0.65; for 6% percent, the ratio is 0.48.

Question 6. Could you explain the nature and specifics of the State order requiring improvements to the Heppner water system by July 1, 1975?

Answer. There is no known State order requiring improvements to the water system by July 1, 1975. In November 1973, the City requested approval of 28 new service connections. The State's Department of Human Resources approval was contingent upon rebuilding of the City's existing facilities at Well No. 3 by July 1, 1974. Recent expansion of the Kinzua Plywood Plant has resulted in the need for expanding and increasing the capacity of the City's system. Their present schedule provides for construction to be initiated in June 1974 with the system to be operational by June 1975.

Senator GRAVEL. I find I do have one question. In view of your statement here, General, do you feel that we should have a specific new authorization bill before you proceed?

General KELLY. I would say that we would not need a new authorization, sir, but the authorization should be amended.

Senator GRAVEL. That could be provided as a result of committee action.

We appreciate your statement very much, General.

I know you have very competent assistants and they can stay, if you wish to return to your office.

General KELLY. If it would be appropriate, I would like to return to the office, but I certainly will leave representatives here.

Senator GRAVEL. That will be fine.

Thank you very much, General.

PORTUGUES AND BUCANA RIVERS, PUERTO RICO

Our next group of witnesses will be our distinguished colleague the Honorable Jaime Benitez and his colleagues from Puerto Rico.

Mr. Commissioner, would you convey my good wishes to your very excellent and competent Governor, who is a very close personal friend of mine, and who I think has done a very fine job for the people of Puerto Rico.

Of course, you, yourself, sir, do a very excellent job in representing the interests of the Commonwealth here in Washington. You may proceed as you wish. Please introduce for the record the gentlemen who accompany you from Puerto Rico.

STATEMENT OF HON. JAIME BENITEZ, RESIDENT COMMISSIONER, PUERTO RICO; ACCOMPANIED BY HON. DENNIS HERNANDEZ, SECRETARY OF TRANSPORTATION AND PUBLIC WORKS; HON. LUIS A. MORALES, MAYOR OF PONCE, AND COMMONWEALTH SENATOR JOSE MENDEZ-MOLL, CHAIRMAN, COMMITTEE ON TRANSPORTATION AND PUBLIC WORKS

Mr. BENITEZ. Thank you, Senator Gravel. All of us are most grateful to you for your interest not only in this particular project, but in all other projects affecting Puerto Rico.

It was one of our happiest moments when we were fortunate enough to welcome you to our island and to have you gain first-hand information on our efforts to cope with our problems in Puerto Rico.

I certainly will transmit to the Governor of Puerto Rico your kind regards. I may say that all of us have been asked by him to express once again the great affection and admiration we have for the Senator from Alaska.

I may say that the people who accompany me here today are evidence of the great importance that we in Puerto Rico attach to this project.

To my left is the Secretary of Public Works of Puerto Rico, the Honorable Dennis Hernandez.

To my right, and the position has no political implications, is the mayor from Ponce, the distinguished and courageous Luis Morales.

Next to him is the senator from Puerto Rico, Mr. Mendez-Moll.

All of them have made a special trip to join me in testifying to the importance that all of us, and particularly the people in southern Puerto Rico, attach to this project.

This project (which has been one of the major aspirations of the Ponce community) would provide significant environmental improvements, flood control, water supply and potential recreational opportunities.

It was one of the five new starts in the President's fiscal year budget of 1974. The project was not included on that occasion because, as has already been testified, the Corps of Engineers cost data was not firm.

We have just heard from General Kelly that they have come to the Committee on Appropriations with new firm cost data.

I have with me a letter, which I would like to read into the record from the Assistant Director of Civil Works, Colonel Withers, concerning a question that the chairman raised a few minutes ago.

DEAR MR. BENITEZ: I am pleased to inform you that a Post-Authorization Change for the Portugues and Bucana Rivers project in Puerto Rico was approved by the Office of Management and Budget on 22 April 1974.

By this action, the Administration accepted the changes in costs, benefits, reservoir storage capacities, and benefit distribution which are based on our recently completed design memorandum.

This action together with filing of the Environmental Impact Statement with the Council on Environmental Quality on 25 February 1974, and the Corps testimony before the Public Works Appropriations Subcommittees on the firmness of the cost estimate removes all constraints on our capability, to initiate construction, which was previously furnished to you.

Sincerely yours,

G. K. WITHERS,

Colonel, Corps of Engineers, Assistant Director of Civil Works, Atlantic.

MR. BENITEZ. The current joint costs, Federal and Commonwealth, of the whole project amount to \$121 million. As has been testified, the new benefit-cost ratio is 1.6 to 1, which is normally regarded as very satisfactory.

The Corps of Engineers has testified also that their capability for 1975 is \$1.5 million.

I will now limit myself, Mr. Chairman, to underscoring the danger to life and property for the city of Ponce, which has a population of 180,000, because of flooding. The Corps of Engineers has described the flood potential in the following language as:

*** one of extreme urgency for human and natural resources. Because of its location on the coastal plain the city is extremely vulnerable to sudden flooding. Warning time can be expressed in hours or minutes, and a flood originating during the night would result in absolutely no warning time whatsoever.

Those of us who have just recently witnessed the terrible destruction left in the wake of various tornadoes across the nation can anticipate the dangers and damages of this sudden nocturnal visit of disaster—the basic difference being that in Ponce's case such damages can be prevented through projects like Portugues and Bucana.

This is one of the reasons why we are appearing before you to request your understanding and support.

The worst flood could cover nearly all of the developed and inhabited area and it is impossible to assess the threat to human life

from such a flood. Property damage would exceed \$100 million. Damage from the statistical 10-year flood would exceed \$175 million.

In the material received last year, the Corps of Engineers also discussed Ponce's pressing need for a reliable water supply. The need for water supply augmentation, to quote from the Corps of Engineers,

*** is illustrated by the current drought being experienced in Ponce. It has been reported that about one-half of the city's population were entirely without water service early in June after the main reservoir now serving the city dried up.

The city of Ponce, facing the threat of an epidemic, requested emergency services from the Commonwealth Government.

It is this type of emergency and of potential disaster against which we must protect the community.

I have already referred to the Office of Management and Budget. I would now like to request permission to file with you for the record the report from the National Resources Secretary of the Commonwealth on the recreation and water supply aspects of this project.

Senator GRAVEL. That will be accepted for the record.

[The document referred to appears on p. 121.]

Mr. BENITEZ. The people of Puerto Rico are deeply appreciative of your interest in this matter.

I now defer to my good friend, Secretary Hernandez, who will describe in more detail the major thrust of this project.

Mayor Morales and Senator Mendez are also here to answer any questions and to submit their statements. All of us are here to add our encouragement to your own personal enthusiasm for this project.

Thank you, Mr. Chairman.

Senator GRAVEL. Thank you very much.

STATEMENT OF DENNIS W. HERNANDEZ, SECRETARY OF TRANSPORTATION AND PUBLIC WORKS, COMMONWEALTH OF PUERTO RICO

Mr. HERNANDEZ. Thank you, Mr. Chairman.

I am Dennis Hernandez, Secretary of Transportation and Public Works of the Commonwealth of Puerto Rico, and I am here respectfully to request this subcommittee's endorsement of the inclusion of the Portugues and Bucana Rivers flood control project at Ponce, Puerto Rico, with a \$1.5 million appropriation for commencement of construction.

This project was authorized by Congress in 1970. I have presented to this subcommittee detailed testimony with all pertinent information to justify my recommendation.

Ponce, in particular, is affected by frequent and severe floods and droughts with corresponding effects on the commerce, industry, agriculture and residents of the area.

The flood problem in Ponce is among the most serious in Puerto Rico. Damaging floods occur almost annually and severe floods can be expected every 5 years.

The small size of the island, its topography and climate, make the flood problem worse than average. The island has a central mountain range with a main divide that runs approximately east-west

with elevations of the range between 2,000 and 4,000 above mean sea level.

Most mountain slopes are about 45 degrees in the sector of Ponce, greater than the average in the island. The streams are among the steepest on the islands, with mountains within 4 miles of the coast.

The average annual rainfall of the island is about 70 inches. The northern part of the island has a higher annual rainfall, and the southern slope is drier.

The floodable areas are located in the coastal plains along the periphery of the island which is also the location of the main urban centers and where the land is most appropriate for agriculture as well as industrial and residential development.

In Puerto Rico, the heavier rainfall and floods are usually associated with the passing of tropical hurricanes through or near the island. Because of the heavy amount of rainfall in the mountains near the coastal zone, the steepness of the mountains and the proximity of the urban area to the edge of the mountains, the magnitude of peak flows of water into Ponce are larger in general than in the continental United States (for a drainage area of comparable size). These factors; of course, make flash flooding an ever-present danger.

Mr. BENITEZ. What are the markings on the picture you are showing now?

Mr. HERNANDEZ. The flood plains of the island, located mainly on the periphery of the island, and where most of the flat land suitable for commercial and residential development is found.

Mr. BENITEZ. Those blue areas are the places where floods take place?

Mr. HERNANDEZ. Yes, and also the places where the best land for development is available.

As has been said before, with respect to flash floods, it is worth mentioning that according to the survey report made by the Corps of Engineers on the Portugues and Bucana Rivers, there would be less than 4 hours to evacuate safely the affected population of Ponce, 180,000 people.

According to the information provided by the Corps of Engineers, property damage from this type of flood could exceed \$100 million.

In addition to the social and human damages caused by the floods, large physical damages require monetary assistance from the Commonwealth and the Federal Government. Damages from floods occurring on the island during the period 1899 to 1970 have been estimated at \$1,130 million.

The last flood in that area, was estimated to have caused \$10 million in damages, In another flood 283 lives were lost. The flood situation in Ponce is of extreme peril to human and natural resources and, due to its location on the coast, the city is very vulnerable to flash flooding.

The southern region of Ponce and the surrounding areas are not only affected by floods but also by severe drought. The need for increasing water supplies was demonstrated by the drought of 1973. At that time it was reported that about one-half of the population of Ponce was entirely without water service early in June, after the main reservoir of the city was dried up.

The southern region of Puerto Rico is an area of increasing water demands due to population growth and the development of heavy

industries using large amounts of water. Unfortunately, it is also an area of little rainfall and most limited natural supplies. Still, future development in southern Puerto Rico is expected to be centered in this area.

Besides the Portugues and Bucana project, there is no other alternative in the near future to satisfy the pressing needs for water supply for urban and industrial development in the southern region of Puerto Rico.

The Commonwealth of Puerto Rico is currently involved in a program to convert the agriculture-based economy to an industry-based economy.

This project will be a great help in our fight to increase the per capita income of our people and also to fight unemployment. The protection is also needed to provide suitable land in the area for industrial and residential development.

The Commonwealth already has a large program for flood control in the amount of \$180 million, of which it has already appropriated \$32.5 million. The Legislature has also already appropriated \$12 million as matching funds to start the Portugues and Bucana project.

Mr. BENITEZ. These are all pictures of flooding in Ponce.

Senator GRAVEL. When was that flood?

Mr. HERNANDEZ. 1962.

Senator GRAVEL. When was the other flood before that?

Mr. HERNANDEZ. This picture now is 1970.

Senator GRAVEL. And the previous flood before this was when?

Mr. HERNANDEZ. 1961, December 6.

Senator GRAVEL. So in 10 years time you have had two major floods there?

Mr. HERNANDEZ. That is right.

The action by Congress of approving the funds for this project will mean great benefits for the people of Ponce in terms of providing protection against flooding and furnishing a dependable water supply to the city and its surrounding communities.

I respectfully request your kind consideration of this petition for the appropriation of moneys to begin project construction.

I am deeply grateful to the honorable chairman and members of the subcommittee for allowing me the time to bring to them the feelings and needs of the people of the city of Ponce. Thank you very much.

Senator GRAVEL. Thank you, Mr. Secretary.

The flood plain area is all populated area, is that correct?

Mr. BENITEZ. That is right.

Mr. HERNANDEZ. Shown is the main city of Ponce, and the blue area is the land suitable for commercial and residential development of the city. The two rivers are shown also in the picture.

Mr. BENITEZ. We would like to present the mayor of Ponce.

STATEMENT OF HON. LUIS A. MORALES, MAYOR, CITY OF PONCE

Mr. MORALES. Thank you, Mr. Chairman.

Chairman Gravel and members of the Senate Public Works Subcommittee on Water Resources: I am Luis A. Morales, mayor of city of Ponce of the Commonwealth of Puerto Rico.

I am here respectfully to recommend that this subcommittee endorse the inclusion of the Portugues and Bucana Rivers, flood control project, in the Public Works for Water and Power Development and Atomic Energy Appropriation Bill of 1975, with the necessary funds to start its construction. This project was authorized by section 201 of the Flood Control Act of 1970, Public Law 91-611, approved on December 31, 1974.

The necessity of this project has been clearly demonstrated by the severe floods and droughts experienced on several occasions by the people of Ponce.

The flood of May 6, 1958, left more than 600 families homeless and reported physical damages amounted to more than a million dollars. Three deaths occurred during this flood.

The citizens of Ponce have great concern that this project be started as soon as possible as they know the dangerous flash-flood conditions of the Portugues and Bucana Rivers. Past experience with floods along these two rivers shows that warning time is extremely short. Thus, if a severe flood occurs during the night there would be no warning time to evacuate safely the affected citizens, most of whom live in the poorer sectors of the city.

A severe drought affected the city of Ponce during 1973. During this drought about half of the city's population of 180,000 inhabitants was entirely without water service. On this occasion the city, facing the threat of an epidemic, requested emergency assistance from the Commonwealth government.

The area surrounding Ponce is one of great industrial growth. The present demand for fresh water from industries in the area is high and is expected to increase in the near future due to the expansion of old and the establishment of new industries.

We believe that the best solution to the flooding and water supply problems in and around Ponce is through the construction of the recommended projects by the Corps of Engineers as authorized by section 201 of the Flood Control Act of 1970, approved on December 31, 1970.

The people of Ponce are anxious that these projects be started as soon as possible not only because of the great benefits they will derive from the projects in terms of flood protection, water supply, and recreation facilities, but also because we have been waiting for this event since early in the 1940's when the Corps of Engineers started studying the projects.

This project will also play an important role in reducing unemployment in the southern region as its construction will create new jobs and will, after completion permit the urban development of areas at present not suitable for that purpose.

On behalf of the citizens of Ponce, Puerto Rico, I respectfully request this subcommittee's endorsement in order that these projects be included in the before mentioned bill with the necessary funds to start their construction. Thanks very much.

That is really our hope.

Senator GRAVEL. Thank you, Mr. Mayor.

Our next witness will be Senator Mendez.

STATEMENT OF HON. JOSE MENDEZ-MOLL, SENATOR, COMMON-
WEALTH OF PUERTO RICO

Mr. MENDEZ. Mr. Chairman and members of the Senate Public Works Subcommittee on Water Resources:

I am José Mendez-Moll, member of the Senate of the Commonwealth of Puerto Rico and chairman of the transportation and public works committee.

I was born in Ponce and I was elected to the Senate by this city and its district. Since I started in my public career, one of the main issues I have dealt with is flood control.

In Ponce and surrounding areas we have been hearing about the channelization of the Portugues and Bucana Rivers for two generations now.

Therefore, I am here to pursue my interest in relation to projects for flood control and other purposes on the Portugues and Bucana projects, Ponce, Puerto Rico.

I respectfully recommend that this subcommittee endorse the recommendation that a \$1.5 million assignment be made in the public works for water and power development and atomic energy appropriation bill of 1975 in order to start construction.

These projects were authorized by Congress through section 201 of the Flood Control Act of 1970, Public Law 91-611, approved on December 31, 1974.

Channelization and flood control are topics that we could be talking about for hours. For example, they are related to: (a) tropical hurricanes (b) heavy rains (c) industrial development (d) topographical aspects (e) people living in flood areas (f) flash floods, and so on.

I am well aware that time is your stock in trade. For this reason I will pinpoint the problem focusing on Ponce and its area.

These problems are of the utmost importance to the citizens of Ponce as well as for the economic development of the whole island. They will provide adequate protection to the 180,000 citizens of Ponce, and permit use of the flood plains for badly needed urban development. They will also provide a dependable water supply for the city of Ponce and its surrounding area.

The southern region of Puerto Rico, including Ponce, is an area where heavy water-using industries are established. A petrochemical complex is being developed along the shores of Guayanilla and Tallaboa Bays. Those are towns very near Ponce.

As you know, petrochemical industries are attracted to Puerto Rico because of Puerto Rico's oil import quotas and Commonwealth tax structure incentives. In this particular industrial complex there are seven major corporations, one of which recently announced a \$200 million expansion.

The present demand for freshwater in industrial areas in the southern region of Puerto Rico amounts to about 15 million gallons per day. This is expected to increase to about 30 million gallons per day by 1980.

It is very important to note that these industries require freshwater of the highest quality available, which at present is not being

provided. These industries have each an ion exchange process to demineralize the water they are using in their processes.

Residents from Ponce and the surrounding area consume about 17 million gallons of water daily. This demand is expected to increase to about 27 million gallons per day by 1980.

We were talking a few minutes ago about the floods that occur in Puerto Rico. Severe droughts are also an important aspect of life in the southern region of Puerto Rico. Last year, more than one-half of the population of Ponce was reported without water service, in June 1973. Would you imagine a situation like that? Half of the population of Ponce without water.

To satisfy the aforementioned future water demands from both the industrial and residential sectors, there is no other alternative, within the economic framework of the Commonwealth, than to go ahead with the Portugues and Bucana projects.

If these projects are not started during the second semester of fiscal year 1975, industrial and population growth in the southern region of the island could be jeopardized. This in turn would endanger the economic development of the Commonwealth as the type of industry involved is crucial.

This means flatly that if we do not have the facilities constructed by 1980, Ponce and the area will not have enough freshwater for human and industrial consumption.

As you can appreciate, it is of enormous importance to us for you to approve the aforementioned assignment. The situation is really critical.

In connection with floods, I must stress that according to the U.S. Geological Survey, the southern area has an extraordinarily large runoff. As much as 37 inches of rain have fallen in this area during a 5-day period.

The Portugues and Bucana Rivers also go through the city of Ponce. There may be no rainfall in the city, but up in the mountains, it abounds and there is no time for warnings to be issued about flash floods. We really have a major problem.

Also at stake, regarding construction of these projects, is the confidence of the people of Puerto Rico in programs developed by the Corps of Engineers.

The Portugues and Bucana projects have been studied by the Corps of Engineers since 1940. More than feats of engineering, these projects have become a dream to the people of Ponce and southern Puerto Rico.

I would be very glad if this dream could begin to come true for the citizens of Ponce during the second semester of fiscal year 1975.

In Puerto Rico there are currently 26 projects in the flood control program, with an estimated cost in excess of \$180 million. Our legislature has appropriated funds for these projects in the amount of \$32.5 million and approved a \$14 million expenditure for fiscal year 1975 to continue the development of the same and to commence studies and designs for new ones.

\$5 million have been assigned to comply with the Federal program regarding the Portugues and Bucana projects.

I believe that the inclusion of these projects in the bill before your consideration is justified based on the reasons expressed above;

the benefit-cost ratio of 1.6 to 1.0; the firm cost estimates and the advanced status of local cooperation to be provided by the Commonwealth of Puerto Rico. You will then solve a real problem in a most positive manner.

Thank you very much for your consideration.

Senator GRAVEL. Senator, Ponce is the second largest community in Puerto Rico, is it not?

Mr. MENDEZ. Yes, sir; it is.

Senator GRAVEL. So it is the second most important industrial area of Puerto Rico also.

Mr. MENDEZ. I could say that I think that the southern part of Puerto Rico is of vital importance for industry, sir.

Senator GRAVEL. I am persuaded by the human need that cries out here. I think having two floods in a decade is really an unusual tragedy.

The stark fact of a major community of this size being without drinking water because of flooding is just an abominable situation from any point of view.

I can assure you of my total support in trying to get your project started because it has been passed around since 1940 and that is much too long. I can assure you that if I have any influence at all you will see it completed by 1980 and if I am fortunate enough to still be here then I will be on hand for the project dedication.

Not only do you have my personal support, but I will address, as chairman of the subcommittee, a letter to Senator Stennis, to whom I understand you will be presenting your testimony for the Appropriations Committee. I will write Senator Stennis and endorse the project and I will also contact him personally on the floor and try to put all my influence behind this.

Senator Clark has just joined us and I know he is very sympathetic and interested in this area. Senator Clark?

Senator CLARK. I would only second the chairman's strong position on this and hope that we move forward with it. The costs, as you can see from the great increases that have occurred over the years, will continue to get greater and greater the longer we delay. I hope we move with deliberate speed on this.

Senator GRAVEL. I will invite my colleague to join me with his signature on my letter, if he cares to.

Senator CLARK. Fine.

Senator GRAVEL. Commissioner Benitez, I want to commend you on what I think has been a very fine presentation by your group. I appreciate the distance they traveled to participate. I flew in from Alaska yesterday so that I could be here to see you.

Mr. BENITEZ. We have never felt more at home than under your chairmanship of this subcommittee. We are most grateful for your consideration, the warmth of your reception, and your expressions of support. We would do the same for Alaska any time.

Senator GRAVEL. If you can send some of your sunshine and warm air up to Fairbanks in January and February, it would be appreciated.

Again, extend all my good wishes to my friends in Puerto Rico.

[Mr. Hernandez' complete statement and the statement of the Secretary, National Resources, Commonwealth of Puerto Rico follow:]

STATEMENT OF HON. DENNIS W. HERNANDEZ, SECRETARY OF TRANSPORTATION
AND PUBLIC WORKS, COMMONWEALTH OF PUERTO RICO

Honorable Chairman Senator Mike Gravel and members of the Senate Public Works Subcommittee on Water Resources, I am Dennis W. Hernandez, Secretary of Transportation and Public Works of the Commonwealth of Puerto Rico.

I am here to respectfully recommend this Subcommittee its endorsement to include the projects for Flood Control and Other Purposes on the Portugues and Bucana Rivers, Ponce, Puerto Rico, in the Public Works for Water and Power Development and Atomic Energy Appropriation Bill, 1975, with a \$1.5 million assignment for the commencement of their construction. These projects were authorized by Section 201 of the Flood Control Act of 1970, Public Law 91-611, approved in December 31, 1970.

It is my intention to provide this subcommittee all pertinent information to justify my recommendation.

Other officers of the Government of the Commonwealth of Puerto Rico will also testify before this Subcommittee in relation to the urgent need of these projects.

My presentation will include basic information on the Flood Conditions in Puerto Rico as Compared to Continental U. S. A., of our Flood Protection Program and of the Portugues and Bucana Projects in Ponce, Puerto Rico.

We believe this information is essential for the understanding of the seriousness and the urgency of the Portugues and Bucana Projects in Ponce.

FLOOD CONDITIONS IN PUERTO RICO AS COMPARED TO CONTINENTAL U.S.A.

Puerto Rico is an island approximately 100 miles long and about 35 miles wide, with an area of about 3,600 square miles, that is about two thirds the size of Connecticut. The island is in an almost East-West orientation and despite its small size, it is varied in topography and climate.

The island has a central mountain range with a Main Divide that runs approximately East-West having elevations of the range between 2,000 and 4,000 feet above mean sea level. This Main Divide is about 20 miles from the North Coast and near 15 miles from the South Coast. The mountainous area drops quite abruptly to a zone of foot hills and finally to a coastal plain that goes around the island. This topography leads to a large number of separate short streams with abrupt slopes. The slope of the streams in the North Slope are of 132 feet per mile and in the South Slope of 237 feet per mile, which indicates their high degree of steepness.

The 1970 census for Puerto Rico indicated a population of about 2,700,000 inhabitants for a density of near 750 inhabitants per square mile, which is among the highest densities of population in the world. Puerto Rico has a few large Urban Centers with 78 municipalities. In addition, there are a lot of people scattered throughout the rural zones. As a result it is very difficult to build any reservoir or any large structure without affecting a lot of people.

The average annual rainfall of the island is about 70 inches. It varies from a minimum of 30 inches at the South West corner to over 200 inches in the Luquillo Mountains on the North East. The Northern Slope has a higher annual rainfall and the Southern Slope is drier. In the past this has led to the building of storage reservoirs on the Northern Slope and conveying the water through tunnels across the Mountain Range to the Southern Side.

The study of peak flows as related to water development resource projects in Puerto Rico conveys the consideration of different conditions with respect to similar projects in the continental U.S.A. These conditions include high intensities of precipitation, variability of weather, infiltration characteristics of soils, antecedent moisture conditions and relative magnitudes and flashiness of floods.

The design of spillways for dams is usually based on the Probable Maximum Precipitation referred to as PMP and that of flood protection works on a fraction or ratio of PMP. Values of PMP in the Eastern United States for 6-hours point rainfall varies from values of 18 inches in the Northwestern part of the area, to 31 inches near the Southern tip of Florida. The 6-hour PMP value is 30 inches over most of the island with a maximum value of 37.5 inches at the top of the mountains compared to the corresponding values between 18 to 31 inches in continental U.S.A. Please also note that the maximum recorded 6-hour rainfall values are nearly one half of the 6-hour PMP. The

proportional ratios or reduction factors to be applied to the PMP in the Eastern Continental States for the determination of design floods "for use in areas where failure would not result in loss of life or extensive property damage" which near the Southern tip of Florida is 2.1.

In Puerto Rico the heavy rainfall and floods are usually associated with the passing of tropical hurricanes through or near the island. The distribution of rainfall during the storm of May 19-20, 1940 caused an inflow of 78,000 cfs into the Guayabal dam from a drainage area of about 44 square miles rose from zero to peak flow in about two hours.

The 1960 hurricane caused an inflow into the Loiza dam of 182,000 cfs from a drainage area of 207 square miles. Note that the inflow rose from zero to 182,000 cfs in about six hours, and that inflow over the spillway crest gate rose from zero to 160,000 cfs in about four hours.

The same September 1960 hurricane developed a peak flow of 197,000 cfs or about twice that of Niagara Falls in the Loiza River a distance downstream from the dam, from a drainage area of 239 square miles. The October 5 to 10 in 1970 storm caused a number of successive peak flows at the Loiza River at Caguas (upstream from the Loiza dam) the biggest of which reached a peak flow on the fifth day of 60,000 cfs from a drainage area of 89.8 square miles.

The difference in magnitude between floods in some areas in the continental U.S.A. and in Puerto Rico can be dramatized by the following two tabulations prepared by the U.S. Geological Survey. The first one shows discharges at selected sites during the flood of June 30 and July 1st. of 1973 at Vermont. This table shows in the first line that in the Moose River, from a drainage area of 75.2 square miles, a peak flow of 4,340 cfs occurred which they classified as representing a 200-year recurrence interval. The last line shows that in the Lamoille River, from a drainage area of 310 square miles, a peak flow of 14,400 cfs occurred which also represents a 200-year recurrence interval. It is worth noting in the third line that in the Connecticut River, at a point with 2,644 square miles of drainage area, which is about $\frac{3}{4}$ of the area of Puerto Rico, a peak flow of 57,100 cfs occurred, representing a 40 year recurrence interval.

In contrast to this, the next tabulation which shows discharges for the floods of October 5-9, 1970 at selected sites in Puerto Rico, indicates that in the Bayamon River (in the third line) from a drainage area of 71.9 square miles a peak flow of 58,000 cfs occurred which has been classified as a 33-year recurrence interval flow and that a previous maximum known flow at this same point was 80,000 cfs in 1945; that at the Plata River (second line) from a drainage area of 208 square miles a peak flow of 80,000 cfs occurred classified as representing an 18 year recurrence interval flow with a previously maximum known flow of 120,000 cfs in 1928.

DISCHARGES FOR THE FLOODS OF JUNE 30, AND JULY 1, 1973, AT SELECTED SITES IN VERMONT

Stream and location	Drainage area (sq. mi.)	Period of known floods	Maximum flood previously known		Maximum during present flood			
			Date	Discharge (cfs)	Date	Discharge (cfs)	Recurrence interval (years)	
Connecticut River Basin:								
Moose River at Victory.....	75.2	1947	Apr. 25, 1970	3, 010	July 1	4, 340	200+	
Passumpsic River at Passumpsic.....	436	1928	Mar. 18, 1936	16, 000	July 1	18, 200	200+	
Connecticut River at Wells River.....	2, 644	1949	Mar. 27, 1953	54, 000	July 1	57, 100	40	
Wells River at Wells River.....	98.4	1940	June 2, 1952	3, 230	June 30	4, 020	200+	
Williams River at Brockways Mills.....	103	1940	June 1, 1952	8, 910	June 30	8, 760	30	
Saxtons River.....	72.2	1940	Sept. 12, 1960	5, 610	June 30	7, 260	100+	
Hudson River Basin:								
Walloomsac River at North Bennington.....	111	1931	Sept. 21, 1938	8, 450	June 30	7, 540	25—	
St. Lawrence River Basin:								
Otter Creek at Center Rutland....	307	1928	Sept. 22, 1938	13, 700	June 30	11, 500	200+	
Dog River at Northfield Falls....	76.1	1934	Sept. 21, 1938	9, 750	June 30	10, 400	100—	
Lamoille River at Johnson.....	310	1910-13	Mar. 18, 1936	13, 000	July 1	14, 400	200+	

Source: From Water Resources Review of the USGS for July, 1973*

DISCHARGES FOR THE FLOODS OF OCTOBER 5 TO 9, 1970, AT SELECTED SITES IN PUERTO RICO

Stream and location	Drainage area (sq. mi.)	Period of known floods	Maximum flood previously known		Maximum during 1970 flood		
			Date	Dis-charge (cfs)	Date	Dis-charge (cfs)	Recur-rence interval (years)
Rio Grande de Manati at Ciales	128	1946-70	Sept. 6, 1960	77,300	Oct. 9	125,000	-----
Rio de la Plata at Toa Alta	208	1928-70	Sept. 13, 1928	120,000	Oct. 9	80,000	18
Rio de Bayamon at Highway 2 at Bayamon	71.9	1945-70	Aug. 4, 1945	80,000	Oct. 9	58,000	33
Rio Loiza at Caguas	89.8	1945-70	Aug. 4, 1945	85,000	Oct. 9	62,800	31.5
Rio Valenciano nr Juncos	16.4	1960-70	Sept. 6, 1960	37,100	Oct. 9	18,000	26
Rio Gurabo at Gurabo	60.2	1960-70	Sept. 6, 1960	74,600	Oct. 9	59,900	50
Rio Loiza at Loiza Dam	207	-----	Sept. 6, 1960	170,000	Oct. 9	162,000	-----
Rio Loiza Highway No. 3	239	-----	Sept. 6, 1960	197,000	-----	-----	-----
Rio Humacao at Humacao	17.3	1960-70	Sept. 6, 1960	40,000	Oct. 9	13,000	11
Rio Jacaguas at Lago Guayabal	43.5	1909-70	May 19, 1940	70,000	Oct. 9	53,900	-----
Rio Bucana nr Ponce	25.6	1899-70	Aug. 8, 1899	47,000	Oct. 9	12,000	4.6

Source: From USGS Water Resources data.

The before mentioned does not mean that in the continental USA may not exist areas with floods of similar conditions of flashiness and magnitude, but generally in these areas urban centers do not exist as in Puerto Rico, where many of our towns are located in valleys and at the edges of mountains.

It may be observed from the previous technical information that the magnitudes of peak flows in Puerto Rico are larger in general than in the continental USA for the same size drainage areas and that the condition of flashiness is more critical.

With respect to flashiness it is worth mentioning that according to the Survey Report on Portugues and Bucana Rivers, Ponce, Puerto Rico, prepared by the Department of the Army in 1970, there would be less than four hours to evacuate safely the affected population of about 250,000 inhabitants and that the depth of flooding for such a flood could exceed six feet in some areas in Ponce.

In addition to the social and human detriment occasioned by these floods, large physical damages have been occasioned requiring monetary assistance from both the Commonwealth of Puerto Rico and from the Federal Government. The damages from the most recent floods in the island, that occurred in 1970, have been estimated in \$18 million. The damages from floods occurring in the island during the period of 1899 to 1970 have been estimated in \$1,130 million.

FLOOD PROTECTION PROGRAM OF THE COMMONWEALTH OF PUERTO RICO

To solve the flood situation described before, the Commonwealth of Puerto Rico established through its Public Law Number 53 of 1966, a Flood Protection Program with an initial allocation of \$500,000. Since then, the Puerto Rico Legislature has allocated funds yearly for the construction of flood control projects. Up to now there are various flood control projects completed and in service at an estimated construction cost in excess of \$22 million.

As of this moment there are 26 projects in our Flood Control Program at different stages of study, design and construction with a total estimated construction cost in excess of \$180 million. The Puerto Rico Legislature has already appropriated funds for these projects in the amount of \$32.5 million. To continue the development of these projects and to initiate studies and design of new ones, the Puerto Rico Legislature approved a total allocation of \$14 million for Fiscal Year 1975.

It is worth indicating that of this \$14 million allocation approved for Fiscal Year 1975, \$5 million have been assigned as part of the funds of the Commonwealth of Puerto Rico to comply with the Federal Legislation approving the Bucana and Portugues Projects. With this recent assignment we have up to now a total allocation of \$12 million to finance part of the local cooperation required for these projects.

Although the Flood Control Program of the Commonwealth of Puerto Rico has grown greatly, as it is receiving a present allocation of about 28 times its original one in eight years, it has been impossible to satisfy adequately

the most pressing needs with respect to flooding in Puerto Rico. In special circumstances where large investments are required to solve flooding and water supply problems and where the benefit-cost ratio thus justify it, we have requested the aid of the Federal Government to develop multipurpose projects, as it has been the case of the Portugues and Bucana Projects.

PORTUGUES AND BUCANA PROJECTS

Major floods on the coast at Ponce have occurred during the years 1899, 1928, 1954, 1958, 1961, 1962 and 1963. There are no accurate records available of the damages caused by the floods of 1899, 1928, 1961 and 1962. Damages in the Portugues and Bucana Rivers basins for the floods of 1954, 1958 and 1963, were estimated to be \$2 million, \$1.3 million and \$4 million respectively.

During the 1899 flood, which was caused by a hurricane, 283 lives were lost and during the 1958 flood, three deaths occurred. As it may be observed flood potential for Ponce is of extreme peril to human and natural resources, and due to its location on the costal plain the city is extremely vulnerable to flash flooding.

Thus warning time is short, and a flood originating during the night could result in no warning time whatsoever. A severe flood, such as the Standard Project Flood, would cover all the developed and inhabited area and it is impossible to exaggerate the threat to human life that such a flood would pose. According to information from the Corps of Engineers property damages from the Standard Project Flood would exceed \$100 million.

The Southern region of Puerto Rico including Ponce, is not only affected by floods but also by severe droughts. The need for an increase in water supply was illustrated by the drought of 1973 experienced in Ponce. It was reported that about one half of the population of Ponce of 250,000 inhabitants were entirely without water service early in June 1973 after the main reservoir of the city dried up.

The Southern region of Puerto Rico is an area of increasing water demands due to population growth and the location of petrochemical and other heavy water using industries.

Besides the Portugues and Bucana Projects there is no other alternative in the near future to satisfy the pressing needs for water supply for urban and industrial development in the southern region at Puerto Rico. If this additional source is not provided the water supply development in the Portugues and Bucana Basins would become very critical.

Being the situation of flooding and water supply in Ponce one that would require a large investment for its solution and due to the lack of local funds in that respect, the Government of Puerto Rico requested aid from the Federal Government through the Department of the Army, Corps of Engineers.

The preparation of the Survey Report on Portugues and Bucana Rivers, Ponce, Puerto Rico, was authorized by Section 4 of the Flood Control Act of August 18, 1941 (Public Law No. 228, 77th Congress, First Session). This Survey Report was completed by the Corps of Engineers, South Atlantic Division, 29 years later and submitted to the Chief of the Army in February, 1970. At the time of preparation of the Survey Report the total first costs of the plan were estimated at \$49.7 million with a benefit-cost ratio of 2.3 to 1.

The proposed plan by the Chief of Engineers was endorsed by the Commonwealth of Puerto Rico, through the Department of Public Works acting as local sponsor of the projects, during the process of preparation of the Survey Report, and in hearings held by Congress on May 26, 1971.

The projects for Flood Control and Other Purposes on the Portugues and Bucana Rivers, Ponce, Puerto Rico, were authorized by Section 201 of the Flood Control Act of 1970, Public Law 91-611. The authorized plan of improvement of the Portugues and Bucana Projects consists of two multipurpose lakes, diversion of Portugues River to Bucana River and channel improvements on both rivers. The plan would provide essentially Standard Project Flood Protection, a dependable water supply of about 33.8 million gallons a day for Ponce and surrounding area, and recreational facilities for full public use of the lakes.

The estimated cost of construction of the projects to the United States at the time of Congress authorization was \$41,756,000. In July 1973, estimates of first costs for the projects were revised by the Corps of Engineers being the total first costs of the magnitude of \$121,081,000 of which \$65,689,000 would

be cost to the United States and \$55,392,000 would be the cost of Non-Federal cooperation to be provided by the Commonwealth of Puerto Rico. This total investment would be made in a 7 to 8 year period.

I believe that the great difference between the most recent estimate of first costs just mentioned and corresponding estimate at the time of Congress authorization of the projects, prevented fund allocation from the United States for Fiscal Year 1974.

Surprisingly, the projects were not included in the 1975 President's Budget, despite the recommendation of the Corps of Engineers in that respect.

On March 6, 1974, in the testimony of General Carol N. Letellier, during the hearings of Fiscal Year 1975 Budget, held by the House and Senate Public Works Appropriations Subcommittees the status of the projects was discussed.

As of today we have complied with all the assurances required by House Document 91-422 and have submitted all pertinent documentation to the Corps of Engineers, necessary for the commencement of the construction works for a first stage of the projects. Plans and contract documents under preparation by the Corps of Engineers for this initial stage will be completely by end of the present month, according to information provided by the Corps of Engineers in December 1973.

As it may be observed the only matter pending so that the construction of this first stage of the projects could be started during Fiscal Year 1975, is that the necessary funds be assigned by Congress.

The action of the U.S. Congress by approving funds for these projects would not only mean benefits in terms of providing protection against flooding and furnishing a dependable water supply to the city of Ponce and surrounding area, but would also help to restore the confidence of the people of Puerto Rico in the effectiveness of the programs developed by the Corps of Engineers, and thus in the Federal Government.

On behalf of the citizens of the Commonwealth of Puerto Rico, I request your kind consideration to this petition for the appropriation of \$1.5 million for starting the construction of the Portugues and Bucana Projects as a Corps of Engineers sponsored projects.

I am deeply grateful to the Honorable Chairman and to the Members of this Subcommittee for allowing me to bring the feeling and needs of our citizens from Puerto Rico in relation to these important projects. Thanks very much.

STATEMENT OF HON. CRUZ A. MATOS, SECRETARY OF NATURAL RESOURCES, COMMONWEALTH OF PUERTO RICO

INTRODUCTION

I am Cruz A. Matos, Secretary of Natural Resources of the Commonwealth of Puerto Rico. It is my privilege to present to this Subcommittee a written statement regarding a very important project for Puerto Rico. The project is located within the municipality of Ponce in south-central Puerto Rico. It consists of the construction of two multiple-purpose dams and reworking the river channel through the city of Ponce for water supply, general recreation, fish and wildlife enhancement, and flood control. The project has been authorized under Section 201, Title II of the River and Harbor Act of 1973.

PROJECT DESCRIPTION

There are proposed two earth-filled dams, one about 8 miles above the mouth of the Portugues River, and the other about 9.5 miles above the mouth of the Bucana River on the Cerrillos River. The proposed Portugues dam will be 260 feet high, of rock-fill with adjacent uncontrolled overflow spillways. The lake produced by this dam will have a 24,200 acre-feet storage capacity, of which 14,000 acre-feet will be for water supply, yielding 11 million gallons per day (MGD), and the remainder used as flood control. The proposed Cerrillos Dam will be 305 feet high of rock-fill with adjacent uncontrolled overflow spillways. The lake produced by this dam will have a 39,800 acre-feet storage capacity, of which 20,000 acre-feet will be for water supply, yielding 23 MGD, and the remainder used as flood control. The plan also entails the enlargement of about 5.7 miles of the Bucana River with floodway Levees along the lower portion, the enlargement of about 2.1 miles of Portugues River, and the

construction of a 1.3 mile diversion channel from the Portugues River to the Bucana River in the southern section of city of Ponce.

WATER SUPPLY NEEDS

Puerto Rico is an Island of contrast. Generally, along the north coast and central mountain regions, there is an abundance of rainfall, but along the south coasts, particularly near the dry south central and south western parts of the Island, adequate water supplies do not exist. Ponce, the Island's second largest city, is situated on the dry south-central coastal plain. The total rainfall there is variable, averaging about 35 inches annually, while the mountain areas (such as "La Carmelita", in the Central Mountain area, the source of the Bucana and Portugues Rivers) receive nearly 100 inches annually.

Streamflow characteristics of the Bucana and Portugues Rivers are roughly similar and are heavily influenced by the plunging topography of their upstream reaches, and the seasonal rainfall pattern. The situation is further complicated by the fact that the flows of these diminish so they flow towards the sea because of ground water recharging. Thus, during the dry season (primarily December through March), the rivers run dry in portions of the lowlands, while, during the rainy season, there is a surplus of water.

The City's population is also rapidly expanding the population of Ponce increasing from 105,000 in 1940 to 156,500 in 1970. While the municipality is now about 79 per cent urban and 21 per cent rural, the percentage of urban residents is expected to continue increasing under current development plans, reaching a projected population of about 250,000 in the city and 300,000 in the municipality by the year 2020. Present water demand in the area is expected to increase. According to the Commonwealth Aqueduct and Sewer Authority, the total water demand for the Ponce Region for 1970 was 33.2 MGD. This figure is expected to rise to 53.75 MGD for 1980 and 78.4 MGD for the year 1990, mainly due to the expected rise in industrial activity in the area. It is expected that some of these future needs could be met by re-cycling purified waste water from domestic waste treatment plants to the industrial area; however, although re-cycling of waste water from the Ponce Regional Sewage Treatment Plant is now actively in the planning stages, new sources for water will have to be found.

RECREATIONAL NEEDS

Within the Ponce Region, there are no opportunities for active or passive fresh water recreation. The upper reaches of the streams support limited fish populations mainly composed of mountain mullet and gobies. In the lower reaches, the intermittent water flow and serious pollution problems have seriously reduced their value as significant fishery habitats. At the present time, a recreation development plan and public park totaling 140 acres are planned for the proposed lakes. Activities such as fishing, camping, hiking, and eventually fresh water boating and swimming, will then be possible, and available for the first time in the region. It has been estimated that by 1985, the recreational activities will bring 400,000 persons per year to the areas, and by 2020, 700,000.

My colleague, the Honorable Dennis W. Hernandez, Secretary of Public Works and Transportation for the Commonwealth of Puerto Rico, will explain the flood protection benefits which this project will realize to this Subcommittee.

WILLOW CREEK, OREG.

Senator GRAVEL. Our next witness is our distinguished colleague, the Senator from the State of Oregon, who is here to honor this subcommittee with his testimony on Willow Creek, Oreg.

STATEMENT OF HON. MARK O. HATFIELD, U.S. SENATOR FROM THE STATE OF OREGON

Senator HATFIELD. Thank you, Mr. Chairman.

I first would like to thank you for your long, involved interest in this project, and express the appreciation of the people of my State

for the sensitivity and support the Senator from Alaska has given to us as we have appeared before your committee from time to time.

I am proud to present to you this morning, Mr. Chairman, the consulting engineer for the city of Heppner, Mr. Stephen Anderson on my left. On my right is a civic leader of longstanding, a retired farmer, a member of the chamber of commerce, Mr. Orville Cutsforth. He is representing the city of Heppner and the county of Morrow.

I would also like to say that Senator Packwood, my colleague from the State of Oregon, is unable to be here due to a conflict with other testimony that he is having to offer this morning in another committee. I am happy to present to you his statement of support for the Willow Creek Dam and ask that it be placed in the record.

Senator GRAVEL. It will be placed in the record following your statement.

Senator HATFIELD. Mr. Chairman, I would like to offer my statement and then summarize it, if that is acceptable, and not dwell on the subject at length because I would like to have you hear from the two gentlemen who accompany me here this morning.

I will outline very briefly the facts of the case because I know you are very familiar with them. For the record, the Willow Creek dam and reservoir project was approved by this committee and authorized by Congress in the Flood Control Act of 1965.

The advanced engineering and design for the project is essentially complete and the initial construction funds were appropriated for fiscal 1974.

Since the time of authorization there has been a change in the criteria for the standard project flood which has required an increase in the project's storage allocation for flood control. That is one of the changes.

Second, prior to the authorization of this project in 1965, the city of Heppner had requested that storage be set aside for municipal and industrial water supply. Since that time, the city has reviewed the situation and found that it can accomplish this through an alternative—deep wells—which would represent a saving for the city. This changes a feature of the Willow Creek project.

Third, certain channel improvements were authorized, or provided for, in the 1965 authorization act. Due to the heavy flood of 1971, the Corps of Engineers under section 208—of the 1954 Flood Control Act—authority did conduct certain improvements, so that the channel improvements in the original authorization would not now be economically feasible.

Also, I must add that there have been recent studies by the Bureau of Reclamation that would indicate that the irrigation under current criteria and assumptions would not be economically justifiable at this time.

The Bureau has recommended that the irrigation programs not be foreclosed but that they be deferred. So that changes the picture to some degree as well.

As I stated at the outset, there is a greater need for flood control—and let me say we have in this area some very troublesome flood-producing combinations. We have winter rains which fall usually on frozen grounds, and we have summer thunderstorms, as well.

A thunderstorm augmented by snowmelt can create the most serious of problems.

As you know, one of the worst disasters in the entire Nation caused by floods occurred in 1903 when 247 lives were lost in the Heppner area.

I am going to leave to General Kelly the description of some of the technical justifications for the changes that are required. But I want to indicate to you that there is no question that the overwhelming majority of people in the region support this particular project.

In fact, many of them would prefer a larger project, offering the possibility of even more storage space for future irrigation or a combination of irrigation and flood control, but if this is not incrementally feasible, we have to accept that reality.

I want to say that our colleague on the House side, Congressman Al Ullman, is in full support of this project. So you have the united delegation and you have, with perhaps a few exceptions, a pretty solidly united public support in the area.

Mr. Chairman, we have a time factor problem as well in this. The city of Heppner has been mandated by the State of Oregon to upgrade its water supply system. This means that they will have to work together with the corps in changing and moving their present system, because part of the system is in an area that will be inundated by the storage reservoir of the project.

The city of Heppner has until July 1975 to accomplish the necessary changes in their water system as required by the State. That puts them under the gun, so to speak, in this matter of time.

I want to emphasize that we are seeking only an amendment to the 1965 Flood Control Act. That is, we need to modify the original authorization language.

As you know, I am a member of the Appropriations Subcommittee on Public Works. We moved in good faith with appropriating \$450,000 for fiscal year 1974. That money is being held in abeyance until we can get this authorization change.

I also want to emphasize, Mr. Chairman, that it should be changed on the basis of the 1965 criteria. I am talking primarily about discount rates and the cost-benefit ratios that are derived from those discount rates.

Again, I want to thank the committee for its willingness to hear us, for its sympathy and understanding of this problem in the past, and I hope that we might move now to correct this technically in order that we can release the funds involved with moving the water system and also expedite getting under construction this project that is so desperately needed.

[The statements of Senators Hatfield and Packwood follow:]

STATEMENT OF HON. MARK O. HATFIELD, U.S. SENATOR FROM
THE STATE OF OREGON

MR. CHAIRMAN: The Willow Creek dam and reservoir project in Oregon was authorized by the Flood Control Act of 1965 (Public Law 89-298). The advanced engineering and design for the project is essentially complete and initial construction funds were appropriated for the present fiscal year (FY 1974).

Since the time of the authorization there has been a change in criteria for the standard project flood which has required an increase in the project's storage allocation for flood control. The project thunderstorm is now considered to cover the entire Willow Creek drainage area, in contrast to a much smaller area considered in the original project document.

Secondly, prior to authorization of the project, the City of Heppner requested that storage be set aside for municipal and industrial water supply. Since that time the City has reviewed its water needs and has determined that alternative sources could be developed at an overall saving. They have therefore withdrawn their request for municipal and industrial water, and it should be deleted as a project purpose.

Third, the 1965 authorization provided for improvement of Willow Creek channel below the dam and through the City of Heppner. Some channel improvement was performed by the Corps of Engineers after a flood struck the area in 1971. This work was performed under the Corps' Section 208 (of the 1954 Flood Control Act) authority. Further channel improvements in connection with the Willow Creek dam project would not now be economically feasible and should be deleted as a project purpose.

Recent studies by the Bureau of Reclamation have indicated that irrigation under current criteria and assumptions is not economically justifiable at this time. The Bureau has recommended that irrigation not be foreclosed in this project, but deferred. Therefore, the operation of the Willow Creek project for irrigation, as specified in the 1965 Act, should be deferred for the present.

The need for flood control of the Willow Creek drainage area is as urgent as ever before. Floods in the area, either from winter rains on frozen ground or from summer thunderstorms augmented by snowmelt, develop suddenly and without warning. The biggest flood on record took 247 lives back in 1903, which must rank as one of the most disastrous of such occurrences in our country's history.

I will leave the technical descriptions and justifications of the project modifications proposed by the Corps of Engineers to General Kelly, the Deputy Director of Civil Works, who is here to testify today. I would just add that the modified project is supported by the overwhelming majority of the people of the region. They would prefer a larger project, offering the possibility of increased storage space for future irrigation or joint use (irrigation and flood control), but if this is not incrementally feasible—and it appears that it is not—then the modified project as the Corps will present to you today is fully supported. Congressman Al Ullman, who represents the people of this region in the House of Representatives, concurs with this view and that of my colleague, Senator Packwood.

Finally, Mr. Chairman, I urge you to act on the modification proposal with all possible speed. The first construction funds, an appropriation of \$450,000, are hanging in abeyance until the Public Works Committees and the Congress approve the modifications. This delay is causing serious complications for the City of Heppner, which must upgrade its water supply system by July, 1975, to comply with State requirements. As their water storage facility and some water lines are now located in the area that would be inundated by the reservoir, the City would need to coordinate the upgrading with relocations required by the project. Needless to say, if there is to be a Willow Creek Project, the Corps participation in the relocation of the municipal water supply facilities is needed as soon as possible.

Thank you for your time and attention to this matter of critical importance to the people of the Willow Creek basin.

STATEMENT OF HON. BOB PACKWOOD, U.S. SENATOR FROM THE STATE OF OREGON

Mr. Chairman, I am here today to offer my full support for the proposed modifications to the Willow Creek Dam project in Heppner, Oregon.

Heppner is a tiny town in northeastern Oregon with a population of 1,435. Heppner's citizens have displayed an extraordinary degree of patience in waiting for this project to finally get off the ground. In recent years, that patience has been rewarded with Federal appropriations for preconstruction planning. More recently, however, the patience of my friends in Heppner has been wearing a bit thin. And I can't say that I blame them.

Last January, the City of Heppner was informed that because of modifications in the project purposes, it would be necessary to obtain congressional approval once again. In addition to the natural disappointment caused by a further delay in the completion of the dam, this latest development has destroyed the city's timetable for relocating and upgrading its water system.

It had been hoped that the changes in the water system could coincide with the relocation of a reservoir and water mains which would be required by the Corps in building the dam. In December, 1973, Heppner residents passed a \$450,000 bond for their water system, but if they do not soon receive a firm commitment from the Corps of Engineers, the additional cost to Heppner could be enormous.

The Willow Creek project as currently proposed includes a 149 foot dam with a storage capacity of 11,500 acre-feet. The total project cost is \$13,100,000. The benefit-cost ratio is 1.39 to 1. The benefits break down as follows:

Flood control.....	\$554, 000
Irrigation	37, 000
Recreation	19, 000
Fish and wildlife.....	13, 000
Area redevelopment.....	54, 000
 Total	 677, 000

It is worth noting that one item which cannot be included in these calculations is the value of human life. I'm sure this subcommittee has already been made aware of the natural disasters which Heppner has been forced to endure. The most devastating flood down Willow Creek occurred on June 14, 1903. One-third of Heppner was destroyed and an estimated 247 lives were lost. To this day, it is remembered as the worst natural disaster in Oregon and among the worst in the history of the United States.

Almost 71 years have passed since that day of devastation in 1903. And while the odds are against a similar natural disaster occurring this June 14th or even 5 years hence, I don't think we can afford to gamble with the vagaries of nature, the unpredictable destruction of a flashflood. Instead, we have the opportunity to assure a safe future for Heppner's population. In my mind this future is the promise which should direct the Subcommittee to positive action.

Mr. Chairman, I have rarely seen the citizens of a community so uniformly behind a project. I think the people of Heppner deserve your support. I urge this subcommittee to move favorably and expeditiously on their request.

Senator HATFIELD. Mr. Anderson, the Consulting Engineer to the city of Heppner, has a brief statement. I would like to have him given the opportunity to make that statement.

STATEMENT OF STEPHEN C. ANDERSON, CONSULTING ENGINEER, CITY OF HEPPNER, OREG.

Mr. ANDERSON. Thank you, Senator Hatfield.

Senator Gravel and members of the subcommittee, I would like to thank you first of all for allowing me to be here.

I have a letter from a citizen of Heppner. We had a public meeting and offered to read any letters from citizens a couple of weeks ago. I would like to read this letter, if I may.

Senator MIKE GRAVEL,

Chairman, U.S. Senate Appropriation Subcommittee, Willow Creek Dam Project

GENTLEMEN: Your committee has at its disposal all facts concerning the need for this project from 1903 to 1974. The need for a flood control dam has increased rather than decreased in relationship to area growth.

The government has offered flood insurance on homes and businesses which are located within the flood plain. This insurance is not an offer, it is in effect a demand supported by the impossibility to borrow money from any Federally insured lending agency unless the property owner has this insurance.

A total mockery of human life! The authors of and supporters of this insurance, I call penny-wise and dollar-foolish.

The primary need for a flood control dam is the safety of human life, and in this case, the monetary value of property is a secondary consideration. Irrigation and recreation, while most desirable, are also secondary in nature.

Both quality and quantity control of water are necessary in today's technology of irrigation. Most larger irrigators are using deep wells and sprinkler systems rather than the unpredictable stream flow; therefore, creating a negative attitude toward the purchase of water from impoundment. Smaller irrigators are in favor of impoundment.

However, their water rights, in most cases, are more recent than those of most of the large irrigators.

For me to appear in person at this hearing would, in effect, be telling my Congressmen that they are incompetent—a subject better left to be settled in the election booth.

The Willow Creek Flood Control Dam is needed and wanted. My most sincere suggestion is to start construction of this project immediately. The alternative is to definitely and completely abandon the project and to make public the total amount of money spent on the project to date.

Sincerely,

W. W. WEATHERFORD.

I would like to stress that I am reading this for Mr. Weatherford. His views are entirely his own.

As a Consulting Engineer representing the city of Heppner, the city would like to first of all make the statement that they are in complete support of the Willow Creek Dam project.

They have stated in hearings in the past that they are in full support of it and I would like to again reemphasize the city's support of the project. The project is not only a local project; it is a regional project.

The large number of people who live within south Morrow County do the biggest amount of their shopping and most of their business is transacted in the city of Heppner.

So we are for this project 100 percent, as far as the flood aspects go, as far as the recreational aspects go, and we would like to stress that we feel that this is a regional project that will not only benefit the city of Heppner but we feel will benefit the whole south Morrow County area.

As Senator Hatfield stated, the problem that we are faced with right now is one of timing. This is an unfortunate problem. This problem has been caused by the fact that the original authorization had to be modified.

We are trying to live with this problem and still come out with our water system and the cooperation of the Corps of Engineers completed by July 1, 1975.

The purpose of my trip back here is to emphasize this need of timing.

I have a copy of the report that was prepared by my firm in November of 1973 and I would like to submit it for the committee's use.

Senator GRAVEL. It will be accepted for the files.

Mr. ANDERSON. The city of Heppner has had a constant growth of approximately 1 percent, a rather slow growth, since 1890, other than for a brief period right after 1900 when they lost about 250 of their citizens in a flood.

Right now the city's present population is approximately 1,500. Because of a plant expansion by Kinzer Corp., they are expecting

an increase in population of about 400 people this year and next, or approximately a 25 percent increase in population.

The situation, as I am sure you are somewhat aware of, that we are faced with in timing is that the city's water system is right in the middle of the Willow Creek Dam project. The city draws water from four wells located up Willow Creek. These wells pump the water into a transmission line and it flows down Willow Creek and into the city.

Two miles of the lower portion of the transmission line are directly in the pool of the Willow Creek family. The city's main reservoir, a 780,000 gallon reservoir, lies directly in the west abutment of the Willow Creek Dam.

These things give you an idea of the problems caused by this interrelationship between the Willow Creek Dam and the city's water system. The city was given a mandate by the State Board of Health last summer that there would be no new water service connections allowed in the city until something was done with their water supply system.

At this time I began the compilation of this report and it was published in November 1973. In December of 1973, based on the proposals that I made in this report, the city voters upheld a \$450,000 bond election by a 2-to-1 margin for improvements to their water supply system.

The improvements to the water supply system are set up in two phases. One of the phases was improvement to the supply system, itself, involving letting a contract to improve one of the city wells, and by making these improvements we have a release of 28 new building permits in the city, if these improvements can be made by July 1, 1974.

Last week we awarded a contract and we foresee no problem with making these improvements and getting phase 1 of the project going along. The 28 building permits that were originally allowed by the State board of health have since been used up and there is additional demand for more building permits now.

The second phase of this project, which is closely correlated with the Corps of Engineers' work, is the phase that we are here to ask for your support on today. Timing is the main problem. We have until July 1, 1975, to complete this project.

We have approximately 9 months of construction time that it is going to take. We also have engineering design time and time to allow the contract to be let. The minimum amount of time right now that we could possibly let this project slip, until we have to actually make the decision whether we go with the Corps of Engineers in relocating these facilities or whether we go on our own and build our own facilities, is about 3 months.

This is the string I would like to stress upon the committee today. We have been told by General Kelly that it would cost them approximately \$200,000 more to relocate these improved facilities at a later date if the project is postponed.

We estimate that it will cost the city approximately \$250,000 more right now if we don't go along with this project with the Corps of Engineers. It is a small drop in the bucket, but there will be about

\$0.5 million lost on this project if something isn't done on it in the next 3 months.

To restate the purpose of my trip back here, I am here to represent the city, to tell you that we are for the Willow Creek Dam project 100 percent, and I am also here to stress upon you that a speedy approval of the modified authorization of the Willow Creek Dam project so a joint effort can be begun to relocate and improve the water of the Heppner City water supply system is requested.

Senator GRAVEL. Thank you very much.

Senator HATFIELD. Now I would like to call on Mr. Cutsforth, a leading citizen of the area, for a brief statement.

STATEMENT OF ORVILLE CUTSFORTH, SR., HEPPNER CHAMBER OF COMMERCE

Mr. CUTSFORTH. Honorable Chairman, I am Orville Cutsforth, Sr., a retired farmer. I am here to do what I can to promote the Heppner Flood Control Dam. I represent Morrow County and the city of Heppner, Oreg.

The history of flood control problems in the Willow Creek Basin goes back into the late 1800's when reports of heavy flash floods were recorded.

In 1903, Heppner suffered one of the great major disasters of this century when over 247 lives were lost, the entire business area wiped out and untold thousands of dollars of property losses sustained by the downstream farmers.

This occurred when a wall of water struck the town as a result of a tremendous cloudburst.

There have been other floods in the history of Willow Creek that have contained the same tragic potentials as those held in the flood of 1903, and yet have been accepted as minor floods.

Heppner has just completed the replacement of bridges and the municipal swimming pool which were damaged in the flood of May 1971. In order to accomplish the work, it was necessary to vote a bond issue to provide funds for repair of sewer, bridges, and the swimming pool, as well as considerable street damage. Some residents abandoned their homes and have not moved back into them.

We realize that the Willow Creek Dam project is but one of very many that you must consider, but to us it is a major project.

While this dam will generate most benefits from flood control, there are other benefits such as irrigation, and we urge that irrigation storage be planned and included in the structure for future use.

There is also water recreation to be considered as there is not a lake or river from the Columbia River on the north boundary of the county to the Blue Mountains in the south, and the lake that is proposed here, small as it is, will get a great deal of use.

We are also troubled here with a rapidly falling water table, and we anticipate that this proposed storage will alleviate some of this problem.

May I urge that modification of the project authorization be approved so that the corps may proceed with construction of Willow Creek Dam in Morrow County, Oreg.?

To the honorable members of this committee, I wish to express my very deep appreciation for the opportunity you have given me as a representative from Morrow County to appear before you. Should there be any questions, I will do my best to answer them. Thank you.

Senator GRAVEL. Thank you very much, sir, for your statement. You have, of course, a very able advocate in Senator Hatfield, and I am happy to see that this has the support of Senator Hatfield, Senator Packwood, and Congressman Ullman.

We will coordinate with your office, Senator, in developing the necessary language for the required amendment, and we will take it up as soon as we can, having a meeting in the subcommittee and press it through to the full committee.

I am sure you will be on the floor to help us carry it at that time.

I feel your testimony has been very persuasive and it appears the project still has a good cost-benefit ratio is quite beneficial. I think you will see some rapid action.

Senator HATFIELD. Thank you very much, Mr. Chairman, for this opportunity this morning. We appreciate your very great concern about our problem.

Senator GRAVEL. Thank you.

[Additional statements relative to Willow Creek follow:]

PORTLAND, OREG., April 21, 1974.

Re Proposed Willow Creek Dam.

Senator MIKE GRAVEL,

Chairman of the Subcommittee on Water Resources of the Public Works Committee, Dirksen Building, Washington, D.C.

DEAR SENATOR GRAVEL: I am writing in opposition of the proposed Willow Creek Dam to be constructed in Heppner, Oregon, a small town in Eastern Oregon. I hope this letter will be recorded in the public records, as well as read at your hearing.

This proposed dam is a flood-control project, but in all the years that my family and I have lived there, Willow Creek has *never* flooded. The flooding that has caused previous damage is in Shobe Canyon, and this area isn't even located near the proposed damsite. Some type of water control is necessary for Heppner, but it seems to me that a less expensive re-channeling or other means would be more feasible than spending millions of dollars on a dam that is in an ineffective area. This type of federal expense seems uncalled for, and I do not care to have my taxes spent on this flagrant expenditure.

Secondly, the dam is proposed to be a recreation area. In such a small community, surrounded by even smaller communities, where is the demand or population going to come from to use this center? Willow Creek is already endowed with its natural resources, so why does the money have to be spent on a man-made project that will not be used to the fullest because of its location?

I suggest that your committee do some further investigating to learn the desires of this small, Eastern Oregon town. Very few residents are in favor of the proposed dam, and those that are, are trying to get the federal government to construct a project that will benefit their town, and improve the water system. This should be done by the city government, not the millions that the federal government would have to spend.

I propose your committee go in *opposition* of the Willow Creek Dam project, and that the Corps of Engineers seek a less expensive means of flood control for the residents of Heppner—namely a channel-improvement system.

Thank you for your attention.

Sincerely yours,

JANET T. BLISS.

HEPPNER UNITED METHODIST CHURCH,
Heppner, Oreg., April 19, 1974.

Senator MIKE GRAVEL,
Chairman, Subcommittee on Water Resources of the Public Works Committee,
Dirksen Building, Washington, D.C.

DEAR SIR: I believe the reasons against the proposed Willow Creek Dam outweigh the possible advantages to be gained by its construction. Much less money could be spent in other ways to give a good flood control margin of safety for the community. Sociologically, ecologically, aesthetically, and economically the dam is unfeasible.

I am opposed to it's construction.

Please enter this letter in the official record of the Committee's meeting.

Yours Truly,

EDWARD A. CUTTING.

HAGER'S DAIRY,
Heppner, Oreg., April 20, 1974.

Senator MIKE GRAVEL,
Chairman, Subcommittee on Water Resources of the Public Works Committee,
Dirksen Building, Washington, D.C.

GENTLEMEN: We wish to again express our opposition to the proposed dam on Willow Creek above Heppner, Oregon. Since irrigation benefits are now moot (proposed lands plus many times more land is now under irrigation from Columbia river by private monies), this leaves only recreation, flood control, and supplemental water for City of Heppner as benefits. City of Heppner needs can be filled by wells so no real need there. We have lived on Willow Creek for more than sixty years and do not believe there will be enough water only occasionally for recreation—rest of the time this will be a mud flat area breeding mosquitos and an eyesore to the ecology of our area.

Regarding flood control: the 1903 flood damage was result of haystacks being in bottom of canyon. Water washed haystacks into fences which caused a dam, next dam was hay plus footbridge, next was hay plus bridge plus chintown (shacks built of packing boxes, etc.). Water was dammed up five separate times which caused the extensive damage. Some work has been done on this watershed which helps the water to flow rather dam up and "tumble," the usual cause of damage and loss of life.

We have had a greater problem with floods from Shobe canyon that drains into Heppner than from Willow Creek for the past fifty years. The proposed dam would do nothing for this problem. SEC soil conservation work has been done three miles above Heppner where floods originated. This work has cut water run-off on this land to zero and increased productivity of land more than fivefold. Enclosed is a copy of an article from pages 20 and 21 of March 21, 1974 issue of Oregon Farmer-Stockman by Mike World.

There is work that needs to be done on Willow Creek watershed for flood prevention. This could be done for an estimated one to one and a half million dollars which is better, cheaper, and more positive approach to flood control than proposed dam.

We, therefore, wish to go on record as opposing expenditure for the proposed dam on Willow Creek which we feel that the damage to our ecology is not warranted as benefits of dam are at best questionable.

Sincerely,

JEWEL N. HAGER.

HEPPNER, OREG., April 22, 1974.

Senator MIKE GRAVEL,
Chairman, Subcommittee on Water Resources of the Public Works Committee,
Dirksen Building, Washington, D.C.

HONORABLE SENATOR, We wish to protest the building of the Willow Creek Dam. We feel, as many other residents of Heppner do, that a flood control dam here would not serve any good purpose.

Our home was destroyed by flood on May 25, 1971, yet we are sure that had the dam been constructed at that time, it would not have prevented the disaster we had then.

Will you please give our opinion some consideration?

Thank you.

Sincerely,

Mr. and Mrs. CARL McDANIEL.

BEAVERTON, OREG., April 22, 1974.

Senator MIKE GRAVEL,
Chairman, Subcommittee on Water Resources of the Public Works Committee,
Dirksen Building, Washington, D.C.

DEAR SENATOR GRAVEL: I am writing you concerning the proposed Willow Creek Dam in Northeastern Oregon. The proponents of this dam state that this structure is necessary for flood control.

I am a former resident of the proposed site for the dam and think that adequate steps can be taken for flood control which do not necessitate an expenditure of this magnitude. Improving the Creek's present channel or perhaps widening it should be an effective measure. I feel it is important to preserve Eastern Oregon's scarce good land. The construction of this dam would result in the destruction of prime farm land and would only benefit real estate developers.

Also, I doubt that the dam, if it is constructed, would be an effective flood control measure as Willow Creek's tributaries—Shobe Canyon and Balm Fork—have been the sites of past floods and would not be affected by a dam on the proposed site.

I urge you to oppose this proposal.

Mrs. JUDY ROTHROCK.

 PENDLETON, OREG., April 22, 1974.

Senator MIKE GRAVEL,
Chairman, Subcommittee on Water Resources of the Public Works Committee,
Dirksen Building, Washington, D.C.

DEAR SENATOR GRAVEL: I am writing to you about the hearing which you will chairman for the proposed Willow Creek Dam, located in Morrow County, Oregon at Heppner. I am the owner of most of the land that will be condemned if the dam is built and this place is the nucleus of my ranching operation. I have never offered any public opposition to the proposed dam until now.

When the local politicians started working on this project twenty years ago or more, my opinion was that the majority of the people in the local area were in favor of a multi-purpose dam. Since that time, many of the irrigation farmers below Heppner have filed a protest against having any irrigation feature written in the dam specifications. Many other people, who are economically minded and are opposed to useless spending of government money, have shown their negative feeling about building the dam. If it were constructed, it would only control two of the four streams that converge within the city limits of Heppner and one of these has never caused any flood damage to the city.

The indecision of not knowing if I will have an economical ranch operation from year to year has been very disconcerting and, I believe, after twenty years or more, the efforts to get monies to build the dam should be dropped and another approach made to control any unusual flooding in this area.

My opinion is that channel improvement similar to that in Walla Walla, Washington and Colfax, Washington would solve the problem in Heppner. The cost would be one-fifth to one-third the cost of building the dam.

Please let me repeat, "The dam would only control two of the four streams converging within the city limits of Heppner and one of these has never caused any flood damage to Heppner."

I would be very happy to give anyone interested a ground tour of the area effected by the proposed dam.

It is my request that this letter be read at the hearing on the proposed dam, and my wish that the committee oppose the appropriation of any money to build the dam.

Very truly yours,

R. STEPHEN THOMPSON.

 HEPPNER, OREG., April 18, 1974.

Re Proposed Willow Creek Dam.

Senator MIKE GRAVEL,
Chairman, Subcommittee on Water Resources of the Public Works Committee,
Dirksen Building, Washington, D.C.

DEAR SENATOR GRAVEL: In the near future, you will chair a committee which will hold hearings on the proposed Willow Creek Dam to be located in Mor-

row County in Eastern Oregon. It is my desire that this letter be read at the public hearing and entered in the official record. This letter is written in opposition to the proposed dam which I consider as unnecessary and a flagrant waste of public monies.

The proposed dam is a flood-control project which will affect only two of the four creeks that pass through the town of Heppner, namely Willow Creek and Balm Fork. Of these two creeks, Willow Creek has never caused any flooding damage to the city of Heppner. Balm Fork, a tributary of Willow Creek, and Shobe Canyon, a tributary not even affected by the proposed dam, have caused flooding. In my judgment, these creeks can both be controlled by a channel-improvement program which, according to Corps of Engineer figures, would cost \$2.8 millions. It would seem to me that a channel-improvement program and a certain degree of land-stabilization work in the headwaters of Balm Fork and Shobe Canyon make sounder economic sense than a \$10-\$15 million dam which won't effectively protect a town whose property values within the flood-plain amount to \$7.6 millions.

The main support for this project comes from the Heppner City Council which sees the proposed dam as a means of using public monies to modernize Heppner's antiquated water system which because of new residential construction has been ruled as inadequate by State of Oregon inspectors. Relocation of the existing reservoir and main lines leading into it will be necessitated if the dam is constructed. Thereby, the federal government will bear a sizeable amount of the economic burden of up-dating Heppner's water system instead of the city's solving its own problem.

There is opposition to the project by the downstream irrigators who have filed a written protest to any irrigation feature which may be incorporated in the dam. Many individuals share my feelings that the project is unnecessary and an expensive venture which fails to solve its primary function—flood protection for Heppner. By and large, the majority of the residents feels nothing but apathy towards the project. During the last nine months, since the Corps came forth with its current plan, the local newspaper has printed only three letters concerning the dam—two in opposition and one in favor of construction. There were only four letters submitted at the last public hearing held by the Corps of Engineers, two in favor and two against, with oral testimony being about equally divided. If we consider the foregoing as barometers of public opinion, it must be concluded that the project is being kept alive by a few local officials.

I request that your committee goes on record as opposing this project and that the Corps of Engineers be encouraged to direct its attentions toward a channel-improvement project which will meet the needs and wishes of the people.

Sincerely yours,

TERRY E. THOMPSON.

HEPPNER, OREG., April 19, 1974.

Re Willow Creek Dam, Heppner, Oregon

Senator MIKE GRAVEL,

Chairman, Subcommittee on Water Resources of the Public Works Committee, Dirksen Building, Washington, D.C.

DEAR SENATOR GRAVEL: It is our desire that this letter be read at the public hearing concerning the proposed Willow Creek Dam and entered in the official record. We, the undersigned, wish to voice our opposition to the construction of the dam. It is our feelings that the dam is economically unsound, an unnecessary expenditure of federal funds and that it is undesirable to many persons in the community. A sound program of soil conservation and channel improvement could attain similar end results at a greatly reduced cost to the taxpayers.

[The above letter had 32 signatures attached. The original has been retained in the committee files.]

Senator GRAVEL. The committee stands adjourned.

[Whereupon, at 11:10 a.m., the subcommittee recessed, to reconvene subject to the call of the Chair.]

